



2024

KEAN

RESEARCH
DAYS

HYBRID



COUGARS CLIMB HIGHER

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WELCOME



It is with great pleasure that I extend a warm welcome to each of you joining us for Research Days 2024, where we are poised to embark on an exhilarating journey of knowledge, exploration and discovery.

In today's fast-paced world, research stands as a beacon of enlightenment, guiding us toward innovative solutions to the myriad challenges facing society. This event serves as a platform for faculty and students from diverse disciplines to converge, collaborate, and catalyze advancements in their respective fields.

Over the course of three days, we have meticulously curated a program that promises to inspire, engage and provoke thought. From presentations by thought leaders to interactive panel discussions and captivating poster presentations, there will be ample opportunities to delve into the latest breakthroughs, exchange insights and forge meaningful connections.

The richness of this gathering lies not only in the depth of knowledge shared but also in the bonds forged among fellow enthusiasts of discovery. As we embark on this collective quest for understanding, let us embrace the spirit of curiosity, open-mindedness and collaboration. Together, let us push the boundaries of knowledge and pave the way for a brighter, more innovative future.

If you cannot join us in person, please take the time to browse the posters and research presentations you see listed. Once again, welcome to Research Days 2024. May your experience be enriching, enlightening and filled with moments of inspiration.

Sincerely,

Sue Porterfield, Ed.D.
Vice President for Research
Kean University

FACULTY RESEARCH MENTOR OF THE YEAR

JENNA TUCKER, DTP

Department of Physical Therapy

College of Health Professions
and Human Services

(Graduate Advisor)



Jenna Tucker, DTP, is a Clinical Assistant Professor in the Department of Physical Therapy at Kean University, where she has served as the neurological content coordinator since 2019. She has been a practicing clinician for over 13 years, including inpatient, outpatient and home-care rehabilitation for adults with neurologic dysfunction, specializing in brain injury. Tucker earned her Doctorate in Physical Therapy, with a minor in psychology, from Northeastern University in 2011. She has been a Certified Brain Injury Specialist since 2012, and was designated as a Board-Certified Clinical Specialist in Neurologic Physical Therapy in 2014. Tucker is a member of the Brain Injury Alliance of NJ Board of Trustees and was recognized by the BIANJ as the 2023 recipient of the Jill Shulman Community Pillar Award. In collaboration with clinical partners at Intermountain Health, Tucker's research focuses on brain injury rehabilitation, specifically concussion and examination/treatment of dysautonomia. Her speaking experience includes symposia, workshops, platform and poster presentations at national and statewide conferences, as well as multiple nationally-recognized podcasts. Each of Tucker's research publications and presentations have involved multiple Kean DPT students and/or alumni. Since 2019, she has provided extensive mentorship to more than 30 DPT students for their involvement in current and future projects.

IYAD GHANIM, PH.D.

Department of Communication Sciences & Disorders

College of Health Professions and Human Services

(Early Career Faculty)



Iyad Ghanim, Ph.D., is an Assistant Professor in the Department of communication sciences & disorders at Kean University. He earned a M.A. in Linguistics from UNC at Chapel Hill and a Ph.D. in Communication Sciences and Disorders from Montclair State University. In his research, Ghanim uses psycholinguistic methods to explore the cognitive processes of speech and language processing, in particular, exploring how bilinguals use meaning-related or semantic information to process words and sentences. In the past three years as a faculty member at Kean, Ghanim has extensively mentored numerous undergraduate students in research projects funded by the Office of Research and Sponsored Programs (ORSP) ... and several Center for Undergraduate Research and Fellowships (CURF) projects. These have resulted in co-authorships on publications or conference presentations at New Jersey Speech & Hearing Association (NJSHA) and other regional conferences. Most recently, one particular work exploring the effects of wearing face masks on language processing in bilinguals involved a first-generation undergraduate student who is interested in eventually pursuing a research doctorate. This work led to a prestigious publication in a top journal with the student as a co-author.

NAZIF DURMAZ, PH.D.

Department of Marketing, Global Business and Economics

College of Business and Public Management
(Senior Faculty)



Nazif Durmaz, Ph.D., is an Associate Professor of Economics at Kean University. He received a Ph.D. in applied economics from Auburn University, Alabama. He mainly teaches the graduate course Managerial Economics for MBA and undergraduate courses International Economics, Quantitative Methods in Economics, and Macroeconomics. Durmaz has published over 25 peer-reviewed academic articles in prestigious journals, such as *International Journal of Forecasting*, *Economic Modeling*, and *Journal of Economic Studies*. Three of the published articles are with undergraduate students. He has presented his research at many respected conferences and universities around the world. His research interests are in international economics and trade, open economy macroeconomics, and empirical financial economics.

FACULTY RESEARCH MENTOR OF THE YEAR - HONORABLE MENTION

JOSHUA GUITAR, PH.D.

Department of Communication, Media and Journalism

College of Liberal Arts

(Graduate Advisor)

- Honorable Mention



After completing a B.A. in Communication at Adrian College, Joshua Guitar earned his M.A. and Ph.D. in communication from Wayne State University. Joshua currently serves as an Assistant Professor of Communication at Kean University, where he teaches classes in rhetoric, critical media studies and political communication. Joshua employs both classical and critical methods of rhetorical inquiry to examine mediated political discourse, oftentimes to interrogate the rhetorical manifestations of ideology that inhibit democratic discourse, civil liberties and political equity. Joshua's research has been featured in communication journals like *Critical Studies in Media Communication*, *Communication and Democracy* and *Western Journal of Communication*. Joshua recently authored a book entitled *Dissent, Discourse and Democracy: Whistleblowers as Sites of Political Contestation*, published by Lexington Books in 2021. Joshua has also won a number of awards for his research, including the 2019 Top Paper Award in the Political Communication division of the National Communication Association, the 2022 James Madison Prize for Outstanding Research in First Amendment Studies, and the 2023 Robert M. O'Neill Top Paper Award in the Freedom of Expression division of the National Communication Association.

THOMAS ABRAHAM, PH.D.

Department of Marketing and Management

College of Business and Public Management

(Senior Faculty)



Thomas Abraham, Ph.D., is a Professor of Management at Kean University. He received his Ph.D. from the University of Massachusetts and his MBA from the Indian Institute of Management. His research interests include sustainability information systems, IT skills and capabilities, and MIS curriculum and education. He has published his research in several journals including *MIS Quarterly Executive*, *Journal of Enterprise Information Management*, *Communications of the Association for Information Systems* and *Decision Support Systems*. He has served as Chair of the Department of Management and as Coordinator of the Master of Science in Management Information Systems program at Kean University. He was recently re-elected to the executive council of the Kean Federation of Teachers, the faculty and professional staff union, where he serves as the Vice President for Membership. He currently teaches both graduate and undergraduate classes in MIS and sustainability. He began his career as a computer programmer and systems analyst and has been an IT consultant to several companies including Sony Music and BMG.

MALIHE ALIASGARI, PH.D.

School of Integrative Science and Technology (IST)

College of Science, Technology and Mathematics
(Early Career Faculty)



Malihe Aliasgari, Ph.D., brings a unique blend of mathematical and engineering expertise to Kean University. After joining the inaugural cohort of the Equity in Action Presidential Postdoctoral Fellowship Program in 2021, she transitioned to a role as Assistant Professor of Mathematics in the School of Integrative Science and Technology (IST). Aliasgari is also a dedicated Faculty Research Mentor, guiding both graduate and undergraduate students in their research endeavors.

Aliasgari holds two Ph.D.s: one in pure Mathematics from Amirkabir University, Iran, and another in Electrical Engineering from the New Jersey Institute of Technology (NJIT). This dual background informs her research interests, which lie at the intersection of Machine Learning, Deep Learning, Error Control Coding, Information Theory, and Algebraic Coding. Aliasgari is particularly drawn to research that bridges the gap between theoretical foundations and practical applications in engineering.

SIYUN YANG

Undergraduate Student Researcher of the Year

- Natural Sciences



Siyun Yang is a senior-year undergraduate student from Kean University majoring in Biology. She is currently working at the Chemometric and Molecular Modeling Laboratory under the supervision of Supratik Kar, Ph.D., at Kean University. Her research interests are computational drug design and discovery. Currently, she is working on two different research projects: One is the implementation of computational-aided drug discovery against neglected viruses like Nipah and Zika virus, and the other one is environmental toxicity assessment for industrial organic chemicals towards different fish species. She has published four Q1 research articles, including *Science of The Total Environment* (IF = 9.8), *Computers in Biology and Medicine* (IF = 7.7), and *Nature Scientific Reports* (IF = 4.6), and two book chapters. She has presented her research at various national and international conferences, including the American Chemistry Society (ACS) Conference 2023 in San Francisco, the ACS Conference 2024 in New Orleans, and the NJADDG Symposium at Princeton University.

JUSTIN ANTONIO

Undergraduate Student Researcher of the Year

- Social Sciences



Justin Antonio is a senior business management major at Kean University. His research interests involve organizational and leadership psychology, often working with the concept of emotional intelligence. His first job was located at Kean University, as a research recruiter in the Center of Undergraduate Research and Fellowships. Throughout the years, he has held multiple leadership positions, including presidents for the Business Research Society, Business Analytics Student Association, and Human Resources Management Club. He currently has interests in corporate entertainment, marketing research, and human resources management as possible routes for career prospects.

TRISTRAM DACAYAN

Undergraduate Student Researcher of the Year

- Formal Sciences



Tristram Dacayan is a senior at Kean University pursuing a B.S. in Computer Science. He started doing research as a freshman in 2020 under the guidance of Daehan Kwak, Ph.D. He has a remarkable passion for research to match his commitment, and enthusiasm for computer science. His main field of interest revolves around artificial intelligence and machine learning (AI/ML), and he strives to learn more about technologies and advancements in the field, with notable experience in Computer Vision (CV), Natural Language Processing (NLP), and Large Language Models (LLM). His work includes enhancing Electronic Health Records (EHR) summarization through LLM-Augmented Knowledge Graphs and employing an NLP Pipeline for EHR summarization. He was also co-advised by Kuan Huang, Ph.D., to develop an Automated Parking Space Occupancy Detection system using Spatial Grid Mapping. Additionally, Tristram has worked on Computer Vision-Based Monitoring for Online Meetings. At Carnegie Mellon, he pioneered the development of an Automated Pain Assessment system using Video Masked Autoencoder Architecture. These projects not only demonstrate his technical proficiency but also his commitment to applying computer science to real-world issues and societal challenges.

Through his research, Dacayan has been able to attend and present his work at many national and international conferences, such as Great Minds in STEM (GMiS), National Conference for Undergraduate Research (NCUR), International Conference on Pattern Recognition and Artificial Intelligence (PRAI) 2022, Computational Science and Computational Intelligence (CSCI) 2022, 2023, and RISS Working Papers Journal 2023. He also had the opportunity to publish four papers about his research work at these conferences. Inspired to broaden his AI/ML knowledge, he was selected for Carnegie Mellon's Robotics Institute Summer Scholars (RISS) REU program in 2023 and Google's Software Product Sprint (SPS) in 2021. Alongside his research work, his third-place award in the Kean Business Plan Competition in 2023, his first-place win at the GMiS CAHSI Hackathon in 2021, and his elected role as vice president of Upsilon Pi Epsilon (UPE) demonstrate his efforts outside his academics.

After graduating, Dacayan aspires to pursue an M.S. in Computer Science at Kean University's graduate program, engage in revolutionary AI/ML research, and undertake doctoral studies to deepen his expertise and significantly contribute to the field.



ISABEL DESANNO

Graduate Student Researcher of the Year

Isabel R. DeSanno is a distinguished graduate student at Kean University pursuing a Master of Arts in Forensic Psychology with a perfect 4.0 GPA. Driven by a passion for understanding the complexities of human behavior within legal contexts, Isabel aspires to further her academic journey by pursuing a Ph.D. in Clinical Psychology. With a solid foundation in forensic psychology, Isabel has garnered extensive experience in conducting academic research and working as a graduate assistant with the Center for International Studies and the Office of Career Services. Her dedication to the field is evident through her involvement in numerous research projects, where she has presented her findings at prestigious conferences such as the South Eastern Psychological Association and the Eastern Psychological Association. Isabel's academic excellence and commitment to scholarly pursuits have been recognized through various awards and accolades, including being named Graduate Research Student of the Year in Spring 2024 and serving as the valedictorian for Kean University's 2022 undergraduate class. Additionally, she has received scholarships such as the Seaman First Class Peter J. Russo & Signalman First Class Walter E. Lafferty Scholarship by the U.S. Coast Guard Foundation and Kean University's Trustee Scholarship.

In addition to her academic achievements, Isabel has demonstrated leadership and service through her involvement in various extracurricular activities and volunteer initiatives. She competed as an NCAA Division III athlete during her four years at Kean University as a distinguished women's swim team member, where she specialized in the 100- and 200-yard breaststroke. Notably, the team was the undefeated NJAC champions during the 2022-2023 season, and Isabel received Academic All-NJAC honors during the 2021-2022 season. As a former high school and undergraduate valedictorian, she is committed to expanding her professional experience in alignment with her focused areas of study. This year, she also served as the inaugural president of the Cougar Career Club, which aims to serve as the bridge between campus and careers for like-minded students and student groups, offering programming, field trips, and exclusive learning opportunities for its members. With her exceptional academic background, research experience and commitment to advancing the field of forensic psychology, Isabel is poised to make significant contributions to the field as she progresses in her career.

STUDENT RESEARCHER OF THE YEAR

LIRA LLOLLA

Graduate Student Researcher
- Honorable Mention



Lira Lolla holds a B.A. in Molecular Biotechnology from Kean University. Graduating this May with her Master's in Science and Technology, she has focused her academic research on medicinal and innovative biotechnology practices. Lira is an award-winning pharmaceutical representative holding the Merck Great Award and Vice President Club Award. Her passion is using her background in science and health care to bridge innovative pharmaceutical developments to health care providers and their patients! She enjoys using her experiences to encourage and help others around her. Her passion is to strengthen her skills and to one day be able to give back to the community that has allowed her great opportunities to better her life!

MEAGHAN DOWDELL

Doctoral Student Researcher of the Year



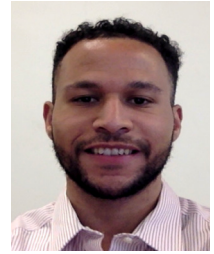
Meaghan Dowdell is currently a third-year doctoral candidate in the Kean University Department of Physical Therapy, set to graduate in May 2024. In 2021, she graduated magna cum laude from the University of Scranton majoring in kinesiology/exercise science. While pursuing her undergraduate degree, she served as a research intern within the kinesiology department, where she gained experience assisting with numerous aspects of the research process. Since beginning her graduate education, Meaghan has been involved in over ten research projects primarily focused in the field of brain injury and dysautonomia rehabilitation under the mentorship of Jenna Tucker, DTP. She has co-authored one peer-reviewed manuscript, one peer-reviewed abstract, one platform presentation, and numerous poster presentations at both state and national conferences. In 2023, one of these posters was recognized nationally at the American Physical Therapy Association Combined Sections Meeting with a third place poster award by the Academy of Neurologic Physical Therapy, Brain Injury Special Interest Group. Meaghan also serves as a mentor to other students in the DPT program who are seeking research opportunities. Upon graduation, Meaghan will be pursuing a career as a neurological-based doctor of physical therapy and plans to pursue a Ph.D. focused on brain injury rehabilitation. Her goal is to transform neurological physical rehabilitation through clinical experience, dissemination of evidence-based research, and teaching within DPT programs.

STUDENT RESEARCHER OF THE YEAR

DANIEL WATSON

Doctoral Student Researcher

- Honorable Mention



Daniel Watson is a doctoral candidate from the United Kingdom completing his final year in the combined school and clinical psychology Psy.D. program at Kean University. He is currently completing his internship at the Mendota Mental Health Institute in Wisconsin, where he is engaged in forensic evaluations, as well as the treatment of individuals with serious mental illness. His research interests primarily fall within the areas of forensic psychology and treatment outcomes.

COVER DESIGN WINNER

LISA MICHELLE



Lisa Michelle is a proud science geek with a passion for biological research. In her free time, she loves designing her homemade scented candles, exploring new cuisines through cooking, and cheering on her favorite sports team - the New York Jets. For the winning design, Lisa Michelle wanted to incorporate Keanu the Cougar's natural mountainous habitat with a feeling of wonder for what mysteries the future may hold.

COVER DESIGN WINNER OF THE YEAR

MAYA KRUZDLO

Honorable Mention



Maya Krzdlo is a freshman here at Kean University. She is pursuing a business management degree, transitioning her studies into entrepreneurship. Proud member of Kean women's soccer team, Maya loves fitness and nutrition as well as art and design. In her free time, she runs a fitness account on Instagram as well as volunteers throughout all organizations at Kean. Maya is not afraid to take a risk and be authentically herself. She prides herself on listening, observing all surroundings, and being comfortable being uncomfortable because that is where one will see the most growth. Her future looks bright with her focused on achieving the goal of becoming CEO of her own company.

NOORUL SAMA

Honorable Mention



Sama, a sophomore majoring in computer science, enjoys working with OCIS on campus and engaging with students and professionals in related fields. Beyond academics, she appreciates different forms of art such as photography and painting. Photography serves as a means for her to capture and explore the beauty of the world around her, while painting allows her to express her creativity and emotions in a tangible form. As Sama continues on her academic journey, she is excited to further explore the endless possibilities that technology offers, while also nurturing her passion for creativity and self-expression through art.

FACULTY RESEARCH ABSTRACTS

THOMAS ABRAHAM

School of Management and Marketing, College of Business and Public Management

“Building and Using a Sustainability Information Systems Dictionary”

In this study, we build a dictionary of sustainability information systems (SIS) terms using a literature-based process. We refine the dictionary by applying it to sustainability reports and comparing the results to an earlier manual process. We use a text mining tool called WordStat to help us extend and refine our SIS dictionary. Sustainability reports provide a valuable secondary source for researching SIS. Previously, finding the information systems required tedious manual searches through the documents to identify both the systems and the context in which they were used. Our results include a SIS dictionary artifact and the information systems identified in the sustainability reports of three organizations in different industries.

MALIHE ALIASGARI

School of Integrative Science and Technology, The Dorothy and George Hennings College of Science, Mathematics and Technology

“The Power of Artificial Intelligence for Phenylketonuria”

“In this work we present the first and novel health-aware diet system for individuals with phenylalanine hydroxylase (PAH) deficiency, that aligns with their preferences and restricts the protein based on the level of phenylalanine in their blood test.”

VENESA ALICEA-CHUQUI

School of Public Architecture, Michael Graves College

“Under, On, And Around The Table: A Case Study On Designing For Food Equity And Climate Justice In Architectural Design Studios”

This research is centered around two fourth-year undergraduate architectural design studios exploring a pedagogical interdisciplinary approach at the intersection of climate/environmental/food justice. It is focused on three pedagogical approaches and themes: interdisciplinary studies, systems-level interventions, and climate realities. The key issues explored were local food inequity, community, site, and environmental justice. This research hopes to discuss the challenges of the gap between academic research and practical implementation, especially in design. We will discuss how studios could be used as public research infrastructures and leveraged as a design tool for bridging this gap.

FACULTY RESEARCH ABSTRACT

DENISE ANDERSON

Robert Busch School of Design, Michael Graves College

“Do Interdisciplinary and Experiential Courses Add Value to Higher Education?”

Using survey data from students pursuing their undergraduate degree from an urban, public university, we develop a conceptual model and empirically examine the impact of interdisciplinary studies, participating in experiential learning, and the mitigating role of student demographics on student learning outcomes. While some existing theoretical literature cites the need for experiential learning and interdisciplinary studies in higher education, there needs to be more empirical research papers to support the claim. To the best of our knowledge, this is the first research paper that assesses the interaction effect of being enrolled in an interdisciplinary course and participating in experiential learning on student learning outcomes.

MAXWELL BURKEY

School of Social Sciences, College of Liberal Arts

“The Black Freedom Movement and Public Health”

This project explores the politics of public health by refashioning the understanding of and intervention in “the public” made by the twentieth century’s Black Freedom Struggle.

RACHEL CARLSON

Music Conservatory, College of Liberal Arts

“Transgender and Gender-Expansive Singers in Choir: A Review of the Literature”

The purpose of this study is to review published literature on transgender and gender-expansive (TGE) singers in the context of the choral rehearsal from the past ten years, 2013-2023. Authors wrote on a variety of topics related to gender-inclusive teaching and vocal pedagogy, including honoring singer names and pronouns, using gender-neutral language in rehearsal, choosing gender-neutral ensemble names, providing gender-free options for choral attire, programming repertoire that does not perpetuate gender stereotypes, and supporting singers through transition.

SUBHASISH CHATTERJEE

Chemistry & Physics, The Dorothy and George Hennings College of Science, Mathematics and Technology

“Deducing Bioinspired and Supramolecular Materials Design”

Molecular self-assembly and cooperative assembly are critical in developing complex materials associated with many biological functions, such as structural coloration, photosynthesis, and microbial virulence. Chemically heterogeneous materials, including melanin pigments and light-responsive protein-pigment complexes, have augmented cross-disciplinary research interests in decoding nature-inspired materials design. Notably, molecular assembly techniques can generate unique nanomaterials such as carbon-based quantum dots and biosynthetic disordered pigments. Correspondingly, our work aims to decipher the structural characteristics of (bio)chemically diverse systems, linking their supramolecular architecture with material properties.

JENNIFER CHEN

School of Curriculum and Teaching, College of Education

“The Coexistence of Teacher Stress and Teacher Joy: A Duality of the Teaching Experiences of Early Childhood Teachers in the United States”

This study investigated this research question: How might early childhood teachers make meaning of teacher stress and teacher joy in teaching young children? To this end, I interviewed 12 early childhood teachers in New Jersey via Zoom for an average of 75 minutes. Thematic analysis revealed two overarching themes: (1) teacher stress prompted some to contemplate moving to a better school; and (2) while all teachers accepted teacher stress, they also found the coexistence of teacher joy. Three subthemes emerged: (1) a shifted positive mentality helps to discover teacher joy, and (2) the positive contributor to teacher joy lies in children’s learning growth, and (3) the positive consequence of teacher joy is expressed in teaching commitment.

JUN CHENG

School of Environmental and Sustainability Sciences, The Dorothy and George Hennings College of Science, Mathematics and Technology

“Beach erosion and shore protection at Jersey Shore”

Under the scenarios of climate change and global warming, the beaches tend to experience clusters of storms, and result in severe erosions. Over the past a few decades, as a method for sandy shore protection against chronic and storm-induced erosion, beach nourishment has become widely used worldwide. The threshold of designed beach width for shore protection need to be addressed. Based on the systematically measured beach profiles on Ortley Beach with

FACULTY RESEARCH ABSTRACT

considerable longshore variation, the natural beach recovery from consecutive tropical storms followed by sequence of severe winter storm were investigated. Field observations on beach changes induced by storms will enhance our understanding on beach management.

JOSEPH CHO

Department of Marketing, Global Business and Economics, College of Business and Public Management

"Investigating the Effectiveness of Innovation Policy Mix to Enhance the Adoption of EVs"

Despite efforts to deploy electric vehicles (EVs), the penetration rate is low, and the consequence of the slow diffusion is detrimental to climate change mitigation in the transportation sector. Various factors may affect consumer awareness of EVs, such as cost, charging time, charging infrastructure, vehicle performance, and warranty. Due to the data constraints, the evidence is limited. Significant factors leading to the low market share of EVs can be uncovered when using an agent-based model with an inductive-deductive approach. Thus, the study systematizes various determinants to capture consumer behavior toward EVs and the consumer awareness effect in our model to help illustrate the heterogeneity in response to multiple factors.

ISRAEL CURBELO

School of Mathematical Sciences, The Dorothy and George Hennings College of Science, Mathematics and Technology

"Adversarial strategies for online coloring algorithms of proper interval graphs"

In this paper, we tackle the online graph coloring problem, focusing on graphs with intervals known in advance. Previous studies have established benchmarks for algorithm performance, with the First-Fit method needing twice the optimal number of colors. Our research extends these findings, showing that no algorithm can be more efficient than needing 1.75 times the minimum colors for certain graphs. We prove this by demonstrating a case where any algorithm would require 7 colors for a graph that ideally needs only 4. This work sets a new limit for algorithm efficiency in graph coloring.

RUNAE EDWARDS-WILSON

School of Psychology, College of Liberal Arts

“Internalized Oppression and Internalized Superiority Presented as a Multicultural Personality Theory”

“A multicultural model based on established research of internalized oppression (IO), internalized superiority (IS), and methods used to overcome both are presented. Internalized oppression and IS are defined and discussed as they exist in cultures globally. The model includes the basic precepts inherent in the works of Freire, Fanon, Glaser, Poupart, Tappan, and David. The manifestation of IO and IS in communities is considered as part of paradigms that exist in individuals and in societies. The development and definitive characteristics of the concepts are clarified. Learning approaches to ameliorate the threat presented to individual and social dictums by IO and IS are introduced. Keywords: multiculturalism, oppression, superiority”

DAPHNA EL-ROY

School of Special Education and Literacy, College of Education

“Teaching an Adult with Disabilities to Self-Report Potential Health Concerns”

Teaching expression of unobserved (private) events is important for independence and safety (Devine et al., 2021). The expressive repertoire of reporting sensations that could be indicative of a medical problem was enhanced by applying sensations, verbally modeling, fading the model and reinforcing. An adult with multiple disabilities was taught to verbally identify, and initiate names of three unfamiliar sensations. Responses also included naming of body parts to which the sensations were applied. Three sensations were mastered, two generalized across setting and material and were maintained, and what didn't generalize was taught until mastery. This study extended the literature of teaching children to report arbitrary unobserved events.

MADJI FALL

Department of Bilingual Education, TESOL & World Languages, College of Education

“Latinx Translingual Literacies as Resistance and Activism”

Translingual identities transcend multiple languages and cultural allegiances. Translingual students face epistemic racism, often manifested in interactions with school stakeholders driven by racist monolingual and monocultural ideologies. This paper presents findings from an investigation into the characteristics of delegitimizing actors in school communities who perpetuate epistemic racism and the ways in which translingual students respond. Theoretical, research, and practical implications of the findings and recommendations for future research are discussed.

FACULTY RESEARCH ABSTRACT

ERELL GERMIA

School of Mathematical Sciences, The Dorothy and George Hennings College of Science, Mathematics and Technology

“Analyzing the Assessment Features of a Developmental Mathematics Course Towards Achieving the Quantitative Literacy Goal”

Developmental mathematics courses are primarily offered to undergraduate students who may require intensive support in developing quantitative literacy crucial for career success. We explored how assessments in a developmental mathematics course offered at Kean University contribute to this quantitative literacy goal. Our findings show the lack of focus on quantitative reasoning, with assessments predominantly emphasizing rote calculations targeting a lower level of depth of knowledge. The assessments also underscore the power of interactive technological tools for students to make sense of the relationships between quantities. We offer suggestions advocating for emphasis on engaging students in quantitative reasoning.

JOSHUA GUITAR

School of Communication, Media and Journalism, College of Liberal Arts

“Painting a President: Theorizing the Presidential Portrait Unveiling Ceremony as a Genre of Political Speech”

Through genre analysis, we review the body of presidential speeches during official White House presidential portrait unveiling ceremonies. Our research advances two primary arguments. First, we utilize genre analysis to theorize how the official presidential portrait unveiling events function as a rhetorical genre. Although scholars have theorized many genres of presidential speech, this customary event is significantly understudied. Second, we unpack the significance of the absence of this event in recent years. In doing so, we will reveal how presence and absence signify the political climate of an era. We then discuss the implications of our findings as the unveiling ceremony correlates with the augmentation of the executive branch.

ALEX GUZMAN

Department of Bilingual Ed., TESOL, & World Languages, College of Education

“Examining a curriculum development process for identifying science content language demands through a professional development model”

The rising population of multilingual learners presents intricate challenges for science educators, necessitating culturally and linguistically sustaining instruction rooted in language development theories. This study explored a collaborative curriculum development process in addressing these challenges. Through qualitative research methods, including focus group interviews and content analysis, the study examined how the process supports the identification of language demands within the science curriculum and promote equitable

science learning experiences for MLs. Findings underscore the importance of contextualized professional learning in enhancing science education for MLs, contributing to more equitable learning environments.

FATEN HAFEZ

School of English Studies, College of Liberal Arts

“Environmental Activism and the Power of Ecological Solidarity”

Environmental activism often involves individuals and communities utilizing their physical presence as powerful tools for protest and resistance, thereby highlighting the interconnectedness of human bodies and the environment. This concept perceives the human body as a non-abstract entity but a carbon-based vessel that embodies the very essence of human agency. The corporeality seen in bodily resistance is a visceral example of a unique human experience manifested through constructive environmental protest. The collaborative physical resistance in this unique task demands ecological solidarity, which in its solid unity is capable of engaging effectively in the broader discourse on environmental stewardship and sustainability.

MATTHEW HALPER

Music Conservatory, College of Liberal Arts

“Autumnal for Guitar Orchestra”

“Autumnal is an elegiac work for guitar orchestra that conjures up and alludes to the delicate fading beauty and the quiet wistfulness of summer’s transition to winter. Poets have often used autumn imagery—falling leaves, the colorful “letting go,” the longer shadows and shorter days—to represent life’s impermanence, the ephemeral nature of all things. Autumn is a canvas painted with both nature’s abundance and its evanescence. Autumnal was written for a dedicated to Jayson Martinez and the New Jersey Music Educators Association (NJMEA) Honors Guitar Ensemble as part of a Kean University 2023-24 RTR Award.”

MIN CHUNG HAN

School of Management and Marketing, College of Business and Public Management

“Buy Now Pay Later: Smart consumption or simply avoidance of pain of paying”

“Buy-now, pay-later programs allow consumers to pay for purchases in four installments, without charging any fees. The service providers argue that BNPL promotes inclusion by serving financially underserved consumers. Yet there is rising concern that the BNPL lacks consumer protection, leading them to bad credit. About 26% of BNPL users have missed a payment at least once.

FACULTY RESEARCH ABSTRACT

Retailers pay high processing fees of BNPL to attract more consumers, however, consumers who fail to payback may face financial hardship and not come back for shopping to the retailer. To protect consumers and provide appropriate service, it is important to understand how consumers perceive BNPL, and what makes consumers to choose BNPL over other payment options.”

KUAN HUANG

School of Computer Science and Technology, The Dorothy and George Hennings College of Science, Mathematics and Technology

“Weakly Supervised Object Localization with Non-linear Modulation and Foreground Control”

Many existing weakly supervised object localization methods are built on Class Activation Maps (CAMs), which focus on the most discriminated part of an object and often mistakenly identify the background as the foreground. In addition, their localization accuracy relies highly on classification accuracy, and the detected activation regions are often fragmented. In this study, we propose a novel weakly supervised object localization method to solve these problems. The proposed method is compared with eight state-of-the-art methods on two commonly used datasets (CUB-200-2011 and ILSVRC) and achieves the best overall localization result.

BOK GYO JEONG

School of Criminal Justice and Public Administration, College of Business and Public Management

“United Nations and Non-governmental Organizations (NGOs) Collaboration on Sustainable Development Goals Implementation: An Analysis of Voluntary National Reviews (VNRs)”

This study examines the characteristics of inter-sectoral and inter-organizational collaboration between the United Nations and NGOs in the implementation process of the Sustainable Development Goals. Through the examination of 54 VNR reports from 2018 to 2019, the research identifies and categorizes the stakeholders involved and their respective actions. It examines the code-concurrence between the actor and interaction types. The findings offer insight into the partnership dynamics of transnational actors in the global public policy domain and their collaborative incentives.

BOK GYO JEONG

School of Criminal Justice and Public Administration, College of Business and Public Management

“The Added Values of a Civil Society Network Organization in Advancing the UN’s SDG 16 Plus: Findings from Kean MPA Program’s Capstone Seminar”

This exploratory research examines the added values of civil society network organizations in advancing the United Nations’ Sustainable Development Goal 16 (SDG 16). The study employs qualitative interviews with leaders from five civil society organizations (one civil society network organization and its four member organizations). These interviews focus on the added value of membership-driven organizational networks, their contributions to SDG 16, and the emerging trends that affect these networks’ added values. Furthermore, the study identifies the challenges and opportunities for civil society networks in advancing SDG 16 and proposes recommendations for enhancing their effectiveness and impact.

ANDREAS KAKOLYRIS

School of Accounting and Finance, College of Business and Public Management

“When to Hedge Downside Risk?”

Hedging downside risk before substantial price corrections is vital for risk management and long-only active equity manager performance. This study proposes a novel methodology for crafting timing signals to hedge sectors’ downside risk. These signals can be integrated into existing strategies simply by purchasing sector index put options. Our methodology generates successful signals for price corrections in 2000 (dot-com bubble) and 2008 (global financial crisis). A key innovation involves utilizing sector correlations. Major price swings within six months are signaled when a sector exhibits high valuation alongside abnormal correlations with others. Our signals are also more efficient than those of standard technical analyses.

ANDREAS KAKOLYRIS

School of Accounting and Finance, College of Business and Public Management

“An Experimental Investigation into the Capital Structures of Biotechnology Companies”

This work investigates the sensitivities of the capital structure in five biotechnology companies. Capital structure and its impact on a firm’s cost of capital and value is widely debated since it is related to the strategic decision of restructuring. The literature findings indicate that changes in the value of beta due to different leverage levels or other risk factors do not significantly affect the cost of capital. Our findings are presented and analyzed in this poster.

FACULTY RESEARCH ABSTRACT

SUPRATIK KAR

Chemistry & Physics, The Dorothy and George Hennings College of Science, Mathematics and Technology

“An Integrated Approach to Identify Dual-Target Inhibitors for Nipah Virus Through Drug Repurposing”

Facing the rising menace of the Nipah virus (NiV), with its high mortality rate compare to COVID-19 and the risk of mutation-enhanced spread, this research highlights the critical need for effective treatments. By focusing on the NiV attachment glycoprotein-human ephrin-B2 and matrix protein, we aim to block viral entry and disrupt the assembly process. Leveraging DrugBank, we repurposed known small molecules, subjecting them to thorough screening via precision docking and ADMET profiling, followed by extensive 500ns molecular dynamics simulations and MM-GBSA assessments. Our findings pinpoint lotrolan and lodixanol as effective against both targeted proteins, while Rutin and Lactitol specifically combat the matrix protein.

CAROLINE LAMBERT

Performing Arts, College of Liberal Arts

“Red Tailed Calling - An Essay Film”

This short essay film juxtaposes observations of the natural world with representations of nature in popular culture. While observing a family of hawks nesting in the trees above my house, I began listening to hawk calls on Youtube, and learned that the common Red Tailed Hawk's piercing screech (a husky “kreee-aaaar”) is used as the ubiquitous call for all birds of prey in Hollywood movie s. My film makes connections between this slippage and the mass extinction event that is unfolding due to climate change—an event that is literally reducing the number of birds in the sonic environment.

LAURIE KNIS-MATTHEWS

Department of Occupational Therapy, The College of Health Professions and Human Services

“Understanding how five women make meaning of their temporal environment while experiencing homelessness”

This study explored five women's perceived time while experiencing homelessness. Under faculty guidance, OT students developed an IRB-approved proposal, conducted the study, and produced a manuscript. Qualitative research focuses on the process of exploring how individuals make meaning of some aspects of their lives. Using a creative form to present the overall theme statements, faculty from OT and Theatre Conservatory have created a play to share these women's lived experiences around 3 themes: Homelessness is a chaotic experience that changes as I move from place to place: Outside events influenced how I structured my time while homeless: Now that I have a permanent place to live, I am taking the time to live a better life.

QIAN MAO

School of Accounting and Finance, College of Business and Public Management

“The Impact of the Holding Foreign Companies Accountable Act (HFCAA)”

The Holding Foreign Companies Accountable Act (HFCAA) was signed into law in December 2020. It required certain issuers to establish that they are not owned or controlled by a foreign government. Furthermore, if the Public Company Accounting Oversight Board (PCAOB) was unable to inspect the issuer’s public accounting firm for three consecutive years, the issuer’s securities would be delisted from the U.S. exchanges. Thus, we can utilize the HFCAA as a quasi-nature experiment and study how stock exchanges will strike a balance between attracting high quality listings and providing transparent financial information to investors.

JEFFERY MCCULLOUGH

Robert Busch School of Design, Michael Graves College

“Bringing Lives of Enslaved Laborers to Life: Interior Design As Intervention and Interpretation Tool”

For a professor whose primary academic research interest is active versus passive learning, serving as faculty advisor for a design intervention & interpretation of a period room is a dream scenario. When the student is as enthusiastic about the project as Davida Alford, the collaboration is ideal & becomes foundational to a multi-year project on the implementation of studio-based models of education into lecture courses. Additionally, Liberty Hall serves as a model for Kean, the Michael Graves College & the Robert Busch School of Design for achieving an important element of our strategic plan: to “launch community-based design projects, allowing students to work on real-life challenges, fostering a sense of social responsibility.

ENSELA MEMA

School of Mathematical Sciences, The Dorothy and George Hennings College of Science, Mathematics and Technology

“Deep Ritz method with Fourier feature mapping: A machine learning approach for solving variational models of microstructure”

Microstructures are structural features between the atomic and macroscopic scale that play a key role in the performance of engineering materials. They are spontaneously formed in nature to optimize performance (maximize strength at a given weight, minimize permeability, maximize energy), properties that can be useful in industrial and defense applications. We present a novel machine learning approach, Deep Ritz method with Fourier feature mapping, to approximate solutions to non-convex variational problems that arise in microstructure modeling applications. We focus our efforts in determining whether the algorithm is capable of approximating multi-scale, high frequency solutions, known to pose challenges to traditional numerical methods.

FACULTY RESEARCH ABSTRACT

JULIA NEVAREZ

School of Social Sciences, College of Liberal Arts

“Disciplinary Mapping of Data Analytics and Visualization in Urban Research”

This presentation will illustrate the extent of the disciplinary relevance of data analytics and visualization in urban research by mapping a diverse array of disciplines related to data analytics and visualization in urban research. Traditional fields such as statistics, algorithms, mathematics, computer science, information technology, social sciences, environmental sciences, architecture, and urban studies, and emerging fields will also be included such as design and emerging technologies, vitalities lab, cultural analytics, critical data studies, and internet geography among other fields that at different scales, focus of study, and context address the study of contemporary technological and social issues.

ALEX RIVERA

Watson Institute for Urban Policy

“Black Entrepreneurship Research Project”

The Black Entrepreneurship Research project seeks to identify and understand the factors impacting the ability of Black entrepreneurs to navigate the chronic stress of racism, episodic shocks like COVID or natural disaster, and the combined impacts of those shocks. The project also seeks to develop support for helping Black entrepreneurs navigate these shocks through community organizing, public policy intervention, and education.

DINA ROSEN

Early Childhood Education, College of Education

“Survey Highlights the Significance of Integrating Hands-On Computer Science in Teacher Education Courses”

This survey-based study examines the exposure of preservice teachers to computer science (CS) education and its implication for teacher preparation programs. Findings indicate that preservice teachers possess limited personal experience in computer science coursework, and even less experience with a popular open source, free-coding activity. The findings inform recommendations for enhancing teacher preparation programs, Kean and beyond. Results underscore the importance of prioritizing experiential CS learning opportunities in teacher preparation programs to compensate for the lack of K-12 experience and prepare future teachers for the demands of implementing computer science standards.

ALYSSA SMITH

School of Communication Disorders and Deafness, The College of Health Professions and Human Services

“Validity of Bilingual Speech- In- Noise Hearing Assessments/ Tests”

This project tests whether standardized audiological assessment of hearing difficulty in background noise presents a disadvantage to bilingual more than monolingual speakers. The most popular supplemental speech-in-noise test administered to adults is the Quick-SIN- by Etymotic® Research, which uses sentences to assess a patient’s ability to hear and understand speech in noise. However, the use of sentences to test processing in bilinguals may be problematic: bilinguals may use semantic information encoded in a sentence much differently than monolingual speakers. Therefore, the Quick-SIN-sentences encode additional semantic information, which facilitates monolingual processing, but not bilingual processing.

MARK SMITH

School of English Studies, College of Liberal Arts

“Why SUPERA students are in college: A dialogic self analysis”

This qualitative study explores the reasons Spanish-bilingual SUPERA undergraduates give for entering into a degree program. Students in the SUPERA program were interviewed in Spanish on their reasons for attending college, including their excitement in college, goals for the future, reported challenges, and the perceived integration of college attendance in their lives. The students were also asked about what their parents, teachers, and their peers would say about their college attendance. The analysis explores how they construct the meaning of college attendance in their lives through the dialogues they have with themselves and relevant others and how they position themselves in relation to the tensions and contradictions therein.

BALA SUBRAMANIAN

School of Accounting and Finance, College of Business and Public Management

“Nano Economics”

The international Finance provides mechanisms to bring about equilibrium using Law OF One Price (LOP), Arbitrage, Purchasing Power Parity (PPP) and Interest Rate Parity (IRP) among others. Could these not be extended to bring about equilibrium among political divisions and groups to further the UN sustainability goals? If yes, how can macro and microeconomics be extended to these societal domains such that conflicts are replaced by commerce and economic development? By so transforming, could the global economies thrive instead of striving to eliminate deficit financing, national borrowings and other economic and military weaponry. What could the education sector do that could not be done by world wars, cold wars and political regimes?

FACULTY RESEARCH ABSTRACT

VALERIE VACCARO

Department of Marketing, Global Business, and Economics, College of Business and Public Management

“The Relationship of Liked Music with Consumer-to-Consumer Friendliness and Positive WOM Recommendations in Retail and Service Environments”

As consumers return to in-store shopping, restaurant dining, and travel, it is imperative that retailers and service providers offer worthwhile experiences, or risk going out of business. This is the first known study to investigate the relationship of liked atmospheric music with perceptions of consumer-to-consumer friendliness and customer shopping recommendations in retail and service environments. Participants visited stores and service providers and filled out a survey. Correlation and regression analyses showed statistically significant results. This study extends the theoretical understanding of atmospheric music in retail and service settings. Managerial implications are offered and recommendations are provided for future research.

BO WANG

School of Accounting and Finance, College of Business and Public Management

“Litigation and Cost of Debt”

In this paper, I investigate whether and to what extent patent litigation would influence the cost of debt. Data is collected from multiple sources. I have performed manual name matches among databases to construct the sample (Kafouros et al., 2021, among others). The research question I examine in the project is how patent litigation affects the pricing of loans and bonds and the non-pricing terms of debt. I will use multiple advanced regressions to reduce potential endogeneity concerns. Further, I will explore contingency effects that help to understand the potential underlying channel and mechanism.

ELENI ZGOUROU

Early Childhood Education, College of Liberal Arts

“The Linguistic Environment of Early Childhood Classrooms During Summer”

The purpose of this study was to examine the linguistic strategies preschool teachers use when they interact with children in classrooms operating during the summer. Teachers were video-recorded during their interactions with children in three parts of the day: meal time, free play, and circle time. Teachers' linguistic strategies were assessed using an interval-based coding scheme, documenting nine linguistic strategies. Overall, findings showed that limited linguistic strategies took place during teacher-child interactions. Comparing the interactions across the three parts of the day, linguistic strategies were implemented more frequently during the circle time whereas during meal time, those strategies were the least frequent.

**STUDENT POSTER
ABSTRACTS**

ANGELISE CARRASCO

Faculty Mentor: Huaibing Yu

“Inflation Now VS. Then”

What is inflation? Price increases are known as inflation, which is also known as the gradual loss of buying power. The average price rise of a given basket of goods and services over a period of time can be used to determine the pace at which buying power declines. The increase in costs, which is sometimes stated as a percentage, implies that a certain amount of money may now purchase less than it did in previous times. Deflation is the opposite of inflation and happens when prices fall and buying power rises. The measurement of inflation seeks to determine the total effect of increases in prices for a wide range of goods and services. It enables the price level growth of products and services in an economy over a certain period of time to be represented by a single value. Overall, there are several things that might lead to inflation. The pandemic's economic stimulus, pent-up consumer demand, and supply chain problems have all contributed to the current spike in prices.

ASHLEY DE LA ROSA-HANLON

Faculty Mentor: Huaibing Yu

“The Role of Artificial Intelligence in Financial Forecasting”

This research delves into the transformative impact of artificial intelligence (AI) on financial forecasting and investment strategies. As AI technologies continue to evolve, financial institutions are increasingly leveraging machine learning algorithms and predictive analytics to gain a competitive edge in the dynamic landscape of financial markets. This study aims to explore the effectiveness and challenges associated with incorporating AI into financial decision-making processes. The investigation will cover the historical development of AI in finance, highlighting key breakthroughs and milestones. Subsequently, the research will delve into the diverse applications of AI, such as algorithmic trading, risk management, and portfolio optimization. An examination of the advantages and limitations of AI-driven financial forecasting models will provide valuable insights into the reliability and robustness of these systems. Furthermore, the study will assess the ethical considerations surrounding the use of AI in finance, addressing concerns related to bias, transparency, and accountability. By evaluating real-world case studies and industry practices, this research aims to contribute to a comprehensive understanding of how AI is reshaping financial landscapes and influencing investment decision-making processes. The findings will be crucial for financial professionals, policymakers, and researchers seeking to navigate the evolving intersection of artificial intelligence and finance.

AMANDA DIXON, DIANA ELHALAWANY, MARISA GABLIKS, AHMAD GRIFFIN, IDALIS HADDOCK

Faculty Mentor: Dawn Adams-Harmon

“MGS Business Ethics and Social Responsibility - College Research Project - College Admissions”

The 2019 College Admission Scandal sent shockwaves through academia and society, revealing a web of corruption and deceit within the higher education system. This research project will explore the multifaceted dimensions of the scandal, evaluating both the prosecution and defensive position related to the submit matter. Through a comprehensive review of court documents, media coverage, and scholarly literature, will allow participants to formulate their arguments as it relates to the College Scandal. Our research will review the underlying mechanisms that facilitated the scandal. By examining the roles played by affluent parents, college coaches, standardized testing administrators, and admissions consultants, it seeks to delineate the intricate network of collusion and fraud that enabled undeserving students to gain illicit admission to prestigious universities. Moreover, this research investigates the socio-economic disparities exacerbated by the scandal, highlighting the inequities inherent in the college admissions process. By exploring the systemic biases that advantage the privileged few, it endeavors to foster a deeper understanding of the barriers faced by underprivileged students in accessing higher education opportunities. Furthermore, this project evaluates the legal responses to the scandal, assessing the efficacy of prosecutions and regulatory reforms in deterring future misconduct. It also considers the broader implications for academic integrity and institutional trust, proposing recommendations for enhancing transparency and accountability within the college admissions framework. In sum, this research contributes to the ongoing discourse on ethics in education and underscores the imperative for systemic reforms to uphold fairness and meritocracy in college admissions.

AXEL FALCONI

Faculty Mentor: Huaibing Yu

“Why is Crypto Currency So Volatile?”

Ultimately, supply and demand has determined the price for goods and services for centuries. Key factors that determine the value of goods could also be applied to crypto currency. Interestingly the price of crypto currency as an asset has always been volatile since its inception in 2009. For instance, Bitcoin had peaked at a price of \$65,000 just to decline to \$18,000 sixteen months later! Bitcoin lost \$47,000 or 72.31% of its value in a couple months. However, these fluctuations pale in comparison to other currencies who fluctuate thousands of times greater than Bitcoin. Some people believe that crypto is a fad that will eventually be worthless, similar to other intangible assets that use blockchain technology such as NFTs. Simultaneously there are countries such as El Salvador that are using the technology to process all transactions in the country. Thus making Bitcoin the first intangible form of national currency in human history. I will try to address the factors behind crypto's volatility, and estimate where crypto's future is headed.

STUDENT POSTER ABSTRACT

MARIEA LIBERTO

Faculty Mentor: Huaibing Yu

“Ethics in Finance”

The topic of ethics in finance is related to a corporate governing of sets of guidelines that keep financial professionals and institutions accountable for actions and make sure they uphold standards of significant integrity. This project will demonstrate and portray the very high standards enforced by officials of the finance profession. It will outline specific consequences, repercussions, and monetary penalties that follow an unethical act. An inner moral compass comes into play that battles fear, pressure, greed, and selfishness, and becomes lawfully regulated by governance of the financial professions. The ethical issues this project will cover are confidentiality, independence, professional competence, objectivity, fraud, and professional conduct. A lot can be said for past discretions relevant to these concentrations. Such unlawful activities as inflating revenue, and hiding expenses can lead to worlds of problems not only for the guilty but for those who become victimized by these acts. Hiding expense and inflating revenue can cause investors to make horrible decisions unbeknownst to them. This project will touch on all of those topics, ideas, and concepts.

JIANGYI LING

Faculty Mentor: Huaibing Yu

“Comparative Profitability Analysis of Shein and ZARA: A Study on Financial Performance in the FastFashion Industry”

Shein is a China-based global online retailer specializing in women’s, men’s, and children’s fast fashion products. Founded in 2008, the company quickly gained popularity through its digital-first strategy, offering a wide range of affordable, stylish apparel. Shein specializes in leveraging data analytics and agile supply chains to quickly bring new styles to market to cater to a young, fashion-forward global audience. ZARA is part of the Spanish Inditex Group and was founded in 1975. It is a pioneer in the fast fashion industry. ZARA is known for its innovative supply chain model, which specializes in bringing the latest fashion trends from runways to stores in just a few weeks. Its strategy focuses on customer feedback and market trends to quickly adjust production. ZARA operates a vast network of physical stores worldwide, supplemented by a growing online presence, targeting a wide range of people with its diverse fashion products. This research will cover a broad range of aspects to comprehensively understand their market positions, financial health, operational strategies, and future outlooks.

JIANGYI LING*Faculty Mentor: Huaibing Yu***“Comparative Profitability Analysis of Costco and Target”**

This study provides an in-depth comparative analysis of the profitability of two retail giants, Costco Wholesale Corporation (COST) and Target Corporation (TGT). This research covers a wide range of aspects to comprehensively understand their market position, financial health, operational strategies, and prospects. To assess their financial performance in the retail industry. Using the latest fiscal year data, key financial indicators such as gross profit margin, operating profit margin, net profit margin, return on assets (ROA), and return on equity (ROE) were analyzed. The analysis reveals clear operational efficiencies and financial strategies between Costco, which has a high-volume sales model, and Target, which is known for its diverse product offerings and strong digital presence. Despite their different approaches, both companies are financially sound, with Costco demonstrating superior asset and inventory management efficiency. This study provides insights into the competitive dynamics of the retail industry and reveals how operating models impact profitability and financial soundness.

YIYANG LIU*Faculty Mentor: Abootaleb Shirvani***“Optimizing Risk-Return Portfolios: A Case Study of Healthcare Companies in Mainland China”**

This study delves into the intricate dynamics of risk and returns within the portfolio of healthcare companies in Mainland China, recognizing their pivotal role in public health and innovation. Against the backdrop of China’s escalating healthcare demands, strategic investment in healthcare entities becomes paramount, demanding a delicate equilibrium between risk and reward. This research uses Markowitz’s mean-variance optimization framework to ascertain the optimal portfolio weights for a curated selection of healthcare stocks traded on the Chinese stock market spanning from 2013 to 2021. The investigation juxtaposes the performance of these portfolios against three prominent Chinese healthcare indexes, SZHCSI, FTXIN9, and SZH150, alongside key Chinese indices, including SZHC50, SE50, SSEC, SE380, and SE180 as benchmarks. Results indicate a notable downturn in indexes during the COVID-19 period, with the three healthcare indexes exhibiting superior performance over the market with heightened volatility. Interestingly, the constructed portfolio index demonstrates positive returns and minimal volatilities, exhibiting superior performance post-COVID period compared to major Chinese healthcare indexes and market indices. This study’s findings underscore the critical significance of strategic investment in healthcare companies, particularly during periods of medical advancement and enhancements in healthcare infrastructure, thereby advocating for informed decision-making in portfolio management within the healthcare sector.

STUDENT POSTER ABSTRACT

ZHENYU LIU

Faculty Mentor: Huaibing Yu

“Research on the influence of esg evaluation on long-term performance of enterprises”

This study delves into the profound influence of Environmental, Social, and Governance (ESG) evaluation on the enduring performance of enterprises. ESG factors have surged in prominence as indispensable markers of a company's sustainability and ethical business conduct. Through an extensive examination of ESG metrics and their integration into investment decision-making processes, this research endeavors to unveil the nexus between ESG performance and financial outcomes over protracted timeframes. Employing a mixed-methods approach, this study amalgamates quantitative scrutiny of financial data with qualitative appraisals of ESG practices and disclosures. By scrutinizing a diversified array of companies spanning various industries and geographic locations, the investigation strives to discern trends and correlations between elevated ESG scores and sustained financial performance. Furthermore, it elucidates the mechanisms through which ESG factors shape corporate governance, risk mitigation strategies, and stakeholder relationships, thereby sculpting long-term value generation for shareholders. Moreover, this research confronts the methodological hurdles associated with ESG evaluation, encompassing challenges pertaining to data integrity, standardization, and comparability. By advocating for robust methodologies for ESG assessment and performance evaluation, this study aims to enrich the ongoing discourse on sustainable investing and corporate accountability. Anticipated outcomes of this research include invaluable insights for investors, policymakers, and corporate executives keen on comprehending the interplay between ESG performance and enduring business prosperity. By fostering enhanced transparency, responsibility, and alignment with environmental and societal objectives, ESG evaluation stands poised to catalyze affirmative societal transformation while fortifying the resilience and competitive standing of enterprises within an increasingly intricate global economic landscape.

BOYA LIU

Faculty Mentor: Xue Chunxiao

“Impact of Environmental Information Disclosure on Corporate Risk Taking: Evidence from China”

This paper examines the relationship between environmental information disclosure and corporate risk-taking. This paper obtains data from China A-shares listed companies, and mainly from the Chinese Securities Market and Accounting Research (CSMAR) database. The research sample contains 4,208 companies of 26,557 firm-year observations in China from 2012-2021. The main result of this paper is that environmental information disclosure and corporate risk-taking are negatively correlated. Transparency of environmental information

leads to a lower level of risk-taking. Additional analysis shows that ownership structures of SOEs and non-SOEs have limited influence on the relationship between environmental information disclosure and corporate risk-taking. Results of this paper contribute to more comprehensive corporate governance analysis. This paper empirically analyzes this relationship, while the implicit reasons for this relationship need more research to investigate. As an important method and way to achieve reduced carbon emission targets, environmental information disclosure has gradually attracted widespread attention from the government and the public.

YIYUN MIAO

Faculty Mentor: Huaibing Yu

“Financial Modeling and Investment Analysis of ConocoPhillips”

This project aims to use various financial models to evaluate the stock of ConocoPhillips, a global energy company specializing in oil and gas exploration, production and chemicals. The research will use a multi-faceted approach to conduct an in-depth study of ConocoPhillips stock, conduct stock valuation and provide investment recommendations. The project uses three main financial models: relative valuation, discounted cash flow (DCF) model and dividend discount model (DDM). These models are used to evaluate the intrinsic value of ConocoPhillips stock, taking into account factors such as earnings, growth, and dividends. Gain insight into a company's financial health and performance by examining key financial ratios and metrics. The investment advice section integrates the results of financial models and analysis to provide investors with concise advice. In summary, the project aims to provide stakeholders, investors, and analysts with a robust framework for evaluating ConocoPhillips stock and making informed investment decisions based on comprehensive financial modeling and analysis.

YIYUN MIAO

Faculty Mentor: Kunsu Park

“Trade credit and firm value: The moderating role of internal control quality”

This study examines the moderating role of internal control quality on the relation between trade credit and firm value. Prior research provides mixed results on the trade credit-firm value nexus, which remains an ongoing issue. We consider internal control quality to be one of the essential moderators of the link between trade credit (proxied by accounts payable) and firm value. We first revisit the controversial issue regarding the trade credit-firm value relation and then investigate whether internal control quality plays a moderating role. We hypothesize that internal control quality positively moderates the relation between trade credit and firm value. Our study sheds light on the moderating role of internal control quality on the trade credit-firm value nexus.

STUDENT POSTER ABSTRACT

YIJIA NI, BINGQING ZHAO

Faculty Mentor: Andreas Kakolyris, Tin Shan Suen

“Profitability Analysis of Google Vs Microsoft”

This article will compare the profitability of Google and Microsoft, these two companies both have important positions in the technology industry. Google derives its revenue mainly from advertising, including search ads, YouTube ads, mobile ads, which makes Google one of the largest online advertising companies in the world. Microsoft generates revenue from software licensing fees, cloud computing services (Azure), Office software (Office), games (Xbox), hardware (Surface), and cloud computing services is one of its fastest growing businesses. Our model uses Bloomberg terminal data and Yahoo data to analyze and directly show the profitability comparison of the two companies in the form of charts. Although the profit model and business structure of the two companies are different, they are both highly profitable companies with broad market share and stable sources of profit. In the future, as the technology industry continues to evolve and change, both Google and Microsoft will continue to maintain their leading positions and provide more innovative products and services to users around the world. Our final research results will be presented and analyzed in the poster.

ROGER SANDOVAL

Faculty Mentor: Huaibing Yu

“The Profitability of Corporates Social Responsibility”

The impact of corporate social responsibility (CSR) on financial performance is an important field of study in finance and corporate governance, aimed at understanding the correlation between a firm's ethical and social performance and its financial results. These policies can include philanthropy, environmental efforts, ethical business practices, community engagement, and inclusion of various businesses and stakeholders. The relationship between CSR and financial performance is of great interest and debate. Researchers seek to analyze financial data along with CSR metrics to see if socially responsible practices positively affect profitability and return on investment. The underlying assumption is that companies that engage in CSR activities benefit from improved brand reputation, improved customer loyalty, improved employee morale, reduced regulatory risk, and increased access to capital, all of which can translate into economic growth. Research examining the impact of CSR on financial performance uses a variety of methods, including quantitative analysis of financial statements, statistical modeling, case studies, and qualitative research. Researchers typically examine finance through a wide range of growth indicators, including profitability levels (such as returns) on equity and return on assets, and share price. There are some benchmarks (such as stock returns and market capitalization), measures of operational efficiency, and risk-adjusted return. Scholars must explore the mediating factors that can moderate the relationship between CSR and financial performance, such as industry competitiveness, firm size, corporate governance structure, quality of the firm, stakeholder intentions and its effects about, research investigates how investor markets react to CSR disclosure and initiatives

BEIBEI SHI

Faculty Mentor: Huaibing Yu

“S&P Global Inc. DCF Valuation”

This report presents a discounted cash flow (DCF) valuation analysis of S&P Global Inc., a leading provider of financial information and analytics. By projecting future cash flows and discounting them back to present value, we calculate the intrinsic value of S&P Global Inc.'s equity using fundamental financial concepts and market data. The company's ability to generate cash is contingent upon several critical elements, all of which are included in our research. These factors include working capital, capital expenditures, operating margins, capital structure, and revenue growth. Additionally, our forecast for a DCF model will go out for approximately five years. We consider macroeconomic trends, industry dynamics, and competitive positioning to provide a holistic perspective on S&P Global Inc.'s prospects. Our research indicates that S&P Global Inc. has solid development potential and solid fundamentals, which are reinforced by its diverse business segments and well-established market position. But potential risks like shifting legislation and pressure from competitors are also considered. All things considered, the DCF valuation offers insightful information to help stakeholders and investors decide how much to invest in S&P Global Inc.

DANIELLE VAN DUNK

Faculty Mentor: Huaibing Yu

“Exposing the Dynamics: Examining the Effects of Algorithmic Trading on Price Discovery and Market Efficiency”

The goal of my research project “Exposing the Dynamics: Examining the Effects of Algorithmic Trading on Price Discovery and Market Efficiency” is to show the complex interactions that exist between two fundamental components of the financial markets, algorithmic trading and price discovery and market efficiency. This study implicates the advanced methodology and analysis of historical market data to try to explain the relationships between algorithmic trading tactics and mechanisms that determine pricing. This study will also investigate the impact that algorithmic trading has on the overall efficiency of financial markets. The objective I am trying to achieve is providing information that is useful to a spectrum of stakeholders, investors and market participants. Exploring the relationship adds to this study the understanding of the impact of algorithmic trading on contemporary financial settings, offering advice for steering the interaction between technology and finance. “Exposing the Dynamics: Examining the Effects of Algorithmic Trading on Price Discovery and Market Efficiency” is an important study on the ever changing dynamics of the financial markets in the era of algorithmic trading.

STUDENT POSTER ABSTRACT

ABIGAIL WING

Faculty Mentor: Andreas Kakolyris, Tin Shan Suen

“Samsung Electronics: An illustration of the Cost of Capital Sensitivities”

This study will research the financial decisions of Samsung Electronics, with a particular focus on its optimal capital structure. The aim is to understand how Samsung’s market value is influenced by its leverage, utilizing an analysis of the weighted average cost of capital. Using the synthetic rating method and data from Bloomberg Terminal, various leverage scenarios are simulated to uncover Samsung’s capital sensitivities. Samsung Electronics, as a prominent player in the global technology market, presents an interesting case for examination, especially being a Korean company. The study will explain how changes in leverage impact Samsung’s cost of capital and market valuation. By offering insights into Samsung’s financial strategies, valuable perspectives are provided on how the company navigates market conditions and capitalizes on growth opportunities. Ultimately, this research serves as a glimpse into Samsung Electronics’ financial handling, uncovering the complex relationship between capital structure, cost of capital, and market value. These insights can inform investors, analysts, and stakeholders, offering a deeper understanding of Samsung’s financial stability and strategic direction in the dynamic culture of the technology industry. My findings are presented and analyzed in this poster.

SHIQI WU

Faculty Mentor: Huaibing Yu

“The relationship between green credit and financial performance”

This research project aims to investigate the relationship between green lending and the performance of financial institutions, with a focus on assessing the long-term impact of green lending on the value and stability of these institutions. By comparing the financial indicators and risk performance of financial institutions providing green lending with those offering traditional lending, this study seeks to provide insights into the implications of green lending for the financial industry. The project will involve a comparative analysis of financial metrics, such as profit levels, balance sheet structures, capital adequacy ratios, profitability, and cost efficiency, between financial institutions engaged in green lending and those providing traditional lending. Additionally, the study will analyze risk performance, including credit risk, market risk, and operational risk, to evaluate the impact of green lending on risk management within financial institutions. Through quantitative analysis and qualitative assessment, the research will also evaluate the contribution of green lending to the long-term value of financial institutions. This assessment will consider potential market opportunities, brand value, and customer loyalty that may result from green lending practices, thereby providing a comprehensive understanding of the long-term competitive advantages and sustainability of financial institutions engaged in green lending. The research methodology will involve data collection and organization from financial reports, risk management reports, and corporate social responsibility disclosures of financial institutions offering green lending and traditional lending products. Statistical analysis techniques, such as average comparison, correlation analysis, and regression analysis, will be applied to the collected data to draw meaningful conclusions.

YUANYUAN XU

Faculty Mentor: Huaibing Yu

“The impact of carbon trading tax on the long-term performance of companies in the context of dual carbon”

The concept of a “dual carbon” goal, encompassing both carbon neutrality and peak carbon dioxide emissions, has emerged as a pivotal element in the global agenda against climate change. In this context, the introduction of carbon trading taxes stands as a significant mechanism aimed at reducing greenhouse gas emissions. This policy instrument, by attributing a tangible cost to carbon emissions, compels businesses to confront the environmental impact of their operations directly. As companies globally navigate towards a more sustainable future, the implications of carbon trading taxes on their long-term performance become a critical area of exploration. The effectiveness of carbon trading systems in various economic sectors, especially in high-emission industries, has sparked considerable debate. While these systems are designed to incentivize reductions in carbon emissions, their impact on the financial and operational aspects of companies is complex and multifaceted. For firms, the costs associated with purchasing carbon credits or paying carbon taxes can lead to significant changes in their financial structuring, investment strategies, and even their overall business models. Furthermore, this shift towards carbon accountability is not only a financial challenge but also an opportunity for innovation and transformation. Companies are increasingly required to integrate sustainable practices, develop green technologies, and rethink their approach to resource utilization. The long-term performance of companies in the era of dual carbon goals is thus a reflective mirror of their adaptability, innovation, and resilience in the face of evolving environmental policies and market demands. This research will delve into the multifarious impacts of carbon trading taxes on companies, unraveling how this mechanism influences corporate strategies, financial health, and competitive positioning in a rapidly changing global environment.

XIAOHAN YAN

Faculty Mentor: Huaibing Yu

“Corporate finance”

Corporate finance is a multifaceted field at the intersection of finance and business strategy, dedicated to optimizing the financial structure and decision-making processes within organizations. This abstract provides an overview of key themes within corporate finance, including capital budgeting, capital structure, and working capital management. Capital budgeting involves evaluating potential investments to determine their viability and alignment with organizational goals. The capital structure examines the mix of equity and debt used to finance operations, aiming to strike an optimal balance that minimizes the cost of capital and maximizes shareholder value. Working capital management focuses on efficiently managing short-term assets and liabilities to ensure liquidity and operational continuity. Corporate finance also delves into valuation techniques, risk management, and corporate governance, playing a pivotal role in guiding financial decisions that

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impact the long-term success and sustainability of businesses. The dynamic nature of corporate finance underscores its significance in navigating the complexities of global markets and driving strategic value creation.

QI YE

Faculty Mentor: Huaibing Yu

“Optimizing Tesla’s Capital Structure: Assessing Value and Risk under the Optimal Capital Structure Framework”

This research aims to analyze the impact of different capital structures on the valuation and risk profile of Tesla, Inc. Using the Optimal Capital Structure (OCS) framework, the study will assess various combinations of debt and equity financing to determine the capital structure that maximizes Tesla’s value while minimizing its cost of capital and financial risk. The research will employ financial modeling techniques to estimate Tesla’s enterprise value, cost of capital, and stock price under different capital structure scenarios. Additionally, the study will evaluate the implications of the optimal capital structure on Tesla’s financial flexibility, growth prospects, and ability to navigate market uncertainties. By shedding light on the significance of capital structure decisions, this research will contribute to a deeper understanding of corporate finance theory and practice, especially within dynamic and transformative industries like electric vehicles and renewable energy. Furthermore, it will provide valuable insights for investors, policymakers, and corporate leaders regarding the implications of capital structure choices on firm value creation and long-term financial viability.

BINGQING ZHAO

Faculty Mentor: Huaibing Yu

“Solvency ability analysis of Costco Vs Target”

Solvency ability is important for the company to survive and develop, a solvent retailer is more resilient during economic downturns, and able to weather challenges such as decreased consumer spending or increased competition. A financially stable retail business is more likely to attract investors, as they seek assurances that the company can meet its long-term obligations and generate returns. Costco and Target both are companies in the retail industry, therefore, to measure the solvency ability of Costco and Target, this project will search background information about the two companies, and collect data from balance sheet of the last five years of Costco and Target, using indicators such as current ratio, quick ratio, cash ratio, total debt ratio, debt-equity ratio, ect., to measure both short-term debt capacity and long-term debt capacity. By comparing these dates. By establishing charts, analyzing and comparing these data, we will draw conclusions about the solvency of Costco and Target.

YI ZHOU*Faculty Mentor: Nazif Durmaz***“Mexico-U.S. bilateral trade: Is there a Chinese Yuan effect?”**

This study investigates the impact of exchange rate fluctuations on Mexico’s trade with the U.S. The present study considers the influence of exchange rate volatility and the impact of a third country on their trade. An autoregressive distributed lag (ARDL) methodology to cointegration is employed to estimate bilateral exports and imports of disaggregated 10 industries between Mexico and the U.S. By applying the ARDL approach, we separate the imports and exports to estimate the impacts of exchange rates on bilateral trade correctly. The results show that Mexico’s main industries for exports are significantly affected by changes in the exchange rate in the bilateral trade, meanwhile third-party also effects in both the long-run and short-run. On the other hand, Mexico’s imports seem to be unaffected by these factors. These findings indicate that depreciation of the Mexican pesos (Chinese Renminbi) could increase (decrease) the export volumes of Mexico’s major products in the short- and long-run. Additionally, the study finds that the income levels of both countries play a significant role in affecting their bilateral trade relationship, both in the short-run and long-run.

YI ZHOU*Faculty Mentor: Weichun Zhu***“The Impact of ESG on Corporate Financial and Social Performance: An Integrative Literature Review”**

In this extensive literature review, we investigate the impact of Environmental, Social, and Governance (ESG) factors on the financial and social performance of corporations. By examining more than thirty academic publications from 2015 to 2023, this research compiles important discoveries and new patterns to provide a comprehensive understanding of how ESG affects corporate performance. We demonstrate how adhering to ESG principles promotes social welfare in addition to financial success, signaling a dramatic change in how corporations assess their impact on society. The review focuses on how ESG principles are incorporated into business plans, how they affect various industries and approaches, and how they affect the sustainability and efficacy of organizations. Through a thorough examination of ESG’s place in modern business operations, this synthesis highlights the changing nature of corporate responsibility and performance evaluation in the contemporary business environment and offers stakeholders a comprehensive understanding of ESG’s values and critical implications for business strategy, performance, and societal impacts.

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CHLOE WILSON

Faculty Mentor: Huaibing Yu

“The Profitability Analysis of MTA”

Would like to know the profitability of the MTA and why they keep raising fare prices when nothing of significant change is being done to make the platform safer. Is there a reason as to why the prices are going up? And why has crime escalated on the platform? Is the reason why no changes are being made because of fare evasion or is there genuinely no funding for the MTA this project will look into figuring out these questions by looking at the balance sheet, statement of cash flows and if applicable, the sales and profits sheet. This project will also look into profit turnover as well as where the money is going if not to the MTA. The goal of this particular project will conclude with answering the hypothesis that the MTA are really concerned about fare evasion, or if this is a place for politicians to squeeze more money out of the already broke, everyday common person

CBPM | PUBLIC ADMINISTRATION

DANIELLE CLARK

Faculty Mentor: Sharmistha Das Iyer

“The Effects of Academic Racism”

The purpose of this study was to investigate the effects and presence of academic racism in United States kindergarten through twelfth-grade academic years by interviewing ten undergraduate minority Kean University students. A questionnaire was distributed to students through conducting in-persistent interviews to collect demographic information and open-ended responses to twelve questions relating to perceived racism, academic stress, and a decline in motivation due to race-related stereotyping in one’s primary school years. As such, the current study used a qualitative approach that collected data by using a narrative form, semi-structured interviews, and open-ended survey questions. Over the course of two weeks, ten participants completed the informed consent form in its entirety and then were interviewed separately in order to collect uniquely individually tailored data. Students most commonly reported experiencing and observing academic racism while in high school, the most common form reported was stereotyping and textbook curriculum bias. Students reported their motivation increasing upon completion of years kindergarten through twelfth grade due to them finally having the opportunity to attend a diverse institution where they will be surrounded by other students who relate to their cultural background and upbringing. This study has supported the presence of academic racism being present in United States Public Schools, mental health decreasing due to perceived racism, and academic motivation increasing as a result of attending a diverse institution such as Kean University.

LUIS TORRES

Faculty Mentor: Bok Gyo Jeong

“NYC Foundations’ Engagement in the Immigration Policy Process: Focus on Asylum Petition Policies”

In recent years, the United States has witnessed a surge in the number of migrants seeking asylum, fleeing persecution, violence, and instability in their home countries. During this humanitarian crisis, the political landscape surrounding immigration policies has been tumultuous, marked by debates, reforms, and shifting priorities. As New York City (NYC) stands as a refuge for immigrants, it is essential to scrutinize the role of non-governmental actors, particularly NYC foundations, in shaping the asylum petition policies that profoundly impact the lives of vulnerable migrants. The research is about how NYC foundations navigate the complex terrain of the immigration policy process, specifically focusing on asylum petition policies. This inquiry is critical as it seeks to unravel the mechanisms through which these foundations influence policy formulation, advocacy, and implementation to uphold the rights and dignity of asylum seekers. By examining the strategies, collaborations, and resources deployed by NYC foundations, this research aims to shed light on their motivations, challenges, and effectiveness in engaging with policymakers, advocacy groups, and affected communities. Through an analysis of their interventions, from funding initiatives to coalition-building efforts, this study endeavors to provide insights into the broader landscape of philanthropic engagement in immigration policy. Ultimately, this looks to contribute to a nuanced understanding of the multifaceted interactions between on-governmental actors and the policy apparatus, offering valuable perspectives for policymakers, practitioners, and stakeholders invested in promoting fair and humane asylum policies in the United States.

LUIS TORRES

Faculty Mentor: Thomas Lateano

“Mechanisms and tools available to safeguard constitutional rights”

In many countries across the globe, including Colombia, there exist legal frameworks designed to promptly address urgent threats to constitutional rights. For instance, Colombia’s ‘acción de tutela,’ often translated as ‘action of guardianship,’ empowers citizens to swiftly seek judicial intervention to protect their fundamental rights in situations where immediate action is imperative or where irreversible harm may occur. This mechanism enables individuals to bypass lengthy legal processes and obtain timely relief from infringements upon their rights. Notably, numerous other nations have implemented similar expedited legal remedies to uphold constitutional guarantees in urgent circumstances. These mechanisms reflect a recognition of the importance of preserving individual rights, even in times of crisis or imminent danger. Against this backdrop, this research endeavors to inform the citizens of the United States about the tools at their disposal for safeguarding their constitutional rights during critical junctures. By exploring comparative legal frameworks and

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examining the efficacy of such mechanisms in various contexts, this study aims to empower individuals with knowledge and awareness, enabling them to assert and defend their rights effectively when faced with urgent challenges.

SHELSEA ARAUJO

Faculty Mentor: Jose L Rojas Fernandez

“Effectiveness of Group Acupuncture in Recovery & Performance in Sports”

Acupuncture is a branch of Traditional Chinese Medicine which is the accumulation of experience and theoretical sublimation of the toiler in ancient China in the fight against diseases. Specifically, acupuncture is a practice of penetrating the skin with thin, metallic needles which are then activated through gentle and specific movements of the practitioner’s hands or with electrical stimulation. Acupuncture is used for different types of pain by creating energy flow or Qi through the body that is responsible for overall health. In the realm of sports medicine there are many different modalities used to benefit the athlete, acupuncture is gaining popularity as treatment within this field. In the article Acupuncture in Sports Medicine, the authors evaluate current research in acupuncture in medicine and its impact on athletic performance. The authors say “acupuncture improves peak oxygen levels, maximum heart rate, delayed-onset muscle soreness, pain, swelling, explosive force production, and joint mobility.” Leaving behind the question of how effective is group acupuncture in the recovery and performance of sports related injury in athletes?

EVE BORGELLA

Faculty Mentor: Jose L Rojas Fernandez

“Chinese Medicine”

1. What are some similarities of cancer therapy treatments when involving Traditional Chinese Medicine (TCM) and Modern Medicine aka Western Medicine in today’s society? Based on my question I would like to see if TCM will be able to be incorporated into this modern world. The world has developed in healthcare with new technology, laboratories, and sciences. Even with all that there is there are still some medicines that can be used for the greater good that don’t involve high tech. The TCM can seem very old school but a plethora of people rely on these types of resources. The field of Traditional Chinese Medicine (TCM) represents a vast and largely untapped resource for modern medicine. Exemplified by the success of the antimalarial artemisinin, the recent years have seen a rapid increase in the understanding and application of TCM-derived herbs and formulations for evidence-based therapy. (Wang et al., 2018)

**BIANCA DANIELS, ALICIA ANDERSON, SHELBY SNOW,
MAGARET MORSE, WILLIAM RODAS**

Faculty Mentor: Bok Gyo Jeong

**“Relationship between environmental factors and economic inclusion:
The case study of New Jersey”**

This paper investigates the relationship between environmental factors and economic inclusion activities, aiming to illustrate the connection between these two domains. Economic inclusion entails ensuring that all segments of society, particularly those marginalized economically or socially, have equitable access to market opportunities in various capacities such as employees, leaders, consumers, entrepreneurs, and community members. Achieving economic inclusion not only fosters sustainable economic development but also works towards reducing inequality. Concurrently, environmental factors such as climate change, natural resource availability, and environmental degradation play pivotal roles in shaping economic outcomes and opportunities worldwide. In this research project, the qualitative correlation between environmental factors, including contaminated sites, and their impact on socioeconomic status across six counties in the state are further investigated. By reviewing existing literature, the research emphasizes the importance of understanding how environmental factors influence socioeconomic dynamics and efforts toward economic inclusion, stressing the need to address environmental justice concerns for equitable access to resources and opportunities. Utilizing data from the EquiP Initiative by Kean University, the study examines six counties across North, Central, and South New Jersey, considering factors such as geographical location, population density, and economic inclusivity metrics. Employing a theoretical framework, the research analyzes the relationship between environmental factors like FEMA flood zones and known contaminated sites, and economic inclusion indicators sourced from Kean EquiP data. The findings provide valuable insights into this correlation, suggesting implications for public policy and theoretical understanding, and offering directions for future research in this area. Ultimately, the study underscores the importance of addressing environmental justice concerns to foster equitable economic opportunities across diverse regions within New Jersey.

HARRY FISHER IV

Faculty Mentor: Jose Rojas Fernandez

**“How does practicing traditional Indian medicine play a pivotal role in
American pre- and post-surgical treatment and management?”**

For my research topic, traditional Indian medicine I have asked the following question to assist with my overall research assignment. How does practicing traditional Indian medicine play a pivotal role in American pre- and post-surgical treatment and management? I have selected this question for my research topic because of the contrast between American medicine and traditional medical practices. My feeling is that practicing more natural, holistic remedies can have a lasting effect on the human body that may translate into favorable or

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unfavorable pre- and post-surgical outcomes. Some practitioners of traditional Indian medicine may feel that western medicine can be ineffective, and the testing, procedures, and post operative care could infringe on their healing process. From my limited research on traditional Indian medicine, it is believed that practicing these traditional methods promote positive health which further translates into metabolically well-balanced human beings. I feel that by studying traditional Indian medicine, or Ayurveda, the science of life, one can identify possible alternatives to pre- and post-surgical treatment. Utilizing this principle and the vast network of treatment options that have been passed down for centuries in Indian culture, there is plenty of evidence-based data that could fully explain the question of, how does practicing traditional Indian medicine play a pivotal role in American pre- and post-surgical treatment and management?

TAYLOR MARSHALL

Faculty Mentor: Jose L. Rojas-Fernandez

“The Integration of Yoga into Cancer Care”

Research Question: How can yoga be used as a coping mechanism in those undergoing cancer treatment? For most, receiving a cancer diagnosis will cause an influx of negative emotions such as anxiety and fear. As the disease progresses and the patient undergoes various treatments, each visit to the oncologist can produce feelings of stress. Yoga is an ancient practice that uses physical poses, meditation and breathing techniques to promote wellness. The International Journal of Yoga published an article, Yoga into Cancer Care: A Review of the Evidence-based Research, which states, “The use of complementary and

alternative medicine (CAM) is significantly increasing over the years. About 38% persons in the United States are using CAM for managing pain, arthritis, cardiovascular diseases, cancer, and psychological and emotional problems such as stress, anxiety, and depression, at the cost of approximately \$40 billion.” The integration of yoga in cancer care can elevate the patient’s physical and emotional well-being which may translate into an overall better quality of life.

DELIA LATINI, TENISHA MALCOLM, BARBARA GEORGE JOHNSON

Faculty Mentor: Karl Weiskopf

“A Retrospective on the Spring 2023 Series of Community Conversations on Collaborative, Evidence-Informed Solutions to Prevent and Reduce Violence in Urban and Urban-Rural Communities and for All New Jerseyans” This retrospective presents the outcomes of community conversations organized by the John S. Watson Institute for Urban Policy and Research in collaboration with the New Jersey Legislative Black Caucus, focusing on strategies to prevent and reduce violence in urban and urban-rural communities. These conversations aimed to highlight effective policies and programs while amplifying the voices of marginalized communities historically excluded from decision-making processes. Policy solutions proposed as a result of having convened the conversations include:

- Appropriate \$1 billion in state funds for urban after-school recreation;
- Prioritize the rehabilitation of existing parks into smart parks;
- Establish a two-generational school readiness and workforce development pilot program for low-income households;
- Simplify grant application processes and ensure equitable distribution of resources for violence prevention;
- Raise the age limit for youth support services;
- Prioritize the implementation of restorative justice programs and cannabis regulatory measures in urban communities;
- Recruit Black and Brown residents to state boards and commissions;
- Release the state budget for public review in a timely manner, including a racial impact statement

The principles of Diversity, Equity, Inclusion, Belonging, and Access (DEIBA) are central to the proposed strategies, calling for the centering of voices from underrepresented groups, including individuals in poverty, racial and ethnic minorities, LGBTQIA2S+ communities, and at-risk youth. The document underscores the importance of dismantling harmful ideologies such as racism, sexism, and classism to foster positive change in urban and urban-rural communities. In sum, this series of community conversations facilitated a platform for collaborative dialogue and stakeholder engagement to address, and recommend solutions to, the complex challenges to prevent violence and improve community wellness in urban centers. By prioritizing inclusivity, equity, and community empowerment, the proposed strategies aim to drive sustainable and transformative change in urban policy and decision-making processes for residents of urban and urban-rural communities and for all New Jerseyans.

DELIA LATINI, TRINITY THOMPSON, FABIANA ANGELICA DE OLIVEIRA ROCHA, DYQUAN A. WATERS, SAMANTHA HORACE

Faculty Mentor: Keisha Griffin

“Understanding Urban Research at Kean University”

Kean University has been designated as the state’s first urban research university to combat the challenges of underserved and vulnerable communities in New Jersey. On March 9, 2021, Kean University opened its Urban Policy Institute, the John S. Watson Institute. This institute is a conglomeration of policy centers that address critical topics affecting urban communities, such as economic inequality, health disparities, educational and development challenges, and legislative collaboration. This research project will analyze Kean University, the first Urban Research University in New Jersey, and examine the importance of all stakeholders understanding the distinction’s meaning. The relevance of this project must be considered, as the urban research classification at Kean University

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will be integrated into all areas like curriculum, research, and extracurricular involvement. Within the Webster Dictionary the definition of “Urban” is “relating to, characteristic of, or constituting a city,” this definition refers to that of a city. “Urban” may differ in connotation based on identity, background, and lived experience. It is an ambiguous term, but it is essential to clarify what this means for Kean University and its beneficiaries. Urban research is a systematic approach to understanding the climate and challenges in urban communities using political, social, economic, and environmental contexts. The research team will delve into the current literature to determine the purpose and significance of urban research institutions. The project will also include interviews with some of the University’s critical leadership and administrators to compile information regarding the accomplishments so far as an urban research university. This project will be the first phase of a large-scale study at Kean University. In addition to the literature review, interviews, and analysis, our findings will provide information on expanding our research. The next phase will involve connecting with all Kean University stakeholders and collecting qualitative data on their experiences and understanding of urban research. Urban research overall is a valuable theme for any institution to have as a practice. Giving solutions, ideas, and research to underserved cities is vital to student opportunities and experience and ensuring real-life change within communities. The long-term goal of Urban Research at Kean University can be to offer information sessions and workshops, updated curriculums, and research opportunities to broaden the understanding of the topic. The next generation of leaders within Kean University can then be given space for their ideas to flow beyond the borders of Kean University and flourish into equity, access, and opportunity.

KWEKU MCDONALD, JENNY CRUZ

Faculty Mentor: Dongyan Mu

“A Study on Monitoring Compost Quality Over Time in Varying Conditions”

The study aims to monitor the composition change in compost over time using Inductively Coupled Plasma Optical Emission Spectroscopy (ICP-OES). Compost is the product of aerobic composting, a sustainable method of recycling organic waste and converting it into soil nutrients. The compost used in the study was produced by the in-vessel composter at Kean University, with food scraps from the dining hall, woodchips, and leaves collected on campus during the fall and winter seasons. The compost samples were collected biweekly for four months from four outdoor piles, an indoor bucket, and the offload from the composting vessel. Monitoring the composition of compost over time in a variety of settings will provide a better understanding of how compost application can be approached for use in agriculture, including using the compost to make compost tea for a hydroponics growing system, personal use such as gardening, and commercial landscaping. ICP-OES allows elements such as potassium and phosphorus to be tested, as well as metals, including aluminum and iron. The research findings indicate that over time, both the organic and total nitrogen increased, which is a significant component of a plant’s growth success but leaves room for further exploration to understand the carbon-to-nitrogen ratios and the macronutrient and micronutrient levels. The results can be used to understand further how compost can provide a sustainable growth medium for plants.

KWEKU MCDONALD*Faculty Mentor: Dongyan Mu***“The Transition to Sustainable Development.”**

The goal of this project is to simply and descriptively trace the evolution of paradigms to measure human well-being. Economic growth was initially the paradigm that indicated how a nation’s inhabitants enjoyed life. Measured through per capita income, this measure was soon recognized as inequitable, as a few in most countries enjoyed the bulk of the income, and the majority much less. It has never been wider (Income Inequality by Country 2024, n.d.). Some measure of improvements in welfare such as better health care, education and more housing for large parts of the poor population, was reckoned as necessary to account for the measurement of well-being of a nation’s population (Dang & Sui Pheng, 2015). Account had to be taken for environmental considerations, the standard of living, inequalities between classes, regions and genders and general poverty. Sustainable development is the concept now coined to strive for equitable development within and among nations. This is the new economic view of development. Currently these social, environmental and economic areas of concern are detailed in 17 goals for sustainable development by the United Nations. This study, thus, is to relate this transition from economic growth to sustainable development as it has evolved over the years.

**THALIA MERCADO, TIFFANY BEAUBIEN, STANLEY DURU,
NGOZI IKE, JONATHAN NIEVES, ANANSA PARHAM, JASON PLEITEZ,
SALWA SHAFIQ, ASHLEY SOLIS, ZAINAB TIJANI, NIAH TRAVERS,
CHRISTIE TRIPP***Faculty Mentor: Bok Gyo Jeong***“Strategic Plan Approach for Haitian NGO Sports Program
and Residential Academy”**

The organic grassroots organization, FC Juvenat, was founded in 2023 to provide elite soccer education to students aged 6-14 years old in Port-au-Prince, Haiti. In partnership with founder James Louis-Charles, the Kean Capstone students will shed insight into strategic planning strategies for the organization to transform into two programs. The founder envisions an extracurricular education for school aged children and a residential academy with sports training for high school students. It is the hope of the Kean students and James that this strategic planning will aid in the expansion and creation of the programs, providing sports access to students that live in one of the poorest countries in Latin America with limited sports instructional opportunities. This research aims to address the lack of opportunity for underprivileged children in Haiti; utilizing sports. Through our SWOT analysis we will identify the objectives and vision, in comparison with numerous case studies around the world. This consultancy/research project will also provide thorough feedback and guidance for this groundbreaking organization.

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JASON PLEITEZ

Faculty Mentor: Jose L Rojas Fernandez

“The Supplemental Nutrition Assistance Program and its Effect”

One in eight Americans receives federal assistance through the “Supplemental Nutrition Assistance Program,” or SNAP. For a program this size, it’s critical to regularly assess its efficacy and create laws that will improve its management as it changes. The federal government constantly updates the SNAP program in order to directly address events and circumstances that may be occurring in the US at any given time. Enhancing food security and expanding low-income people’s access to a nutritious diet are the main objectives of the SNAP program. The inability to obtain enough food for a healthy, active life is known as food insecurity. “Over 10% of American households face food insecurity in most years, despite the availability of SNAP and other safety net programs” (Schanzenbach, 2023). Moreover, families with children as well as Black, Hispanic, and Native American communities are more likely to experience food insecurity and financial hardship (Coleman-Jensen et al., 2021). In order to address this, the program gives recipients more purchasing power over food and empowers them to cook at home in order to obtain a more nutritious diet (Caswell et al., 2013). The food products and retailers that are eligible to use SNAP benefits for purchases are governed by the US Department of Agriculture (USDA). The goal is to encourage the recipients to cook and prepare their own meals while also promoting healthy eating. We will compare the effect of the SNAP program between Hispanic and Caucasian beneficiaries.

LUIS TORRES

Faculty Mentor: Rojas Fernandez

“How can the effects of hallucinogen “ceremonial treatments” be quantifiably assessed from the scientific method perspective?”

This study aims to critically evaluate the accuracy and methodological soundness of current research methodologies employed in investigating ceremonial treatments involving ancestral or traditional hallucinogens. The focus is on assessing whether researchers adhere to the scientific method as a tool to mitigate biases. Additionally, we examine the manner in which study groups are accounted for and methods are evaluated. Furthermore, we investigate the predominant perspectives – sociological, medical, or psychological – from which these studies have been conducted. The ultimate goal is to scrutinize the reliability and precision of the discoveries emanating from such research endeavors. To achieve the objectives of this study, a comprehensive review of existing literature will be conducted, focusing on research articles, reviews, and meta-analyses related to ceremonial treatments involving ancestral hallucinogens. The evaluation will primarily center on the adherence to scientific rigor, methodological transparency, and the robustness of study designs. Additionally, a qualitative content analysis will be employed to categorize the disciplinary orientation of the research, distinguishing between sociological, medical, and psychological perspectives.

SOLOMON WATKINS

Faculty Mentor: Jose L Rojas Fernandez

“How can the incorporation of Traditional African Medicine (TAM) into mainstream healthcare systems be optimized to enhance patient outcomes and improve healthcare equity?”

This research endeavors to explore the optimization of Traditional African Medicine (TAM) integration within mainstream healthcare systems, aiming to enhance patient outcomes and bolster healthcare equity. With a large percentage of the African population relying on TAM as a primary source of healthcare, understanding and integrating these traditional healing practices into modern healthcare systems becomes imperative. Recognizing the cultural and clinical significance of TAM, this study seeks to bridge the gap between traditional healing practices and contemporary medicine, addressing healthcare disparities and fostering culturally competent care. By delving into the effective integration of TAM, this research aspires to offer insights into promoting inclusive, patient-centered healthcare, not only within African communities but also in diverse populations globally. Furthermore, the economic implications of TAM integration will be scrutinized, with potential impacts on cost-effective healthcare delivery being a focal point. Through this inquiry, we aim to shed light on the potential benefits of optimizing TAM integration, not only for patient outcomes and healthcare equity but also for the broader landscape of global healthcare provision.

CBPM | MANAGEMENT

CYLIA BLACKMON, NADIA SHAH

Faculty Mentor: Shanggeun Rhee

“Meta-Analysis on the Impact of Poverty on School Success/Retention Rates: Comparison between K-12 and Post-Secondary Education”

Poverty has been known to reduce a student’s chances of getting a high school diploma, thus eliminating the chance of pursuing higher education. For many years, earning a college degree has been seen as a key to escaping poverty; however, success in education requires early enrollment. Poverty is a multifaceted term, including lack of necessities, resources, shelter, education, and more. These factors create challenges, particularly in the context of education and the ability to pursue a quality education that will position one for success in the future. It interferes as well as threatens the education of children because, having to deal with collecting needed supplies, having basic needs met, and the threat of falling behind, children are unable to get the proper education that they deserve. Without education, a more challenging future may occur, severely impairing one’s mental health and raising the dropout rate. Education is such an important component of development. Poverty in the K–12 grades directly impacts a child’s education because of the lack of focused teaching and goal-oriented opportunities to help them get a fair chance at a good education. Understanding

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the relationship between poverty and school retention can help students succeed despite their economic status. Pursuing higher education is optional but essential in many cases for securing the steady and fulfilling lifestyle desired by many. In contrast to K-12 education, college and university retention is determined by first-year retention, persistence rate, transfer-out rate, completion rate, or demographic factors. In all levels of education, especially at the lower levels, parental income is the most important factor. Students rely solely on parents to provide them with their essential needs regarding their education, and colleges and universities utilize FAFSA (free application for federal student aid), where students have the option to input family income in hopes of receiving federal aid to reduce the cost. For students coming from limited resources, they rely heavily on their ability to either receive financial aid or take out loans. Instructional systems ought to integrate more goals and resources into their school systems to help students living in poverty. Both, being in different settings, have different resources and thus have different struggles. As previously mentioned, higher education is optional whereas K-12 is mandatory, so more resources are needed to meet any gaps. Implementing the resources and materials for students who may be financially impacted is a crucial message for educators and those with the power to make the required changes. This will allow them to get a worry-free education and give them the ability to focus solely on school and enjoy their valuable experiences. Education is uplifting, and utilizing resources within will help to support and help students and families living in poverty.

KYMON GREGORY-TAYLOR, ALEXIA PIPER

Faculty Mentor: Thomas Abraham

“Analyzing Business processes at Shoprite”

Shoprite is a corporation operating in the food and grocery industry with headquarters in Holmdel, NJ. Our team will use the design science research method to identify and solve information silos or other problems in an organizational business process. Design science is a research paradigm that focuses on problem-solving by creating artifacts. We will collect our data from primary sources such as interviews with managers and observation. We will document the process creating artifacts such as context diagrams and swimlane flowcharts and using business process modeling notation (BPMN). We will then analyze the process using management, information systems and process management principles discussed in our course and recommend solutions to improve the process. We will report our preliminary findings in the form of a poster presentation.

JIAXUAN CAI, SHIQI WU

Faculty Mentor: Ali Mohammad

“ESG developments for developing logistics companies”

ESG (Environmental, Social and Corporate Governance) is a method of considering environmental, social and corporate governance factors in investment decisions. Carbon neutrality refers to the goal of reducing the impact

on climate change by reducing, offsetting or compensating greenhouse gas emissions. Including ESG and carbon neutrality as part of core strategies has become increasingly important. Environmental concerns often focus on reducing greenhouse gas emissions, resource management, energy efficiency and water management. Social responsibility includes a company's relationships with employees, supply chains, communities and consumers, as well as aspects such as product safety and quality. Corporate governance emphasizes transparency, independence, board structure and supervision mechanisms. The pain point is the conceptual understanding and construction of ESG. In addition, there is also the amount and portfolio of ESG construction investments (ESG investment priorities). Technology is developing rapidly, and each company's investment in technology is growing steadily, which is reflected in transportation, packaging and other aspects.

NAYDELIN BENITEZ VENTURA

Faculty Mentor: Louis D'anjou

"The Consumption of Alcohol Negatively Impacts the Academic Performance of College Students"

Youth Risk Behavior Survey: nearly 29.8% of college students in the U.S. had engaged in alcohol consumption in the past 30 days. Study shows that drinking alcohol negatively impacts the academic performance of students. Not all college students who consume alcohol experience negative effects, and moderation is key. Transition into college coincides with the highest incidence of heavy binge drinking compared to any other age group. Hagman emphasizes that drinking alcohol has numerous unique consequences. One of the primary concerns is that if an Alcohol Use Disorder (AUD) diagnosis in college students goes unnoticed, it can escalate into a more severe form of alcohol dependence in adulthood (Hagman, 2016). A study has indicated that alcohol use disorder (AUD) rates reach their highest point during college years. Epidemiological evidence suggests that the rates of DSM-IV AUDs, which encompass alcohol abuse and dependence, can range from about 12% to 30% during this period (Hagman, 2016).

MAKAYLA CRUZ, CAROLYN RAMOS, NINA RIVERA

Faculty Mentor: Ipek Kocoglu

"Diversity and Inclusion in the Workplace"

Diversity and inclusion (D&I) initiatives in the workplace aim to actively foster an environment that values and respects individual differences across various dimensions such as race, gender, age, sexual orientation, disability, religion, and cultural background. Such efforts are crucial in shaping employee satisfaction, retention, and overall company performance. For instance, Wells Fargo has implemented an extensive D&I strategy, which includes the establishment of diversity councils, employee resource groups, and diversity training programs. Through these initiatives, the bank demonstrates its commitment to promoting diversity and engaging with diverse stakeholders, creating a more inclusive work environment. Furthermore, McKinsey & Company research emphasizes that

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diversity is essential in boosting financial performance. Their research showed that businesses with diverse management teams typically outperform their similar counterparts regarding economic indicators. This relationship implies that promoting diversity in management teams can improve the quality of decisions made and support the organization's success. Companies can better adapt to shifting market dynamics, innovate more successfully, and produce superior financial results by utilizing diverse perspectives and experiences. Therefore, companies prioritizing diversity and inclusion programs stand to benefit both financially and in terms of employee retention and satisfaction.

JOCELINE GUERRA, LINA LARROTTA

Faculty Mentor: Kihwan Kim

“The Use of Data Analytics in Social Media for Data-Driven Marketing Strategies”

Social media, combined with data analytics tools, has opened a new marketing era. Companies effectively reach their target customers and find their needs by analyzing customer data on social media. Therefore, this research delves into the impact of social media marketing and its implications on customer engagement, brand loyalty, and overall business performance. The research aims to explore marketing campaign datasets using secondary data from an existing dataset, industry reports, and case studies related to social media marketing. The dataset includes crucial variables to test our research models, such as company identity, campaign type, target audience, campaign duration, channels used, conversion rate, acquisition cost, ROI, location, language, clicks, impressions, engagement score, and customer segment, providing valuable insights into the effectiveness of various marketing campaigns across different companies and customer segments. This study employs data analytic tools such as Python, social media analytics platforms, and statistical techniques to determine the effectiveness of these actionable strategies through meticulous analysis using a regression analysis model. Additionally, visualization charts and graphs provide comprehensive insights into optimizing marketing strategies through data analytics on social media platforms. Finally, we will discuss the result of data analysis, theoretical and practice implications, and future research issues to empower businesses to make data-driven decisions and improve efficiency in their marketing endeavors.

JENIFER HERNANDEZ, MADELINE DOHOGNE, JAMES GREENBUSH, KENAN GREEN, ANTHONY HORTIGUERA

Faculty Mentor: Dawn Adams-Harmon

“Analysis of United States v. Sterling Bancorp, Inc.”

A guilty plea for securities fraud was announced and signed by the Department of Justice's Criminal Division's Fraud Section with defendant Sterling Bancorp, Inc. on March 15, 2023. Sterling Bancorp, Inc., a community bank based in Detroit with branches across the country, released a fraudulent and deceptive public offering statement (SEC Form S-1) about its flagship lending program,

the “Advantage Loan Program,” in conjunction with its October 2017 initial public offering (IPO). Even though the bank promoted this loan program, which in turn contributed significantly to the bank’s sustained and growing revenue, a sizable portion of the loans made possible by the ALP were the result of falsified documentation. Insiders at the bank, including Scott Seligman, the founder, gained almost \$100 million in stock in conjunction with the IPO. The bank’s ensuing annual filings for 2018 and 2019 (SEC Form 10-K) repeated the fraudulent representations. When the scam was discovered in 2020 during a bank inspection, the stock price plummeted, costing owners almost \$69 million in losses. Our purpose is to identify and analyze the ethical violations involved in this case, and the impacts of this violation. We will represent both the prosecution and the defense in this case, and evaluate whether the penalties that resulted were appropriate.

JANE HOWLETT, FAVOUR OYELADE, ANDREW FARIA, GABRIEL AVILAGA

Faculty Mentor: Chen Meng

“The Impact of High Housing Prices in Today’s Economy”

The economic condition around the housing market has been a major topic for Economics study and is relevant to our daily life. The purpose of this research is to discover and explain the factors of the high housing price in today’s economy. Homeownership symbolizes wealth in American culture, yet it remains out of reach for many due to prevailing economic conditions. In this research, we will examine factors like the 2008 financial crisis and the 2020 pandemic. The 2008 financial crisis impacted the housing market which was led by a surplus of homes that seriously overtook demand (Rosen, 2023). The pandemic caused an uprising in people moving away from high population areas to lower populated areas (Bernstien, Tedeschi, & Robinson, 2021). In addition, when inflation peaks, mortgage rates will have peaked (Kaysen, 2022). Inflation is one of the main factors seen in the causation of these high house prices. We aim to provide our comprehensive views in this research.

JADA MCBRIDE, ALEX MITCHELL, ZYMR MOBLEY, MARIA SANCHEZ, JOSHUA MELVIN, SEAN MENA, WYZIR MARTIN

Faculty Mentor: Dawn Adams-Harmon

“SEC v. Luckin Coffee, Inc.”

Luckin Coffee Inc. committed accounting fraud by purposefully inflating retail sales to over \$300 million. This was accomplished by several dishonest techniques, including creating a fake operations database, inflating costs, and tampering with accounting records. The antifraud provisions of the Securities Act of 1933 were broken by this fraudulent activity between January 2020 and at least April 2019, resulting in significant overstatements of revenue and understatements of net losses in Luckin Coffee’s financial statements. When the scam was uncovered, investors who had lost money on buying Luckin Coffee’s American Depositary Shares (ADS) on the NASDAQ, as well as debt and equity

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investors, were among those who suffered adverse effects. Luckin Coffee cooperated with the SEC investigation to rectify the situation, initiated an internal investigation, and terminated personnel involved in or aware of the fraudulent activities. The Luckin Coffee case serves as a reminder of the value of moral behavior in the workplace, which includes decency, openness, accountability for wrongdoing, duty to stakeholders, and compliance with legal requirements. Businesses that prioritize ethical behavior protect their brand, earn their customers' trust, and help them succeed and survive in the long run.

ELPHAS OKOKO

Faculty Mentor: Sarah Coykendall

"Task Force on Sustainability - Plans for the Future"

Kean University's Presidential Task Force on Sustainability was introduced in 2022 to help advance Kean's sustainability goals. Kean recently submitted a report to AASHE STARS, a campus sustainability hub, that recognized our campus' sustainability endeavors and anticipates awarding Kean with a silver rating. Kean University plans to advance our sustainability rating to the uppermost gold standard rating. This presentation addresses the Cougars-Move-Out sustainability plan, which aims to reduce the high volume of waste generated by students by incorporating charity donation bins at the dorms to dispose of items in fair-good condition that they no longer require. The presentation considers the long-term climate change that could be gained by the "donate not waste" model and offers recommendations for engaging Kean students in wider sustainability projects around education and climate change. The research will also incorporate ways for longevity in Kean's sustainable methods to ensure future generations of students have access and can contribute to a sustainable campus life.

NICHOLAS OROZCO, VANESSA GUTIERREZ, GINO RODRIGUEZ, BRANDON MARTINS, DAPHNE FANCHER

Faculty Mentor: Ipek Kocoglu

"The Role of Emotional Intelligence in Management"

We will be researching the effects of managers' emotional intelligence on team morale, motivation, and conflict resolution as well as team performance. We will be doing the case study of Johnson & Johnson emotional intelligence initiatives, consisting of leadership development programs focusing emotional intelligence competencies, enhanced team morale and productivity in addition to improving leadership performance. Understanding, utilizing, and controlling your own emotions in a positive way to reduce stress, communicate clearly, sympathize with others, overcome obstacles, and solve problems is known as emotional intelligence. It's critical for those in leadership positions to prioritize developing trusting bonds, encouraging collaboration, and creating a positive workplace culture. Emotionally intelligent leaders are skilled at settling conflicts, inspiring and encouraging their groups, and adjusting to change. Johnson & Johnson conducted a study with 358 managers and found that the managers

who performed the best had EQs that were significantly higher than those of the managers who performed less. Lowered emotional intelligence may have far-reaching consequences, particularly for leaders.

SANAA SMITH, DANIEL SANTOS, MAHEE CHOKSI, NICK OROZCO, MICHELLE MEJIAS, EDITH GUDIEL

Faculty Mentor: Ipek Kocoglu

“How Companies Navigate the Challenges and Respond to Climate Change”

The focus of our study is due to the awareness of the Climate Crisis and the need to control the effects it has on the environment have been negatively affecting companies globally within their operations, employees, and standards. This research will identify what serious setbacks are causing an uprising of challenges and negative effects. This leaves us with the question; what are these companies doing to respond to these new challenges being caused by climate change and what are they doing to accommodate for themselves to extract themselves from possible clauses in a climate crisis?

Based on research that has already been conducted, companies have and are implementing strategies to prevent themselves from going into a decline in sales and they are coming up with new ways to reduce their carbon emissions. One of the major changes companies have made was to establish new policies to accommodate the new regulation that has been made to enforce the reduction of carbon emissions. Many companies invest more money into production so they can use more reusable resources to face the awareness of climate change. Unfortunately, as much as it is not discussed, businesses have been going into a rapid decline since 2020, due to different factors, one of them being climate change/crisis. Our research will allow us to fulfill what people have been trying to unveil for the past couple of years.

The data that we will compile and have to this point will be analytics describing different companies that have been on the backend of the effects of climate change and the effect that it has on their production and sustainability aspect of things. We have found that companies inflate their prices based on being affected by climate change and the effects over its long term. Our findings can likely allow managers to understand different tactics to move forward with their businesses and implement them by training workers to sell products a certain way and prevent a drastic decline in overall sales.

MINCHEN TSAI, YUHANG WANG

Faculty Mentor: Kihwan Kim

“The effect of the team member personality and shared leadership and the mediation effect of team cohesion”

This research investigates the nuanced impact of individual personality traits on task-related and relationship-related team cohesion and, subsequently, how these cohesion dimensions mediate the relationship between shared

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leadership, team performance, and team satisfaction. Data were gathered from varied teams across sectors using validated measures, focusing on the Big Five personality traits: neuroticism, extraversion, task-related openness and rigor, and relationship-related affinity. The results of structural equation modeling showed that while association, neuroticism, and extraversion were favorably connected with relationship-based team cohesion, openness, and rigor were significantly and positively correlated with task-based team cohesion. Shared leadership considerably mediated the relationship between these personality qualities and the two cohesiveness variables. Increased team satisfaction and enhanced performance were associated with elevated shared leadership levels. The results highlight how important it is to take a variety of personality qualities into account when analyzing the dynamics of team cohesion. Shared leadership is one fundamental way that individual variations influence team performance. Organizations seeking to maximize team performance and member satisfaction can benefit from the practical implications for team management and interventions that build shared leadership and cohesion. This study contributes to the literature on team dynamics by highlighting the interplay between personality traits, shared leadership, and team cohesion in the pursuit of improved team performance and satisfaction.

YUNING XIANG, ZHOU WEIKAI, ZHENG HAOYUN, LIU XIAONAN

Faculty Mentor: Chen Meng

“History and Evolution of Money”

Money is regarded as a valuable life pursuit by many people, and money also contributes to the foundation of modern society, becoming a keystone to allocating resources orderly. Everything in modern society works with money, which makes people want to explore where it comes from, where it goes, and how it changes. By exploring the laws of change, that is, the interplay between factors and money, one is able to optimize the monetary system and the economic development model to provide some ideas for a better future. Likewise, these studies are relevant to the present day, which is during the fourth industrial revolution, which is also accompanied by a monetary revolution. This provides us with a priority for the study of the history and transformation of money. This report will cover the history and evolution of money, including its use, and the payment system. Money is not always like today's forms, it originated from primitive barter systems to the sophisticated digital currencies of nowadays. This sequential evolution, however, has not occurred occasionally instead of historical necessity. These revolutions have been shaped and influenced by a myriad of social, political, technological, and economic factors. Hence, our report will emphasize the influential factors on revolution from the economic aspects and political aspects, to demonstrate the cause and effect, and summarize some rules based on our analysis. Money's mainstream form can be roughly divided into six types, including Barter, commodity money, representative money, fiat money, and electronic money; electronic money can be decentralized and centralized. Our report will introduce these stages as this sequence.

JUSTIN GENSCH

Faculty Mentor: Huaibing Yu

“Analyzing the Current Real Estate Market”

Mortgage interest rates are among the many high interest rates that exist in the United States today. Taking into account the already inflated prices of real estate; this is not a market that is considered to be “buyer friendly.” When will the average American be able to afford a home once more? Using data from the historical real estate market, such as mortgage interest rates, prices, and the number of buyers, this report will forecast the answer to this question. Additionally, it will investigate the causes of the current high interest rates in greater detail and make an attempt to predict when they will decline. Many people rely on their properties for their livelihood, including builders, contractors, landlords, and house flippers; not to mention real estate agents and brokers. A thriving real estate market supports a wide range of industries; so high interest rates and prices does have an impact on the overall economy.

JEFFREY FERINGA

Faculty Mentor: Thomas Abraham

“Analyzing Business Processes at Westfield YMCA”

The Westfield YMCA, a leading Health & Wellness organization headquartered in Westfield, NJ, is partnering with our team to tackle information silos and inefficiencies within their business processes. We’ll leverage the design science research method, a problem-solving approach that emphasizes creating practical “artifacts” to address specific issues. We’ll gather primary data through interviews with key managers and direct observation of relevant workflows. This firsthand insight will be crucial in pinpointing information bottlenecks and inefficiencies. Using established tools like context diagrams, swimlane flowcharts, and BPMN (Business Process Modeling Notation), we’ll meticulously document the existing processes, creating a visual representation of their flow and potential problem areas. We’ll then analyze the documented processes through the lens of relevant management, information systems, and process management principles learned in our course. This critical evaluation will enable us to identify opportunities for improvement. Based on our analysis, we’ll develop and recommend practical solutions to address the identified information silos and inefficiencies. These solutions may involve process redesign, technology integration, or even cultural shifts within the organization. Our findings and recommendations will be presented in a clear and concise poster format, allowing for easy comprehension and engagement with the YMCA team. This visual presentation will serve as a springboard for further discussion and potential implementation of our proposed solutions.

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EVAN KAVANAGH, ESAI SHAW

Faculty Advisor: Thomas Abraham

“The Madison Area YMCA”

The Madison Area YMCA, headquartered in Madison, New Jersey, operates as a corporation in the health and wellness industry. Our dedicated team is committed to utilizing the design science research method to effectively identify and address information silos or any other challenges within our organizational business processes. Design science, a robust research paradigm, guides our approach as we focus on problem-solving through the creation of valuable artifacts. Our data collection will primarily involve engaging with key stakeholders through interviews with managers and direct observation of the organizational processes. To document our findings, we will employ various tools, including context diagrams and swimlane flowcharts, utilizing the Business Process Modeling Notation (BPMN) for precision and clarity. This comprehensive documentation will serve as a foundation for our analysis. Our analytical process will draw upon principles from management, information systems, and process management, leveraging the knowledge acquired through our coursework. With a thorough understanding of the existing processes, we will identify areas for improvement and recommend strategic solutions. The culmination of our efforts will be presented in the form of a poster presentation, showcasing our preliminary findings and outlining the proposed enhancements to the organizational business processes. Through this rigorous and systematic approach, we aim to contribute to the continual improvement of the Madison Area YMCA's operations in the health and wellness sector.

CYRIL TAN, GLYNNIS TAN

Faculty Advisor: Shanggeun Rhee

“Analysis of Healthcare Provider Strike Action in Correlation to Human Resource Management in the Hospital Setting”

Healthcare Provider Strike Actions are organized labor efforts in which a collective of healthcare providers refuse to perform their duties in the healthcare setting as a tactic to demand changes in their workplace. These demands often include but are not limited to: improving working conditions, safe adequate staffing, and better wages and benefits. Human Resource Management aims to assist organizations in addressing staffing and employee engagement challenges, and serves as a conduit between healthcare providers and corporate leadership. This study aims to use a qualitative approach to explore human resource management practices in the instance of a healthcare provider strikes in hospital settings. This is conducted in a series of interviews with Union Leaders and Healthcare Providers from New Jersey local hospitals such as Robert Wood Johnson University Hospital. The authors then provide a conceptual model that describes human resource management factors that may provoke or pacify healthcare provider strike actions.

ALYSSA FERRARA*Faculty Mentor: Dennis Bogdan***“Video Game Violence Influencing Juvenile Delinquency”**

It has been said before that what one sees and experiences in their environment helps to shape their attitudes and behaviors. Furthermore, it would not be disputed to say that the children today spend more time than previous generations playing video games and other electronic forms of entertainment. What raises cause for concern however, is the trend of video games to feature more violent content as the years progress. Similarly, in both social media and traditional media, there seems to be an increasing trend of delinquent activities being committed by juveniles in American society. This gives cause for question: could there possibly be a connection between the increased amount of violent video games and the perceived increase in delinquent activities among juveniles? Could the increased amount of graphically violent content that video games today are known for be linked to an adverse impact upon the still developing and impressionable brain of juveniles today?

SEAN LAVERTY*Faculty Mentor: Dennis Bogdan***“Analysis of the ethicality of Juvenile Justice Reform in the State of New Jersey”**

The following research will exemplify an analysis of the ethicality of Juvenile Justice Reform in the State of New Jersey. An evaluation of the historic timeline of the New Jersey Juvenile Justice system through research has been included in its entirety, including what points of issues transpired and what natures of reform were introduced to ultimately structure the current New Jersey Juvenile Justice system. Additionally, paramount data and statistics deriving from the juvenile youth houses residing in New Jersey will contribute to an ultimate understanding on the current state of juvenile reform in New Jersey to this day. Drawing upon peer-reviewed sources, research will provide an analysis on current and existing New Jersey juvenile policies, and the most current outlook on restorative programs and strategies to combat recidivism, also including disparities within the New Jersey juvenile justice system, displaying possible disproportionate minority and gender statistics while also highlighting socioeconomic factors influencing specific outcomes.

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JOSEPH DOWNEY

Faculty Mentor: Thomas Lateano

“Showing the Gap: Castle Law Between Theory and Practice”

Castle laws, they are the rights and protections that are given by a municipality to you to defend you, your family, and your property. However, despite their intent, in practice, these laws may stray far from their intended goal. This study aims to show the gap between Castle Laws as written versus how they are interpreted in the everyday courtroom. This study pushes to see the disconnection between what is written in castle laws and what is actually used in common practice. This study goes over the current case law, a brief history and how they matriculated to the complex variant on how they are now, quantifiable public opinion, and speculation on how these laws could possibly change in the future of not only castle law, but other laws relating to “stand your ground.” This study pushes for a more clear, concise, and direct legal system that aligns not with just the doctrine, but with the real world too.

CBPM | ECONOMICS

CHINEDU ANYIAM

Faculty Mentor: Nazif Durmaz

“Korean Merchandise Export”

In this paper, we discuss empirical analysis of the economic growth in Korea between 1980 and 2024 , In order to identify the relationship between relevant variables . Korea is a country notable for applying industrial policies . Exports of goods and services represent the value of all goods and other market services provided to the rest of the world . They include the value of merchandise , freight, insurance, transport, travel, royalties, license fees, and other services , such as communication , construction, financial , information, business, personal , and government services . Results from the past 3 years, South Korea exports for 2021 was \$761.24B a 27.3 % increase from 2020, South Korea exports for 2020 was 597.87B a 7.82 decrease from 2019 , and South Korea exports for 2019 was \$648.61B a 9.85 decrease from 2018 . A Four variable vector autoregression (VAR) is used to study the relationship between trade , and foreign direct investment (FDI) and economic growth using quarterly data from 1980 to 2021 .

PAULA DIAZ

Faculty Mentor: Chen Meng

“Economic Growth and Poverty”

Two centuries ago, the prevailing belief was that widespread poverty was inevitable; however, economic growth has demonstrated its capacity to reduce

poverty over time. Despite significant strides, extreme poverty persists for nearly one in ten individuals globally, as highlighted by the 'international poverty line.' The stagnation of economies in the world's poorest regions presents a critical challenge, with millions trapped in destitution. This research examines the trajectory of extreme poverty over the past two centuries, revealing significant progress alongside persistent challenges. Utilizing data adjusted for inflation and regional disparities, the study underscores the importance of economic growth in lifting populations out of poverty. Analysis reveals that while many regions have experienced growth, certain countries, particularly in Sub-Saharan Africa, remain mired in extreme poverty due to economic stagnation. Without sustained growth, the prospect of eradicating extreme poverty remains uncertain, posing profound implications for global development and equity, especially in the face of emerging challenges like climate change. This research calls for increased attention to the economic plight of the world's poorest nations, emphasizing the urgency of addressing their stagnant economies to ensure continued progress against extreme poverty on a global scale.

PAULA DIAZ

Faculty Mentor: Nazif Durmaz

"Textile and Clothing Imports in the US"

This study examines the dynamics between Textile and Clothing Imports, Import Price, and GDP per capita over a period spanning more than three decades from 1980 to 2021. Utilizing time series regression analysis, the study investigates the interrelationships among these variables and their implications for economic policy. The findings reveal a strong positive relationship between Textile and Clothing Imports and GDP per capita, indicating that as GDP per capita increases, so does the demand for textile and clothing imports. Import Price also plays a significant role, with higher import prices associated with lower import volumes, reflecting the sensitivity of consumer demand to price changes. Moreover, the study identifies notable fluctuations in the variables over the years, highlighting the impact of economic cycles, trade policies, and global market conditions on import dynamics and economic growth. Based on the results, the study suggests that policymakers should consider fostering economic growth to stimulate demand for textile and clothing imports while carefully monitoring import prices to ensure competitiveness in the global market. Additionally, maintaining a stable economic environment and implementing targeted trade policies could further support the growth of the textile and clothing industry.

QIUTONG LIU, SIHAN FU, WEIXUN XIE, JUNYANG LI, ZHIRUI CHEN

Faculty Mentor: Israel Curbelo

"Navigating Uncertainty: A Reinforcement Learning Approach to Solving the Frozen Lake Challenge"

This project explores the application of Reinforcement Learning (RL) techniques to address the Frozen Lake environment from the OpenAI Gym, a popular

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platform for evaluating and developing RL algorithms. The Frozen Lake environment presents an agent with the task of navigating across a grid of ice and water tiles to reach a goal, without prior knowledge of the environment's dynamics. Our approach leverages the principles of Markov Decision Processes (MDPs) to model the environment, enabling the agent to learn optimal policies through interaction and feedback. We begin by formalizing the Frozen Lake problem as an MDP, characterizing the environment's states, actions, rewards, and transition probabilities. To solve the MDP, we implement several RL algorithms, including Value Iteration, Policy Iteration, and Q-Learning, and evaluate their performance in terms of efficiency, effectiveness, and the ability to learn under uncertainty. Our implementation pays particular attention to the challenges of sparse rewards and stochastic transitions inherent to the Frozen Lake environment. Our results demonstrate the comparative strengths and limitations of each algorithm within this context. Value Iteration and Policy Iteration, while guaranteeing convergence to an optimal policy, differ significantly in computational efficiency and practicality for real-time decision-making. Q-Learning, an off-policy temporal difference learning algorithm, exhibits robustness in learning from sparse and delayed rewards, making it particularly suited for the Frozen Lake challenge. The project not only showcases the adaptability and potential of RL in navigating complex, uncertain environments but also contributes to the broader understanding of how different RL strategies can be optimized and applied to specific challenges. Through extensive experimentation and analysis, this work highlights the critical aspects of algorithm selection, parameter tuning, and policy evaluation in the pursuit of autonomous decision-making in uncertain and dynamic environments.

ZHECHEN LU

Faculty Mentor: Nazif Durmaz

"Exports of essential oils for Europe in New Jersey with effects of income, and exchange rates."

The international economy is being incorporated in the age of globalization, with economic globalization emerging as the main tendency. Within the context of New Jersey, its economy is influenced by both the United States and the global economic landscape. This study focuses on the relationships between the US dollar exchange rate, the CPI, the GDP, and the export rate of essential oil in New Jersey. The raw data of exports which range from 1982 to 2023 download from US Census Bureau, and other economic indicators from Federal Reserve Economic Data. By using regression analysis methodology, there is a clearer to observe relationship between the dependent variables and the three independent variables. The hypothesis posits that there exists a positive correlation between the export rate and either the domestic or international GDP, and negative relationships with the CPI, and the domestic exchange rate. This article covers an important gap in the connection between economic variables and New Jersey's exports of essential oil.

ANGEL PEREZ*Faculty Mentor: Nazif Durmaz***“US rice imports”**

Rice as a whole holds an extremely significant economic role, serving as staple food for over half of the world’s population. The production and consumption of rice play a crucial role in many countries, ensuring food security and aiding poverty support. Beyond agriculture, rice impacts trade, employment, and income. Understanding this and the economic dynamics of the world total on rice exports is important for researchers and stakeholders to create sustainable strategies for this essential crop. This study is on rice imports into the US. The findings contribute to understanding agricultural trade and interpret results for policymakers, researchers in the North American rice market. The coefficient b measures the effect of X on Y (interpreted differently depending on the context, e.g., as elasticity). Based on this data, we can perform regression analysis to understand the relationship between the years and the cost of imports.

CBPM | GLOBAL BUSINESS**SYDNE BOGAN***Faculty Mentor: Galia Shokry***“Climate Vulnerability and Contaminated Sites: Implications for Prison Population Health in New Jersey”**

Climate change has become one of the most pervasive global issues that affects every aspect of our lives. Urban areas are especially vulnerable to the impacts of climate change due to a range of different factors such as greater impervious surfaces and higher temperatures, with lower-income and minority neighborhoods disproportionately exposed. Prison populations mirror these dynamics with a concentration of vulnerable populations that have reduced capacity to adapt to climate change risks and impacts. However, few studies have examined the disproportionate and cumulative impacts of a changing climate such as the increasing frequency and intensity of heat and storms for prison populations. In addition, approximately one-third of state and federal prisons are located within 1 mile of known contaminated sites - areas that contain substances in or under the ground that are potentially hazardous to human health or the environment. Those living and working in correctional facilities are exposed to such hazardous materials day in and day out and are often unaware of the risks they face. New Jersey is one of the leading states in the country that has the most contaminated sites totaling 13,472. Using NJAdapt’s Mapping Tools for climate vulnerability and the NJDEP contaminated sites map, this research uses geospatial analysis to help identify and assess the cumulative impacts of contaminated sites, criminal (in)justice and climate vulnerability in New Jersey, in particular the health implications for incarcerated individuals and prison staff.

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EDU CASANOVA, CHEN ZIRI, NAYDELIN BENITEZ VENTURA, PENIEL-REGINALD ATKINS

Faculty Mentor: Dawn Adams-Harmon

“Apple Battery Scandal”

The Apple battery scandal, known as “Batterygate,” rocked consumers’ trust back in 2017. It turned out that Apple had intentionally slowed down older iPhone models through sneaky software updates, a fact they hadn’t shared with users. This discovery led to a wave of questions about Apple’s ethics and sparked legal investigations. The scandal revolves around three main points: Apple’s secretive slowing down of device performance, the damage caused by their lack of transparency, and the aftermath of public outrage that pushed Apple to offer discounted battery replacements and software updates. Despite these actions, doubts remained about whether Apple had done enough to repair its reputation. The core issue here is about trust and transparency. Even if Apple didn’t technically break any laws, their actions clearly clashed with basic principles of honesty and fairness. Batterygate serves as a wake-up call for the tech industry, reminding companies like Apple of the importance of being transparent, accountable, and putting consumers first. As one of the biggest players in the tech world, Apple’s response to Batterygate highlights the need for ethical leadership and a commitment to integrity. Moving forward, companies must learn from this scandal and prioritize ethics in their business practices, recognizing that consumer trust is not something to be taken lightly.

EDITH GUDIEL, JAYLENE GARCIA, CRAIG CONLAN, PEDRO GARCIA, ARIANNA DE LOS SANTOS DIAZ, RAVI GUPTA

Faculty Mentor: Dawn Adams-Harmon

“Business Ethics and Social Responsibility”

Dobbs v. Jackson Women’s Health Organization is an influential case in the United States that has stirred heated debate over reproductive rights and ethical issues. Jackson Women’s Health Organization, Mississippi’s only abortion clinic then, filed a lawsuit against Thomas E. Dobbs, state health officer with the Mississippi State Department of Health, in March 2018 contesting the Mississippi law banning abortion. The verdict in this case was on June 24, 2022, the U.S. The Supreme Court upheld Mississippi abortion law and made it clear that there is no constitutional right to abortion. The votes were 6-3 and with them also overruling Roe v. Wade. (Dobbs V. Jackson Women’s Health Organization | Constitution Center, n.d.) The goal of this research is to conduct an extensive investigation and analysis to identify the key unethical and immoral issues in the case. This will be accomplished by analyzing both parties’ claims in the case and determining whether they are consistent with legal norms, as well as by investigating the ethical implications of abortion, reproductive autonomy, and the more general social consequences of limiting access to reproductive healthcare services. The findings of this study will help to deepen our understanding of the legal and ethical components of Dobbs v. Jackson Women’s Health Organization

GLYNNIS TAN*Faculty Mentor: Shanggeun Rhee***“Relationship oriented HR practices and organizational social responsiveness as a long-term growth strategy: resource based perspective of HRM”**

Business organizations view meeting the expectations of the government, society, and local communities as essential to their long-term existence. These organizations have been impacted, either directly or indirectly, by movements including DEI, Black Lives Matter, LGBTQ rights, green management, ESG, CSR, community services, and economic development. This impact can be demonstrated by offering goods and services associated with these movements or addressing them to improve their reputation. The consensus is that businesses who answer these calls profit more often than those who don't. Top-down and bottom-up strategies are the two basic methods to address these problems. This study argues that an organized approach mandated exclusively by upper management is less durable than the organic, slow growth of organizational capabilities in addressing these problems. When HRM strategies stress developing relationships with corporate members, they can be essential in constructing this managerial competence. By pinpointing particular HRM procedures that promote a collaborative and relational environment within the company, we contend that when these methods are applied to employees, they will acquire qualities consistent with effectively meeting the needs of the broader society.

LEYI YANG*Faculty Mentor: Min-chung Han***“Chinese Consumers’ Attitude Towards the Installment Type of Buy Now, Pay Later (BNPL) Based on Gender”**

The Buy-now, pay-later (BNPL) market is rapidly growing worldwide, reaching \$119 billion globally in 2022 (Businesswire, 2023). In the United States, BNPL allows consumers to pay in four installments with no interest, typically with a 25% down payment and the remaining in two-week intervals (CFPB, 2022). In China, BNPL is referred to as short-term deferred payment that allows consumers to pay in one or a few installments (Bian et al., 2023). China has a \$102.3 billion BNPL market in 2022 (Businesswire), which includes a larger range of services, including the credit card type and the installment type of BNPL. The credit card type of BNPL appeared in 2015, provided by companies like Ant Check Later and JD White Bar, functions similarly to credit cards, with monthly billing cycles for repayments. Installment-based BNPL, represented by companies like Lexin Maya and Watermelon Pay, divides orders into equal installments for payment. This study will focus on the installment type of BNPL, use the term ‘BNPL’ henceforth. Gender differences exist in online shopping (Lin et al., 2018; Altaqqi & Shaouf, 2018; Rodger & Harris, 2003), like males are more likely to be influenced by perceived risk compared to females (Lin et al., 2018). Despite its growing popularity, little is known about the gender differences in BNPL adoption among Chinese consumers. Thus, this research aims to answer the following research question: is there a gender difference in Chinese consumers’ attitudes

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and their intention to adopt BNPL? Despite the statistics showing that China has a large BNPL market, the study for the BNPL in China is limited. This study aims to find out Chinese consumers' gender differences in adopting the installment type of BNPL, based on the technology acceptance model. This study has four purposes: to investigate whether there is a gender difference in (a) usefulness, (b) ease of use, (c) perceived risk, and (d) attitude when adopting BNPL. The study is constructed using the combination of a focus group interview and an online survey to measure the gender differences in attitudes toward BNPL. This research will contribute to assisting BNPL to know better about their consumers as well as raising gender awareness when doing business by investigating Chinese consumers' attitudes based on gender.

WENRUI LI, ZHU YUANYUMENG

Faculty Mentor: Weichun Zhu

“Factors Stimulating Chinese Gen Z’s Purchasing Intention of Luxury Brands”

Purpose –The objective of this research is to investigate the factors that impact Chinese Generation Z’s purchasing intention. We examine the effects of reference group factors, functional factors, endorsement factors, and self-identity factors on Chinese Generation Z’s purchase intention. The empirical investigation focuses on the marketing segment of Chinese Generation Z consumers. We used a structured questionnaire to collect the dataset comprising a total of 31 primary responses. We used the SPSS software to conduct the analyses to test the proposed model and relevant hypotheses. The study findings found that three key aspects, including reference group, functional factors, and self-identity value, play a significant role in fostering loyalty behavior toward luxury brands among Chinese Generation Z consumers. However, the endorsement attribute was not found to have a significant influence on luxury brand attachment of the Chinese Gen Z consumers. The research result is obtained from a student sample which may influence its generalizability. Future research may consider expanding the participant pool to include non-student samples.

CBPM | FINANCE**EMILY ALEXANDER***Faculty Mentor: Huaibing Yu***“AI In Finance & It’s Concerns”**

The topic I choose is to reflect on how AI is involved in Finance today but also the concerns it brings. AI is supposed to help ease human life but also can have some issues in its systems. I am going to do research on the top risks and concerns AI systems bring to our daily lives. AI has many benefits but it’s main issue is that it lacks what humans have. As we evolve, technology advances, we have to be aware of the changes and be open minded to using AI systems. It is great and can be beneficial to all of us but we need to make sure we are aware of what can happen and be cautious. Looking into Privacy concerns, Security risk, Robustness & more, we can analyze and be more aware of what we are dealing with and evolving with in our day to day lives.

EVELIN CABRERA-ACOSTA*Faculty Mentor: Huaibing Yu***“Apple vs Microsoft Risk Premium”**

Apple and Microsoft are two tech companies that have dominated the Technology sector. Apple has an average annual return of 25.46% and Microsoft has an average annual return of 59.32%. By using the capital asset pricing model to analyze the company’s risk premium. I will achieve this by using beta, the market risk premium, expected return and the risk free rate. This will provide investors with a more comprehensive understanding of the excess return they can obtain by taking on additional risk compared to risk-free investments. By incorporating beta investors will be able to measure the volatility of a stock or portfolio in relation to the market. The market risk is the systematic risk that investors will always have, by incorporating the market risk premium it will show the additional return investors could obtain. By using the capital asset pricing model I will analyze the risk premium if an investor was to invest in Apple and Microsoft. This will provide an analysis of which tech company Apple or Microsoft, has a more competitive risk premium.

BIN DAI*Faculty Mentor: Nazif Durmaz***“On the income inequality and stock returns: Canadian province level asymmetric study”**

The research is designed to analyze the effects of stock return on income inequality in Canada, using the data of Stocks Index and GINI coefficient through Linear ARDL and Nonlinear ARDL models. To exclude the impact of aggregation,

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authors didn't utilize the data of Canada at the national level. Instead, we collected and processed separate data from ten typical provinces. The result reveals that in five provinces, stock return can explain the income inequality in the short run under the linear ARDL model. And seven provinces displaying stock returns also have the long-term impact on income inequality under the linear model. With the evaluation of nonlinear ARDL models, the result shows that the impact of stock returns on income inequality is more remarkable in short-term and long-term. In seven provinces, positive stock returns exacerbate income inequality and negative stock returns ameliorate income inequality. Significantly, based on data of Canada, stock returns emerge asymmetric effect on income inequity.

YUYA HUANG, HUITING LIN

Chen Meng

“Privatization- Advantages and disadvantages”

Our project will examine the advantages and disadvantages of privatization. Privatization, different from nationalization, is the process of transferring ownership of a business, enterprise, or service from the public sector (government) to the private sector (individuals or privately owned companies). Privatization can also describe the transition of a company from publicly traded to privately held. Privatization is often aimed at improving efficiency, reducing government spending, promoting competition, and stimulating economic growth. However, it also has a disadvantage, which will seriously affect the public economy. Rising prices, exploitation of natural resources, and the potential lack of access to basic services for low-income groups are disadvantages of privatization. Thus, privatization has two sides, which is worth exploring. Therefore, in our case study, we will evaluate privatization in terms of its definition and performance, considering the differences between privatization and nationalization, the impact of privatization on society, and the potential pros and cons of privatization.

CIARA JEANNOT

Faculty Mentor: Yu, Huaibing

“The Profitability of Apple vs Dell”

Apple and Samsung devices are heavily used worldwide, influencing the advancement of technological devices in the industry. Though both are leaders in the technology businesses, profit analysis ratio factors such as products, operations, and plans/projects affect optimization. Profitability analysis is a part of resource planning and helps business leaders to identify ways to optimize profitability. This will be derived from Apple's and Dell's sales or operations revenues, balance sheet assets, liabilities, and equity to indicate how efficiently these companies generate profit. The margin and profitability ratios include gross, operating, and net profit. Comparing the two companies will clarify which aspects of the company should be modified compared to the other. These results will be displayed in both costing-based and accounting-based. With these two accounting displays, both company's recommendations are both clear and concise. This can

draw our conclusions on the company that is operating close to maximization and what recommendations to give each company based on the ratios to analyze profitability.

WEIYANG JIN

Faculty Mentor: Kakolyris, Andreas

“The value of Nike Inc”

This example examines optimal capital structure choice by simulating the weighted average cost of capital. We explore how levered beta affects Nike Inc's market value and its optimal capital structure. Nike Inc is one of the most prominent and globally recognized companies, having been publicly traded since its inception in 1969. Our model utilizes the synthetic rating method to investigate capital sensitivities of hypothetical alternative leverages by leveraging Bloomberg Terminal data. The literature findings suggest that changes in the value of beta due to different leverage levels or other risk factors may not significantly affect the cost of capital. We choose a US firm with a market capitalization exceeding five billion dollars, akin to other empirical studies in the literature. Capital structure and its impact on a firm's cost of capital and value remain subjects of extensive debate, given its implications for strategic restructuring decisions.

KANGHUI JIANG, LEI TU, CONGYI ZHANG, LINJIE LONG

Faculty Mentor: Kakolyris, Andreas Tin Shan Suen

“An investigation of the weighted cost of capital for large American restaurant chains”

The recent empirical findings serve as a crucial catalyst for our exploration, emphasizing the nuanced interplay between beta values and specific risk factors, which may have previously been overlooked in traditional analyses focusing solely on the cost of capital. Our research endeavors to bridge this gap by immersing ourselves in the intricate world of standard capital structure theories, assessing their applicability within the unique context of the restaurant industry. The inclusion of four prominent American restaurant chains, each a stalwart of the S&P 500 index, adds an extra layer of significance to our study, as it allows us to draw insights from companies deeply entrenched in the heart of the market. Our approach is characterized by rigorous scrutiny and meticulous attention to detail as we dissect the various components of capital structure theories and their implications for restaurant businesses. The poster not only presents the tangible outcomes of our investigation but also serves as a springboard for broader discussions within academic circles and practical applications within the industry. By illuminating the intricate dynamics between risk factors, beta values, and capital structure theories specific to the restaurant sector, our research offers a valuable contribution to the field of financial analysis and decision-making. It provides stakeholders with a deeper understanding of the factors driving financial performance and strategic decision-making within this dynamic and competitive market landscape.

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KANGHUI JIANG, YUQIAN WANG, JINGYING LI, ZEYUAN WANG

Faculty Mentor: Bo Wang

“TikTok’s success in the U.S.”

This research paper explores the extraordinary success of TikTok, a social media platform that has reshaped the app landscape in recent years. By conducting an in-depth analysis, we aim to unravel the underlying factors that propelled TikTok to the zenith of market dominance. The study employs a multi-faceted approach, combining insights from user behavior, content creation dynamics, algorithmic strategies, and cultural relevance. Through a comprehensive examination of TikTok’s unique features, engaging interface, and its algorithm-driven content recommendation system, we uncover the intricacies that have contributed to the app’s runaway success. Furthermore, the paper delves into the socio-cultural phenomena that have played a pivotal role in TikTok’s widespread adoption, emphasizing the platform’s ability to resonate with diverse global audiences. As we dissect the secrets behind TikTok’s meteoric rise, this research provides valuable insights for understanding the dynamics of contemporary app success and sheds light on the potential implications for the future of digital entertainment and social media.

NICHOLAS LALLA, ANTHONY CALUCCI , ALEXANDER XOLETL MEXICA, KENNETH PATRICK , SANTINO RAO

Faculty Mentor: Bo Wang

“America vs Inflation”

This project aims to explore the strategies employed by the Federal Reserve (the Fed) to manage inflationary pressures within the economy and elucidate the resultant challenges faced by corporations during periods of heightened inflation. Inflation, the sustained increase in the general price level of goods and services, poses significant economic risks and disrupts market dynamics. As the primary monetary authority in the United States, the Fed plays a crucial role in regulating inflation through various policy tools and interventions. The project begins by analyzing the mechanisms through which the Fed influences inflation, including its control over interest rates, open market operations, and regulatory policies. By adjusting the federal funds rate and engaging in quantitative easing or tightening measures, the Fed seeks to stabilize prices and maintain economic stability. Furthermore, the project investigates the historical context of inflationary episodes and evaluates the efficacy of the Fed’s responses in mitigating inflationary pressures. Moreover, the project delves into the repercussions of high inflation on corporations, elucidating the adverse effects on their operations, profitability, and strategic decision-making processes. High inflation erodes purchasing power, increases input costs, and disrupts supply chains, thereby diminishing corporate earnings and shareholder value. Additionally, inflationary uncertainty can hamper long-term investment planning, exacerbate financial volatility, and erode consumer confidence, further exacerbating challenges for corporations across various sectors. Through a comprehensive examination of empirical data, economic theories, and case studies, this project seeks to provide insights into the intricate relationship

between the Fed's inflation control measures and the challenges faced by corporations. By understanding the dynamics of inflation management and its implications for corporate entities, policymakers, economists, and business leaders can formulate informed strategies to navigate and mitigate the adverse effects of inflationary pressures on the economy.

HUITING LIN

Faculty Mentor: Huaibing Yu

"The impact of COVID-19 on Walmart's profitability"

The COVID-19 pandemic has had a huge impact on the world economy, bringing both challenges and opportunities. In this context, Walmart as one of the world's largest retailers, is a key case study. The COVID-19 pandemic has affected Walmart in many ways. The pandemic has prompted a shift in consumer behavior, with lockdowns and social distancing measures forcing consumers to change their shopping habits. Consumer demand for cleaning supplies and personal protective equipment such as masks has surged. At the same time, COVID-19 has prompted Walmart to beef up its e-commerce capabilities, strengthen in-store security measures, and optimize its supply chain (because COVID-19 caused disruptions to global supply chains, leading to challenges in sourcing products and increased transportation costs). That's why the coronavirus pandemic will have an impact on Walmart's profitability. Therefore, this paper will study the impact of COVID-19 on Walmart's profitability by analyzing four values: revenue, profit margin, return on assets (ROA), and return on equity (ROE).

XIAONAN LIU, YUYA HUANG, YIYUN MIAO, JIAJUN LIU

Faculty Mentor: Andreas Kakolyris, Tin Shan Suen

"A capital structure analysis of the best 2023 companies"

Capital structure refers to the mix of a company's different sources of financing and the proportion of each in its overall capitalization. And the cost of capital is the total cost a company incurs in order to acquire funds for its operations. This research project delves into a comprehensive exploration of the intricate relationship between capital structure and the impact of beta on the cost of capital, with a particular focus on the top-performing stocks of 2023. By closely scrutinizing the capital structures of industry leaders such as Abercrombie Fitch, Vertiv, SuperMicro, and Duolingo, our objective is to discern the existence of an optimal capital structure that effectively augments overall firm value. The investigation employs a rigorous analytical approach to determine whether specific capital structures wield a significant influence on the cost of capital, thereby exerting a discernible impact on overall firm performance. Through a thorough examination of empirical data and statistical methodologies, we seek to unveil the nuanced dynamics and causal relationships between capital structure, beta, and firm valuation. The findings of this study will be presented in a comprehensive poster.

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JIAJUN LIU, LINJIE LONG

Faculty Mentor: Bo Wang

“Multinational Firms and Geopolitical Risks”

Research on “Multinational Firms and Geopolitical Risks” investigates how geopolitical factors impact multinational corporations’ operations and strategic decisions. It explores risks such as political instability, trade tensions, and security threats, analyzing their effects on cross-border business activities, investments, and market access. This research examines how multinational firms assess, address, and manage geopolitical risks, often through strategies tailored to specific regions or countries. It may include case studies illustrating how companies navigate geopolitical complexities, considering historical contexts and contemporary challenges. Additionally, the research assesses the role of international institutions and agreements in mitigating geopolitical risks for corporations. It also explores the intersection of geopolitical risks with other factors like economic conditions, technological advancements, and regulatory environments, shaping corporate governance structures, supply chains, and expansion strategies. Understanding these dynamics is crucial for multinational firms to adapt to evolving geopolitical landscapes and safeguard their interests globally. Research may further explore variations in geopolitical risks across regions and countries, as well as the strategies and measures adopted by multinational corporations in response to geopolitical turmoil.

TINGTAO LU

Faculty Mentor: jianing zhang

“The impact of social donation on firm innovation in China”

This study investigates the impact of social donations on firm innovation in China, motivated by the evolving landscape of corporate social responsibility and its potential influence on corporate competitiveness. Analyzing data from 4501 Chinese A-share listed companies from 2009 to 2022, the research employs an ordinary least squares (OLS) regression model to explore the relationship between social donations and innovation metrics, specifically patent applications and grants. The findings reveal a significant positive correlation between the extent of social donations and an increase in patent applications, indicating that companies engaged in regular charitable activities are more likely to enhance their innovation capabilities. Notably, the study uncovers a threshold effect; excessive social donations could potentially divert resources from research and development, thus negatively impacting innovation. These conclusions remained consistent and robust even before the COVID-19 pandemic and during the COVID-19 pandemic. Furthermore, the study explores how different industry sectors and ownership structures impact this relationship, adding a layer of specificity to the findings. This research contributes significantly to the literature by establishing a clear link between social donations and corporate innovation within the Chinese context, considering endogeneity factors, offering valuable insights for investors and policymakers in understanding the strategic importance of corporate social responsibility in fostering innovation. By highlighting the nuanced implications of social donations, the study aids in formulating informed decisions and policies that balance social responsibility with corporate innovation.

HAOKAI MA

Faculty Mentor: Huaibing Yu

“Discussion on the factors affecting the exchange rate between China and the United States”

My research topic discusses the factors influencing the exchange rate between China and the United States. In the context of globalization, China and the US, as the world’s largest economies, experience currency fluctuations that not only impact bilateral trade and investment but also have profound effects on the global economy. This study aims to analyze and discuss the main factors affecting the exchange rate movements between these two nations, including but not limited to economic policies, interest rate differentials, trade balances, political stability, and the demand and supply conditions in the international market. Through quantitative and qualitative research methods, this paper seeks to uncover how these factors independently and interactively influence the exchange rate dynamics. The findings aim to provide insights for policymakers, investors, and researchers interested in the complexities of currency exchange and its broader economic implications.

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HAOKAI MA

Faculty Mentor: Andreas Kakolyris

“Analyze zara Investments Inc”

ZARA Investments Inc is a research project undertaken as part of my university coursework. As a college student with a passion for finance and investment, I embarked on this journey to explore various aspects of the financial industry and gain practical experience in conducting research. The project focuses on analyzing investment strategies, market trends, and financial instruments to develop insights into effective portfolio management and wealth accumulation. Through rigorous data analysis and critical evaluation of academic literature and industry reports, I aim to deepen my understanding of investment principles and enhance my analytical skills. Additionally, this research project serves as an opportunity to apply theoretical knowledge acquired in the classroom to real-world scenarios, fostering a holistic learning experience. By delving into topics such as risk management, asset allocation, and financial modeling, I aspire to contribute to the body of knowledge in finance and position myself for future career opportunities in the field.

STUDENT POSTER ABSTRACT

CARLIANIZ MARTINEZ

Faculty Advisor: Huaibing Yu

“Financial Performance of Target Corporation”

This research project explores the growth methods and financial performance of Target Corporation, one of the top retail chains in the US. Target Corporation is a well-known retailer with a strong brand presence and a wide range of products to choose from. Target Corporation's competitive position, market trends, and strategic direction may all be understood by examining its financial performance and growth initiatives. I will offer insights into Target's competitive position and future prospects by a thorough review of financial data, strategic efforts, and market trends. Furthermore, Target's profitability, operational effectiveness, and sales growth over the last few years will be included, highlighting important trends and performance factors. I will be looking into Target's supply chain optimization programs, brand positioning tactics, and strategies to evaluate their effects on consumer engagement, sales growth, and operational success. This research provides important insights for stakeholders, management teams, and investors interested in comprehending Target Corporation's business dynamics and strategy orientation by fusing financial analysis with strategic evaluation.

CYPRAIN MGBAKO

Faculty Mentor: Andreas Kakolyris

“Google Inc.: An illustration of the Cost of Capital Sensitivities”

This example examines optimal capital structure choice by simulating the weighted average cost of capital. We explore how levered beta affects the Alphabet company's market value and its optimal capital structure. Google or its parent company Alphabet is the third largest tech company. It started being publicly traded in 2004. My model will utilize the synthetic rating method to investigate capital sensitivities of hypothetical alternative leverages by using Bloomberg Terminal data. The literature findings indicate that changes in the value of beta due to different leverage levels or other risk factors do not significantly affect the cost of capital. I will use a US firm with a market capitalization of over five billion dollars, similar to other empirical papers in the literature. Capital structure and its impact on a firm's cost of capital and value is widely debated since it is related to the strategic decision of restructuring.

KENNETH PATRICK, BAZIL NADEEM, HONGEI LI, MICHAEL KEATING, MICHAEL RUIZ

Faculty Mentor: Ipek Kocoglu

“Microsoft's Transformation Through Leadership”

The purpose of this research project is to explore and analyze the leadership style of Satya Nadella, the executive chairman and CEO of Microsoft. While Microsoft was already one of the biggest tech companies in the world before his rising to CEO, Microsoft has seen some changes throughout his leadership. As

a result, the company grew exponentially. Nadella's leadership style is primarily based on a growth mindset and innovation. This mindset allows Microsoft to embrace learning and thinking outside the box. Additionally, Nadella focuses on clear and concise communication with all of his employees. All of these factors and more have led to Nadella's success as a CEO, as well as Microsoft's everlasting success. Aside from analyzing Nadella's leadership style, we will also explain why his leadership style works so well. We will also compare Nadella's leadership style to Steve Ballmer's, the previous CEO of Microsoft, to identify major differences that may have impacted Microsoft.

ARISDELZY REYES

Faculty Mentor: Huaibing Yu

"E-Commerce Value on the Economy"

E-commerce has developed over the years as we have become more technology driven. In this research, I will go over how e-commerce is used in international trade to add new opportunities for business in order to maximize profits. Next, it has become efficient in reducing costs that are the usual operations for companies. Therefore, e-commerce has been able to assist in the overall management to effectively allocate resources and close the gap versus other competitors. Not only that, but this form has increased opportunities for promoting larger groups, reaching customers that will continue to consume. Companies that have not grown in this aspect have resulted in the closure of their business. Nonetheless, if not utilized how will this impact the economy and the results of those businesses. E-commerce is developing as more individuals try this platform to be able to exceed their results overall in this digital economy.

CESAR ROSARIO

Faculty Mentor: Nazif Durmaz

"Dom. Rep. Tobacco industry ('67-'23)"

The tobacco trade industry in the Dominican Republic has been a significant part of the country's economy since the early 20th century. The industry has experienced growth over the years, with both domestic consumption and exportation playing crucial roles. The Dominican Republic is one of the largest exporters of premium cigars in the world. Cigars produced in the country are known for their high quality and are highly sought after by cigar enthusiasts worldwide. The export of cigars has been a major source of revenue for the country, contributing significantly to its economy. The modern tobacco industry began to take shape in 1967 with the establishment of various tobacco farms and cigar factories till present day. Overall, the tobacco trade industry in the Dominican Republic has been a vital part of the country's economy for decades, providing employment opportunities and contributing to its global reputation for high-quality cigars that people enjoy an bond over.

STUDENT POSTER ABSTRACT

MICHAEL MOUSA

Faculty Mentor: Huaibing Yu

“Financial implications of demographic shifts in developed economies”

The financial implications of demographic shifts in developed economies are significant and can have far-reaching effects on various aspects of the economy. As developed economies experience changes in their population structure, such as an aging population or declining birth rates, several key areas are affected. First, the labor market is impacted. With an aging population, there is a shrinking workforce, which can lead to labor shortages and skills gaps. This can result in increased labor costs and a decline in productivity, putting pressure on businesses and the overall economy. Secondly, the healthcare system faces challenges. As the population ages, there is a higher demand for healthcare services and an increased burden on healthcare infrastructure. This can lead to rising healthcare costs and strains on public healthcare systems, requiring governments to allocate more resources to meet the healthcare needs of an aging population. consumer spending patterns change. As the population ages, there is a shift in consumer preferences and spending habits. Older individuals tend to spend less on discretionary items and more on healthcare, housing, and other essential needs. This can impact industries such as retail, entertainment, and travel, requiring businesses to adapt their strategies to cater to the changing demographic. Lastly, economic growth potential may be affected. Demographic shifts can influence productivity, innovation, and entrepreneurship. A decline in population growth and a shrinking workforce can dampen economic growth prospects, requiring policymakers to implement strategies to encourage innovation, attract skilled migrants, and support entrepreneurship to sustain economic vitality.

JAMES SCHUMANN

Faculty Mentor: Nazif Durmaz

“Exchange rates influence on imports and exports of corn and wheat commodities”

As international trade persists, exchange rates continually fluctuate from nation to nation; for exports and imports, these rates can become detrimental for business transactions involving certain goods. Exchange rates for wheat product imports can influence a nation's productive capacity for wheat-related goods; with increased exchange rates, a nation would be less inclined to import wheat products as they would be considerably more costly. For corn exporting, exchange rates may be encouraging as certain nations maintain a comparative advantage in producing corn, which allows them to export more corn at a lower cost to other countries. As countries engage in international trade, the fluctuation of exchange rates in both importing wheat products and exporting corn can reflect the world economy's growing development for international markets. Over the given period, the exchange rates' fluctuations show how the world's economy has maintained international relations throughout wheat product imports and corn exports. Throughout international dealings, exchange rates can offer a better understanding of how nations interact and relate over business transactions; wheat product imports and corn exports can display the world

economy's overall wealth in relation to exchange rates. By utilizing wheat product imports and corn exports, this project works to detail the world economy's overall expansion and growth toward a more globalized economy.

CHANGXIN SHI, JIAYI ZHANG, CHENYIFAN JIANG

Faculty Mentor: Benito Sanchez, Imran Yousaf

"The Peer-to-Peer Lending Borrowing Vs. Intermediary Bank Based Lending Borrowing"

Lending and borrowing are widespread in our lives, and there are two major forms depending on whether the transaction is direct from the lender to the borrower: "Peer-to-peer (P2P) lending borrowing" and "Intermediary bank-based lending borrowing." This paper analyzes the advantages of peer-to-peer and bank-based lending and compares the three most essential parts to lenders and borrowers. The lending and borrowing from the bank-based system began thousands of years ago as currency had occurred (Beattie, 2023) (Labate, 2016), and the first bank in the United States was "The Federal Reserve Bank of Philadelphia " started in 1791 (Hill, 2015). If we focus on establishing and developing official institutions, bank-based lending has developed way longer than peer-to-peer lending. Peer-to-peer borrowing is a newly born service in the 21st century and is one of the biggest rivals against bank borrowing (Kagan, 2020). Many factors make it survive among severe competition and grow as big as it is today. P2P borrowing is a very convenient way of making loans with huge accessibility. Moreover, P2P lending platforms often foster a positive bond among borrowers and lenders. No-middleman trading offers more personal interactions, creating a social connection between both parties, especially those seeking social and environmental goals. However, regarding the safety and reliability of P2P borrowing and lending, many people may be concerned about the default risk due to a lack of lawful regulation and supervision. Bank-based lending has been around for thousands of years and has gained a reputation for trust and stability. Several bank characteristics can explain why a bank is an established institution with credibility and trustworthiness, for example, regulatory oversight, risk assessment and due diligence, and disclosure of loan information. Furthermore, Bank-based lending provides loans with a more significant amount, a wide range of financial products, personalized services, and repayment options. Since P2P lending is riskier than bank-based lending, we suggest that lenders disclose loan information and develop a well-developed risk assessment system. Furthermore, we recommend using bank lending for borrowers who need vast amounts of money, but if the borrower lacks time, we recommend peer-to-peer borrowing. It has become a much more convenient, flexible method of lending and borrowing with excellent growth potential, which we believe will continue to develop better in the future.

STUDENT POSTER ABSTRACT

FEIER SUN, CAIYE ZHANG, JIAXIN ZHENG, PINGYU ZHOU, RUOXIN WANG

Faculty Mentor: Chen Meng

“Impact of COVID-19 on the GDP of the United States”

This article explores the impact of COVID-19 on U.S. GDP. We collected U.S. GDP data from 2015 to 2022 and analyzed it in terms of income, investment, government spending, and net exports. As the COVID-19 pandemic rages around the world, thousands of businesses have been forced to close and millions of Americans have lost their jobs. As a result, GDP plummeted in the second quarter of 2020 and the economy came to a standstill. At the same time, the government has adopted a series of economic stimulus measures to alleviate the impact of the epidemic on the economy. However, these measures also created fiscal deficit and debt problems. This study quantifies the actual impact of the epidemic on U.S. GDP through data analysis and model evaluation, and explores the prospects for future economic recovery. This study provides a comprehensive analysis for understanding the impact of COVID-19 on the U.S. economy.

FEIER SUN

Faculty Mentor: Nazif Durmaz

Economic Policy Uncertainty and Housing Prices: Evidence from Asia Pacific countries.

Economic uncertainty refers to a situation where the future economic environment is difficult to predict and there are high risks or unknown factors. It affects governments, firms, and households to make different economic decisions. Economic Policy Uncertainty (EPU) index based on the frequency of newspaper coverage. The index indicates its effectiveness in capturing movements in policy-related economic uncertainty. This article employs quarterly data from 1990 to 2022 to examine household income, interest rates, and economic policy uncertainty (EPU) on housing prices in New Zealand, South Korea, Japan, Australia, China, and Singapore. The empirical study is conducted through the Autoregressive Distributed Lag (ARDL) bounds cointegration test. The results further show that economic policy uncertainty has both long-term and short-term positive effects on house prices, but in New Zealand, economic policy uncertainty harms house prices, and in Australia, economic policy uncertainty has a short-term negative impact on house prices. These results provide strong evidence for the critical role of economic policy uncertainty in shaping real estate markets in Asia Pacific.

GARRETT TERLIZZI

Faculty Mentor: Andreas Kakolyris

“Financial Analysis of Global Self Storage (SELF)”

This project intends to analyze the publicly traded firm Global Self Storage (SELF). The goal of this research project is to analyze SELF's historical performance

and compare it competitors in the industry. By using SELF's most recently disclosed financial statements and information available on the Bloomberg trading terminal this project will also determine SELF's effective tax rate, financial leverage and other key financial ratios. These ratios include: beta, debt, shares outstanding, market capitalization, FCF and times interest earned. These ratios will be important for an in-depth analysis of the entire firm. This historical analysis will be indicative of SELF's expected future performance. Global Self Storage is a small market cap firm located in Millbrook, NY. SELF currently trades below its IPO that occurred 27 years ago in 1997. Analyzing these ratios will explain the stock's abnormally low price and generous dividend yield. The results of this project will yield a buy/ sell recommendation and help viewers determine if they want to invest in SELF.

LEI TU, WEIYANG JIN, XINGYU CHEN, CHENWEN HAO, XIAOCHANG DONG

Faculty Mentor: Bo Wang

“Boeing vs. Airbus: who is the winner of the future?”

This project provides a nuanced comparative analysis of the aviation giants Boeing and Airbus, focusing on their strategic operations, technological advancements, and market presence. By dissecting their strengths and weaknesses, we aim to offer a clear view of their competitive landscape. We delve into their extensive product lines, from commercial aircraft to defense and space technology, assessing how innovation and challenges have shaped their market standings and are likely to influence their future directions. Furthermore, the analysis covers their financial performance, examining revenue trends, profitability, and investment in research and development to gauge their economic health and capacity for sustained growth. We also evaluate the impact of external factors such as global economic conditions, environmental regulations, and technological disruptions on their business strategies. This includes a look at the evolving demands of air travel, such as increased fuel efficiency, reduced emissions, and enhanced passenger experiences, which are critical to both companies' adaptation and growth strategies. Our comprehensive review aims to equip investors and industry stakeholders with deep insights into Boeing and Airbus's operations, guiding informed investment decisions, ensuring a well-rounded perspective on its future potential.

ZEYUAN WANG

Faculty Mentor: Abootaleb Shirvani

“The Chinese Real Estate Market: An Analysis of Investment Opportunities”

The Chinese real estate market presents a complex and dynamic landscape for investors, offering both significant potential and inherent risks. This research project delves into this landscape, focusing on identifying optimal investment strategies within the sector through a comprehensive analysis of 25 leading Chinese real estate companies. Spanning ten years, the study utilizes daily stock

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data to conduct a detailed examination of individual company performance and explore their relationship with key market indices. These companies represent a diverse range of market segments, including developers, property management firms, and construction materials companies. The analysis will leverage the R programming language, employing various techniques like time series analysis and regression models to assess individual company performance, risk profiles, and their correlations within the market. For comprehensive comparison and context, the project will compare the performance of the chosen companies against two key market indices: the Shanghai Stock Exchange Composite Index (SSE Composite) and the CSI 300 Index. By analyzing both individual and comparative performance metrics, the research aims to identify companies demonstrating consistent growth, strong financial health, and potential for superior risk-adjusted returns. This includes exploring potential benefits of diversification across different segments and identifying companies that offer a favorable combination of growth potential and manageable risk. The analysis will consider factors like historical performance volatility, price-to-earnings ratios (P/E ratios), and dividend yields to create a comprehensive picture of each company's investment attractiveness. Understanding the dynamics of the Chinese real estate market holds significant value for both domestic and international investors. This research, by focusing on a ten-year analysis of 25 diverse companies, offers valuable insights into the performance landscape and potential investment opportunities within this sector. The project aims to contribute to informed decision-making by providing a detailed and nuanced perspective on risk-adjusted returns, diversification strategies, and the overall investment potential of the Chinese real estate market.

SEM TEWELDE

Faculty Mentor: Nazif Durmaz

“Merchandise Imports in the US”

Merchandise imports in the United States have seen steady growth as well as fluctuations due to possible trade patterns and economics cycles including expansion and recession as the following dataset is available from 1980 to 2021. The sharp rise in manufacturing imports, which jumped from 124,231 million US dollars in 1980 to 2,256,308 million US dollars by 2021. This growth, which has increased by more than 18 times, shows how manufacturing is becoming more globally integrated and how nations are depending more and more on imports for both production and consumption. More importantly, from 31,161.93 to 61,829.85 USD, the GDP per capita, which is a key indicator of productivity and economic health, nearly doubled. This significant rise reflects improving living standards, increased economic productivity, and improved citizen quality of life. Exports, however, saw some fluctuations in price starting from 96.31M in 1980 going all the way up to 114.85M in 2001 and then staying at 105M in 2021.

RUOJING WU*Faculty Mentor: Kristen Hartman***“Model Minority Myth - A False Narrative Damaging for Asian Americans and American Values”**

The concept of the “model minority” has long been associated with Asian Americans, a narrative that appears complimentary but is fundamentally flawed and damaging. It suggests that Asian Americans, as a group, achieve a higher degree of socioeconomic success than the population average, which not only homogenizes the diverse experiences within this community but also places undue pressure on them to conform to certain stereotypes. This project explores the model minority myth’s multifaceted impact on Asian Americans and American societal values, especially the core ideals of individualism and self-determination. The stereotype paints Asian Americans as a monolithic group, excelling in academic and economic spheres and often being obedient and law-abiding. While these attributes may seem positive, they mask the unique challenges and inequities faced by subgroups within this community, such as Southeast Asian refugee populations. Moreover, the narrative undermines the struggles against systemic racism experienced by other minorities, suggesting that their lack of similar “success” is due to personal failings rather than structural barriers. This study also examines how the model minority myth affects inter-racial dynamics, particularly between Asian and African Americans, by downplaying the role of racism and promoting divisive comparisons. It critiques the false portrayal of inherent racial differences and calls for a more nuanced understanding of the socioeconomic landscape shaped in part by immigration policies. Furthermore, the project addresses how the narrative reinforces racial hierarchies, contributing to systemic racism and limiting the true potential of individuals by restricting them to stereotypical roles. This is particularly evident in the professional sphere, where Asian Americans may be overrepresented in technical roles but underrepresented in leadership positions. To counter these effects, the project advocates for deconstructing the model minority myth, recognizing the heterogeneity within the Asian American community, and addressing the disparities that persist. It highlights the importance of creating new narratives that authentically represent Asian American experiences, as seen in works like Gene Luen Yang’s “American Born Chinese” and the film “Everything Everywhere All at Once.” These narratives reflect a commitment to the American principles of opportunity and fairness and are crucial for an inclusive society that values the unique contributions of all its members.

LIJIE YU*Faculty Mentor: Bo Wang***“Analysis of the U.S.’s Electric Vehicle Industry”**

In recent years, the electric vehicle industry in the United States has been undergoing rapid transformation, characterized by rapid growth in quantity and acceptance by a larger consumer group. With the total number of electric vehicles in the United States exceeding 2 million, the electric vehicle market is in a critical period of development. The project aims to study the current situation of the electric vehicle industry in the United States, identify the main factors driving its

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expansion, and finally explore future trends and challenges. This study will adopt a multidimensional approach to analyze factors such as technological progress, government subsidies, consumer behavior, and infrastructure development. Additionally, we will also evaluate market trends, such as the rise of brands, the reactions of traditional car manufacturers, and the constantly changing preferences of consumers towards electric vehicles. Through a comprehensive analysis of the electric vehicle industry in the United States, the project aims to provide valuable insights into the future of electric vehicles. We explore future obstacles such as supply chain issues, raw material shortages, and the need for continued innovation and policy support. The results of this study will contribute to a deeper understanding of the dynamics shaping the U.S. electric vehicle industry and highlight the path forward for the transition to a more sustainable transportation ecosystem.

MUXUAN ZHANG

Faculty Mentor: Nazif Durmaz

“Energy consumption, economic uncertainty, and CO2 emission in Asia Pacific region”

This article employs yearly data from 1985 to 2022 to examine carbon dioxide emissions (CO₂), real GDP (Y), GDP per capita (Y₂), energy use (EU), and economic policy uncertainty (EPU) in Australia, China, Japan, South Korea, New Zealand, and Singapore. The autoregressive distributed lag model (ARDL) constraint test assesses the adequacy of both short-term and long-term fitness. The findings indicate a positive correlation between the EU and carbon dioxide (CO₂) emissions in Australia, China, South Korea, and Japan during a limited time period. Nevertheless, it is worth noting that only Japan and New Zealand exhibit a positive link between energy consumption and carbon dioxide emissions over an extended period of time. The link between GDP and GDP per capita and CO₂ emissions varies across various nations. In New Zealand, there is a clear and direct link between economic policy uncertainty (EPU) and carbon dioxide (CO₂) emissions. This means that when there is a rise in economic policy uncertainty, there is also a corresponding increase in emissions, both in the short and long term. Hence, it is imperative for governments to contemplate measures aimed at regulating carbon dioxide emissions.

JIA XIN ZHENG, PINGYU ZHOU

Faculty Mentor: Nazif Durmaz

“Stock returns and income inequality in emerging markets”

Income inequality has always been a global problem, especially in emerging economies, where differences in wealth distribution often pose significant socioeconomic challenges. This article focuses on emerging economies, specifically the BRICS (Brazil, Russia, India, China, and South Africa) and MIKTA countries (Mexico, Indonesia, South Korea, Turkey, and Australia). It explores the interaction between stock returns and income inequality. Relation. Known for

their large populations, expanding economies, and growing prominence in global affairs, the BRICS countries are key players in the emerging market landscape. Likewise, MIKTA countries have made significant contributions to global economic growth and development due to their diverse economic structures and strategic geographical locations. By working together, both BRICS and MIKTA, two emerging global organizations, are exerting power beyond their individual influence. This paper utilizes data from 1965 to 2020 to examine stock returns and income inequality in BRICS and MIKTA. Our results reveal that changes in income levels combined with stock market fluctuations have effects on income inequality in emerging markets.

PINGYU ZHOU, FEIER SUN, JIAXIN ZHENG

Faculty Mentor: Andreas Kakolyris, Tin Shan Suen

“Entertainment Industry: Unraveling Capital Structure Strategies”

In the dynamic space of the film and entertainment industry, understanding the complexities of capital structure is critical to strategic decision-making. Capital structure, including debt and equity ratios, profoundly affects a business's financial health, cost of capital, and overall value. However, the precise impact of capital restructuring on these indicators remains a subject of extensive discussion and scrutiny in the finance literature. Our study investigates the sensitivities of the capital structure for all the companies in the Movies & Entertainment industry in the Standard and Poor's 500. These companies are Live Nation Entertainment, Netflix, Paramount Global, and Walt Disney. Capital structure and its impact on a firm's cost of capital and value are widely debated since they are related to the strategic decision of restructuring. The literature findings indicate that changes in the value of beta due to different leverage levels or other risk factors do not significantly affect the cost of capital. Our findings are presented and analyzed in this poster

WEIKAI ZHOU

Faculty Mentor: Huaibing Yu

“The impact of exchange rate fluctuations on international trade and investment”

The project examines the critical role of exchange rate fluctuations in international trade and investment, highlighting the mechanisms by which changes in currency valuations affect cross-border economic activity. Exchange rates play a key role in determining the cost competitiveness of goods and services on global markets, affecting import and export volumes, trade balances and the overall economic performance of countries. Exchange rate fluctuations can have both positive and negative effects on trade, depending on the structure of a country's economy, the elasticity of demand for its imports and exports, and the degree of currency transmission to trade prices. On the investment side, exchange rate movements significantly affect foreign direct investment (FDI) decisions and portfolio investment flows. As investors seek to maximize returns and minimize risks, currency volatility presents both opportunities and challenges. This project explores how investors adjust their strategies in

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response to exchange rate expectations and the impact of these adjustments on global capital flows and economic stability.

CYPRAIN MGBAKO

Faculty Mentor: Huaibing Yu

“Profitability Analysis and future of Tesla and Li Auto”

This project aims to analyze the financial performance and market position of Tesla Inc. and Li Auto Inc., two leading companies in the electric vehicle (EV) sector. Through a comparative analysis of key financial metrics such as gross profit margins, operating profit, ROE, ROA, and net profit margins, as well as a discussion of market trends and competitive dynamics, this study seeks to evaluate the growth prospects and potential returns of both companies. Additionally, it will assess risk factors, future outlook, and the environmental and social impact of their EV offerings. The findings of this analysis will provide valuable insights for investors interested in the EV sector, helping them make informed decisions about investing in Tesla Inc., Li Auto Inc., and the broader automotive industry. With this research I hope to learn something new that may give more insight to investors looking to diversify their portfolio in the future with one of these companies.

CBPM | MARKETING

KEVIN GARCIA CASTRO

Faculty Mentor: Nazif Durmaz

“US corn imports from Canada”

This study examines the trends and dynamics of corn importation into the United States from Canada spanning the years 1967 to 2022. Utilizing data sourced from the United States Department of Agriculture’s Global Agricultural Trade System (GATS), the research analyzes the volume, value, and patterns of corn imports over the specified timeframe. The study employs quantitative analysis techniques to discern factors influencing importation, including agricultural policies, market demand, and production fluctuations. By scrutinizing historical trade data, this research aims to provide insights into the bilateral corn trade relationship between the United States and Canada, shedding light on its evolution, challenges, and opportunities over the past five decades. The findings contribute to a deeper understanding of transnational agricultural trade dynamics and inform policymakers, researchers, and stakeholders involved in the North American corn market. The coefficient b measures the effect of X on Y (interpreted differently depending on the context, e.g., as elasticity). Based on this data, we can perform regression analysis to understand the relationship between the years and the cost of imports. Let’s assume that the years are our independent variable (X) and the cost of imports in millions is our dependent variable (Y).

RACHEL HENNESSEY

Faculty Mentor: Kihwan Kim

“Comparing Consumer-Oriented & Product-Oriented Marketing Effectiveness”

This study will determine which strategy consumers favor and identify if there are any correlations with age. Consumer-oriented and product-oriented marketing strategies are two vastly different approaches that companies utilize. Consumer-oriented marketing focuses on appealing to the customer’s wants and needs and prioritizing customer satisfaction and experience. A product-oriented business focuses on creating a great product and emphasizes innovation over customer service. Several studies have been conducted on the individual effectiveness of each strategy. Our hypothesis states that age will have a direct impact on the marketing style consumers will gravitate towards. Age is one of the variables in this study due to the shift from product-oriented to consumer-oriented marketing that has occurred throughout the past few decades as a result of technological advancements. During this study, forty participants answered a survey that included questions that would determine which marketing strategy is more effective. Each participant also included what generation they belonged to to determine whether or not older generations lean more towards product-oriented marketing while younger generations are prone to favor consumer-oriented marketing styles. The information used in this study supports the hypothesis that older generations (Baby Boomers and Generation X) lean towards product-oriented strategies while younger consumers (Millennials and Generation Z) favor consumer-oriented products. This paper will further discuss the correlation between age and technology.

HONGYUAN HAN

Faculty Mentor: Valerie Vaccaro

“An Analysis of Marketing, Consumer, and Technology Trends in the Video Game Industry”

This study utilized a multifaceted research approach to distill key insights on marketing strategies, consumer behavior, and technological trends in the video game industry. The video game industry is forecast to see significant growth as part of digital entertainment (Turner, 2024). The number of gamers worldwide is expected to increase from 1.31 billion in 2024 to 1.47 billion in 2027 (Turner, 2024; Statista, 2024). Asia Pacific is the largest region representing 46% of global revenue. North America is the biggest subregion and is expected to generate revenue of USD 73.73 billion in 2024 and to grow to 80.9 billion by 2025. Global marketing campaigns emphasize community and cross-platform engagement (Insider, 2024). Video games are being used in marketing through cross-promotions, social media campaigns, influencer partnerships and community events (Insider, 2024). This study identified the following marketing, consumer, and technology trends. In 2024, mobile gaming industry revenues are expected to rise by 10% (Bilas, 2024) driven by the widespread use of smartphones and high-quality mobile games (Porokh, 2023). Similar to TV and music, the gaming industry subscription model is becoming popular with exclusive content (Bilas,

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2024; Morris, 2023). Increasingly, eSports are becoming more popular around the world, with huge viewership and lucrative prize pools (Porokh, 2023), along with brand sponsorship and advertising opportunities (Marr, 2023). The use of artificial Intelligence (AI) in game development supports personalized marketing strategies to enhance player engagement through dynamic and customized content which improves the user experience (Bilas, 2024; McEvoy, 2023, Marr, 2023; Morris, 2023; Packwood, 2023). As gaming experiences become more connected, marketing strategies need to adapt to multiple platforms, including cross-platform gameplay and integration of augmented reality/virtual reality (AR/VR) technologies (Bilas, 2024). AR and VR are being explored to create immersive ads that smoothly integrate with immersive gaming experiences to increase user engagement and ad effectiveness (Insider, 2024; Ricera, 2023). Companies should invest in AI and user-generated content to develop smarter game design and personalized experiences. Firms can leverage event marketing and ongoing content updates to drive higher revenue and player retention. Also, companies need to develop video games that work seamlessly across devices and platforms for loyalty and expand their participation in subscription services and cloud gaming.

CAROLINA CABALLERO-MAYORAL

Faculty Mentor: Huaibing Yu

“Profitability Analysis: Costco Wholesale vs. BJ’s Wholesale Club”

Profitability analysis is an analytical process that seeks to reveal information about various revenue streams of the organization. This project will analyze the profitability of two major competitors: Costco Wholesale vs. BJ’s Wholesale Club. Costco Wholesale and BJ’s Wholesale Clubs are two wholesale clubs that focus on selling different types of products in bulk and services to their membership members only. The selected financial data that will be used to analyze the profitability ratios are net sales, gross profit, net income, operating income, shareholder’s equity, and total assets. By comparing the profitability ratio of Costco Wholesale and BJ’s Wholesale Club from 2019 to 2023, we can conclude how efficiently both wholesale stores can generate profit and value for their shareholders. To add more, by using data from a specific time point, we can see the business’s ability to generate earnings. In conclusion, profitability analysis is an essential part that helps businesses analyze various ways to optimize and enhance profitability.

KARINA ALMEIDA, BELLE BURNS, LIRIANNI ADAMES, NADIA ABDALLA, SUNDAY ADEYEMI

Faculty Mentor: Dawn Adams-Harmon

“Tomasella v. Nestlé USA, Inc.”

This case was a United States Court of Appeals for the First Circuit. In 2018, Danell Tomasella, and on behalf of others in a lawsuit against Nestle, pursued legal action against Nestle for not disclosing on their packaging the worst kinds of child labor happening in their cocoa supply chains. Tomasella felt that it deceived consumers into supporting this child labor. They felt their role in this child

labor broke human rights laws such as ILO Convention No. 182 and the United Nations' 1948 Universal Declaration on Human Rights. There have been unfair trade practices and state regulations that should have been regulated. There was a considerable focus on Child labor in agriculture, armed conflict, domestic work, child trafficking, slave labor, forced labor, etc, throughout this case. There was a violation of Chapter 93A. Child labor is a significant problem in the cocoa industry, with many children being forced to work in hazardous conditions for long hours without proper pay or protection. The use of child labor is not only unethical but also illegal under international labor standards. Plaintiff Danell Tomasella filed suit against defendant Nestle USA, Inc., alleging a violation of Chapter 93A.

**GIOVANNA MALAGON, DANTE LATEANO, WILL MARIN,
RACHELLE LOPEZ, ANDREI HULPOI, STEPHANY LOPEZ**

Faculty Mentor: Dawn Adams-Harmon

"Honeywell Project"

The case concerns claims that, between 2010 and 2014, Honeywell UOP paid bribes to a senior executive at Petrobras, the state-owned oil firm of Brazil. The Southern District of Texas received criminal information from the U.S. Department of Justice (DOJ) accusing Honeywell UOP of conspiring to violate the Foreign Corrupt Practices Act (FCPA). In accepting the accusations and agreeing to specific terms, Honeywell UOP and the DOJ entered into a three-year deferred prosecution agreement. A criminal penalty of about \$79 million is included in the DPA, with a portion credited against payments to be paid in Brazil. In addition, there will be an additional disgorgement and prejudgment interest of around \$81 million related to a concurrent SEC investigation. According to reports, Honeywell UOP paid the Petrobras official a \$4 million bribe in order to gain and hold onto business, namely in relation to a \$425 million contract for the Premium oil refinery project. Honeywell UOP made about \$105.5 million from the deal that was secured through corruption. With a separate payment to the SEC and a partial credit against sums owed in Brazil, the business will pay a total of more than \$160 million. Coordination between the DOJ, Brazilian prosecution authorities, and the SEC is required to resolve the matter. The investigations are being conducted by the IRS Criminal Investigation (CI) Houston Field Office and the FBI Washington Field Office. Credit was given to Honeywell UOP for their cooperative efforts in the investigation, which included proactive disclosure, internal investigations, interview facilitation, and the provision of pertinent documents. The business strengthened its compliance program and fired and disciplined the workers who had engaged in the misbehavior as part of its corrective actions. The case shows how Brazilian and American authorities work together to fight global corruption. In relation to the conduct, Honeywell UOP has committed to keep assisting with any current or upcoming criminal investigations. During the DPA's length, the business and its parent, Honeywell International Inc., promised to improve its compliance procedures and give reports to the DOJ. Assistant U.S. Attorney Suzanne Elmilady for the Southern District of Texas, Assistant Chief Gerald M. Moody Jr., and Trial Attorney Gwendolyn Stamper of the DOJ's Criminal Division's Fraud Section are prosecuting the case.

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ZIQIAO QIN

Faculty Mentor: Thomas Abraham

“Using AI Chatbots to collect secondary source data on Sustainability Information Systems: Comparing ChatGPT, Bard and manual methods”

In the rapidly evolving digital era, there is an increasing need to explore efficient methods to collect and analyze data. This paper investigates the utility of AI chatbots, ChatGPT and Bard, as tools to collect secondary source data on Sustainability Information Systems (SIS) in comparison to traditional manual methods. Through systematic data collection and analysis of 2022 BYD’s CSR Report, we discovered that AI chatbots have the potential to streamline the data-gathering process, reduce human-induced errors, and provide a more interactive and dynamic experience for researchers. However, manual methods are still essential in situations where human judgment is required on nuances and where text needs to be clearly cited. In general, at the current stage, manual methods are still indispensable. The Manual method combined with an AI Chatbot is the best method. There is still much room for improvement in artificial intelligence chatbots to enrich the depth and breadth of SIS research.

JULIA VACCA, JANELLE QUARM, YUHANG WANG, ALBERTO RUIZ, JOANNA MORSI, NICK ZAMALKANY, NIZAM SAYED

Faculty Mentor: Dawn Adams-Harmon

“Grounded Justice: Boeing’s 737 MAX Fraud Conspiracy”

The issue of Boeing 737 MAX is one case that emphasizes an organization’s legal, ethical, and moral failures. This presentation highlights the problems like the design and certification of the 737 MAX airline leading to the company Boeing being charged with fraud and conspiracy. Problems like their disregard for human lives solely for financial gain, prioritizing money over their aircraft safety, and hiding important information from the regulators and operators. This led to crash cases and the death of several people and Boeing covered up their deception through misleading statements, and concealing information from the FAA. By thoroughly analyzing the issues that led to so many issues and Boeing being charged for fraud amongst other things. With a subject area of compliance and ethics, this study completely underlines the need for strict regulations, evaluations, accountability, and ethical awareness in the airline industry. Most importantly, restoring trust, ensuring safety, and long-term sustainability, is the main goal of the project abstract.

YUNPING YANG

Faculty Mentor: Kyungwon Lee

“Service Failure and Recovery in the Sharing Economy: From the Uber Consumers’ Perspectives”

Uber is an important transportation platform for the development of modern society, and people are gradually relying on online car booking to travel. To a certain extent, its development also maintains the sustainable development of social transportation. Therefore, understanding customer feedback and needs has important guidance for the development of Uber. In this project, we want to understand the service failures that Uber users encounter during the service delivery process (e.g., driver doesn’t show up, late pickup, bad driving, driver doesn’t respond, Uber app related, etc.). What type of service recovery method Uber users would like to receive for service failures (such as financial compensation, apology, explanation of the problem, etc.), and who Uber users would like to receive from (Uber company and Uber drivers) for recovery after service failures. To achieve this research, we used Uber consumer reviews on third-party online review sites to conduct content analysis and reach our conclusions.

MARQUIST MUSE, SEMAJ DASTINOT, JOSE GONZALEZ-BERGERY, COLIN ADADEVOH

Faculty Mentor: Ipek Kocoglu

“Organizational Culture and Employee Well-being”

The purpose of this study is to investigate the intricate relationship between worker well-being and company culture, with an emphasis on how cultural components affect stress levels, work-life balance, and job satisfaction. Motivated by Google’s Project Aristotle, which investigated the workings of effective teams, the purpose of this research is to illustrate how psychological safety, trust, and involvement support worker wellbeing and team performance. We are going to use Google’s initiative Aristotle as a case study to analyze organizational culture and its practical effects on worker well-being. This study looks closely at Google’s strategies for encouraging psychological safety, developing trust, and encouraging inclusivity in teams in an effort to draw important conclusions and lessons that apply to different types of organizational environments. The research employs a qualitative approach, integrating information from surveys, interviews, and documentation to obtain a comprehensive understanding of the relationship between employee well-being and company culture. The identification of patterns and themes through these analysis will shed light on the ways in which company culture affects different aspects of employee well-being. The study’s expected results include a greater comprehension of the intricate connection between corporate culture and worker well-being, along with doable suggestions for companies looking to foster a supportive environment that puts worker well-being first. The purpose of this study is to contribute to the development of strategies that support employee well-being and organizational performance in today’s dynamic work contexts by highlighting the significance of promoting psychological safety, trust, and inclusivity.

NICHOLAS THORNE

Faculty Mentor: Ipek Kocoglu

“Corporate Social Responsibility (CSR) on Organizational Identity and Employee Well-being”

For team 7 our job is to talk about Corporate Social Responsibility on Organizational Identity and Employee Well-being. Our main goal is to understand how CSR initiatives affect organizational identity and the well-being of its employees. This relates to focusing on its employees sense of purpose, job satisfaction, and mental health. In today's society it is evident that many employees value a good work life balance and want to be appreciated for the work they do. The case study suggests that Patagonia's CSR efforts are known for integrating environmental sustainability into its business model which helps to improve the identity of its organization, employee alignment with corporate values, and just overall employee well being due to a strong sense of purpose and commitment to social and environmental causes. Just to reiterate, we are going to be diving into depth of how exactly CSR initiatives are going to positively impact employee well being in the workplace as many individuals seek to have fulfilling jobs along with some level of a work life balance.

CHRISTIAN PASQUALINI, YUE PAN, OLIVIA POGROSZEWSKA, ESTEFANY MOZ, MANUELA NORENA MARIN, ROGER MOROCHRO

Faculty Advisor: Dawn Adams-Harmon

“Dobbs V. Jackson Women's Health Organization: Case Study”

The issue in Dobbs v. Jackson Women's Health Organization revolves around the constitutionality of a Mississippi law banning most abortions after 15 weeks of pregnancy, directly challenging the precedent set by Roe v. Wade (1973) and Planned Parenthood v. Casey (1992). This case presents a complex intersection of legal, moral, and ethical considerations. At its core, it questions the balance between a woman's right to bodily autonomy and the state's interest in protecting fetal life. The ethical violation here pertains to the potential infringement upon women's reproductive rights and autonomy, particularly their right to choose abortion as established by precedent. The Dobbs v. Jackson Women's Health Organization case underscores the ethical imperative to protect and uphold individuals' reproductive rights and autonomy. By engaging in ethical analysis and advocating for equitable and evidence-based policies, stakeholders can work towards ensuring access to safe, legal, and timely abortion care, thus upholding principles of autonomy, justice, and beneficence.

COE | EARLY CHILDHOOD EDUCATION**JUSTIN JUDSON***Faculty Mentor: Verneda Hamm-Baugh***“The Influence of Skin Color on Beauty Perception and Approachability”**

The present study was designed to examine the influence of skin color on how individuals perceive one’s attractiveness and approachability. Eighty participants engaged in a two-item survey in which they viewed images of a virtual model and rated the model’s attractiveness and approachability on a scale of one to ten. The participants were separated into four groups, those who viewed the light-skinned male model, those who viewed the light-skinned female model, those who viewed the dark-skinned male model, and those who viewed the dark-skinned female model. A 2x2 ANOVA found a significant main effect of complexion for both attractiveness and approachability. The dark skinned virtual models were rated less attractive and less approachable than the light-skinned virtual models. Furthermore, the dark-skinned female model was rated the least attractive. The dark-skinned male model was rated the least approachable. These findings suggest that even when viewing virtual characters, implicit bias noticeably influences individuals’ opinions and perceptions.

REEM OTHMAN*Faculty Mentor: Eleni Zgourou***“Children’s self-regulation skills during their pretend play”**

This research project documents the development of preschool-aged children’s self-regulation skills through their engagement in pretend play in a classroom following a play-based curriculum, the Tools of the Mind. The study employs an action research approach, in which a sample of ten students aged 3 to 5 years will be observed over a period of several weeks within the same classroom in a state-funded school in a suburban area of New Jersey. Participants are observed twice a week for six weeks. Each session lasts for 15 minutes. Participants are being assessed twice during the study. The first assessment is administered at the beginning of the study. The second assessment is administered at the end of the study to measure the impact of pretend play on participants’ self-regulation skills. Findings of this study will provide insights into the potential benefits of integrating pretend play into early childhood education practices. Implications for practice and suggestions for future research will be discussed.

NINA IGLESIAS*Faculty Mentor: Eleni Zgourou***“Using the Creative Arts to Enhance Behavior Strategies in an Integrated classroom”**

This research conducted through focus groups in a preschool in central New Jersey gave an insight into how the creative arts can help children who are moving

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forward into integrated classrooms from mainly multiple disabled ones. Many times children can get frustrated when they do not have the speech they need to communicate properly, or the tools that are necessary to assist in that communication. This is also a catalyst in why many students cannot self-soothe and self-regulate because they are not sure how to help themselves calm down even through sensory integration. When educational professionals came together to have a discussion consisting of seven questions each for four focus groups, there was a great opportunity to learn from background knowledge and conversations on a topic that was relevant to all participants. We all learned so much about how we all are alike in what frustrated us and the children, and how we can help them benefit more from the wonderful program that was created just for them.

COE | PHYSICAL EDUCATION/TEACHER CERTIFICATION

BAILEY ROSENMEIER, ANNE SOUZA, DANA TRUMP, MICHAEL MEALEY AND JOSHUA PORTILLA

Faculty Mentor: Edward Olsen

“The Dissemination and Implementation of Recess Policies and Practices in an Urban Public School District”

The primary purpose of this study was to investigate and examine how state and district-level recess policies and practices are disseminated and implemented in an urban public school district. A secondary aim was to make recommendations to the school district in light of barriers and facilitators of these policies and practices and students' physical and socio-emotional health. The following research questions guided this inquiry: (a) What is the current status of state and district-level recess policies and practices in an urban public school district?; (b) How are state and district-level recess policies and practices disseminated and implemented in an urban public school district?; (c) What are the barriers, facilitators, and recommendations to state and district-level recess policies and practices?; and (d) What are stakeholders' perceptions of students' physical and socio-emotional health after the COVID-19 pandemic? This project is significant for several reasons. First, New Jersey passed Senate Bill 847 (recess law) in 2019 to help reduce pediatric obesity, mitigate cardiovascular risk factors and type 2 diabetes, help children and adolescents meet the recommendation of 60 minutes per day of moderate to vigorous physical activity, promote and instill healthy habits at a young age, and develop their socio-emotional skills. Second, Senate Bill 847 requires all public school districts in New Jersey to offer a 20-minute daily recess period to grades K-5; offer recess outside, when possible; and preclude a student from recess unless they violated the district's code of conduct. Additional mandates include: recess does not have to be offered on shorter school days; the provisions do not apply to students who have medical reasons or 504 plans; and recess cannot be used to fulfill the 150 minutes of health and physical education as outlined by N.J.S 18A:35-5. Third, children and adolescents' physical, mental, and emotional health as well as their academic learning have been compromised

as a result of the pandemic. Finally, recess is viewed as an ideal environment and strategy for a post-pandemic recovery because of its cognitive, physical, and social benefits.

COE | SPECIAL EDUCATION

BRIANNA CEPPARULO

Faculty Mentor: Janet L. Fike

“A Study that Analyzes General Education and Special Education Teachers’ Perceptions of Preparedness to Use a Co-Teaching Model ”

The purpose of this study is to analyze general education and special education elementary teachers’ perspectives on the co-teaching model and the training opportunities they have received. The study will also gather information about which co-teaching model is used most by the teachers and if they believe the models are effective in the inclusion classroom. The survey consists of questions about the teacher’s use of the co-teaching model, the professional development opportunities, the time to plan, and the strategies given to teach in the inclusion classroom. The twenty-question Google Form survey was sent to twenty-five general education and special education teachers who teach grades first through fifth. The teachers work in the Cranford School District. The researcher hypothesized that special education and general education teachers have experienced using the co-teaching model but may lack the proper strategies to use the models effectively in the classroom. The researcher also hypothesized that the teachers may need additional professional development and planning time to use the co-teaching models successfully.

ROSIBEL CHAVEZ

Faculty Mentor: Randi Sarokoff

“Teaching Learners with Autism to Mand for Information Using When, Where, and Why”

Learners with Autism Spectrum Disorder (ASD) often display a delay in communication skills, specifically requesting (manding) for information using wh-questions. Manding for information is crucial for learners to gain control over their environment and to make their wants and needs known. Previous studies have shown verbal models to be effective for teaching requesting using wh-questions (Sundberg et al., 2001). The present study investigated the effects of using a verbal model to teach learners with ASD to mand for information using “when,” “where,” and “why. The participant was an 11-year-old with autism. A multiple-baseline design across wh-questions was used to show experimental control. Investigators hypothesized that using a verbal model as a teaching tool will be effective to teach a learner with autism to mand for information.

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Following the condition Verbal Model Present and then fading that verbal model in the Verbal Model Absent condition should result in independent initiations for information. Hypothesized results anticipate that this procedure will be effective to teach the learner with autism to mand for information using “when”, “where”, and “why”. This study extends previous research by using verbal models to teach three forms of wh-questions to mand for information. The results might be useful to clinicians when looking for effective methods for instructing this essential interpersonal ability, thereby enhancing the lives of those with ASD.

GABRIELLA CERRONE

Faculty Mentor: Janet L. Fike

“The experience and performance of phonics in teaching structured literacy to children in kindergarten to third grade with and without disabilities”

Research demonstrates that phonics is beneficial. “Phonics approaches have been consistently found to be effective in supporting younger students to master the basics of reading, with an average impact of an additional five months’ progress. While there have been fewer studies examining phonics with older readers, there is evidence that it can have a positive approach” (Evidence for Learning, 2023, p. 2). This study will demonstrate that teachers see the impact on the student’s performance in reading and writing for students with and without disabilities. It will also show to what extent teachers are being taught or trained in phonics. The purpose of this study is to examine the extent and effectiveness of phonics in teaching structured literacy to children in kindergarten to third grade with and without disabilities. The study will evaluate the scope of teachers’ training in phonics, and determine whether teachers’ perception regarding those students who receive phonics instruction have a more significant improvement in reading and writing skills.

OLUWANISHOLA KOREDE

Faculty Mentor: Janet L. Fike

“Teachers’ Perspectives on Skills and Supports that Students with Learning Disabilities Need to Succeed in Postsecondary Education”

Recently, there has been a growing rate of students with learning disabilities (LD) in schools. According to the National Center for Education Statistics, NCES, in 2022, the number of students aged 3–21 studying under the Individuals with Disabilities Education Act (IDEA) was 7.2 million. This data makes up 15% of all public school students across the United States. They are considered the largest category of students with disabilities in postsecondary education in many countries. Students with learning disabilities view access to postsecondary education as an opportunity to enhance their chances of obtaining and maintaining employment, earning a higher income, and a pathway to life-long independence and a superb quality of life (Wilson, Getzel, & Brown, 2000). Recent evidence by the National Center for Education Statistics and the U.S. Department of Education (2022) shows that students’ data studying under IDEA remains

the same. The importance of the study was to analyze teachers' perspectives on the skills and the support that students with learning disabilities will require to be ready for and successful in postsecondary education. In addition, this study will find the learning strategies to help students with learning disabilities succeed in postsecondary education. The study surveyed teachers' responses to determine what they know about preparing students with learning disabilities for postsecondary education and to provide insight to the researcher, the principal, and school administrators on the type of professional development to give to teachers so they can support their students with learning disabilities better.

TYLA EDWARDS

Faculty Mentor: Daphna El Roy

"Interventions including PECS to increase communication of children with autism spectrum disorder"

There are many children with autism spectrum disorder who are nonverbal and can't communicate their wants and needs to other individuals. The Picture Exchange Communication System (PECS) is used for individuals who have no, or limited speech and provides an opportunity for augmentative /alternative communication. PECS is an effective way for an individual who is nonverbal to initiate requests using a binder, velcro strips, and single laminated symbolic cards. A survey was used to determine if the procedures that were found effective in the literature were used by the participants and if so, how effective these procedures were rated to be by them. The literature revealed a variety of effective procedures including PECS used to increase communication of children with autism spectrum disorder. These procedures included the use of point-of-view modeling (Rodrigues et al. 2020), technology (Hill et al. 2014), and systematic prompting (Doherty et al. 2018). The results of the study showed that the intervention packages including PECS used by most participants were least to most prompting, differential reinforcement, and vocal requests; used by 94% of participants, systematic prompting and reinforcement by 75%, and phases I-IV of PECS plus reinforcement by 69%.

ALYSSA ORTIZ

Faculty Mentor: Janet L. Fike

"Teachers' perceptions of the influence of race on middle school disciplinary practices"

This study aimed to investigate middle school teachers' perceptions of how race influences disciplinary practices, with a focus on understanding if and how these perceptions inform classroom practices. Rooted in the broader themes of education equity and social justice, the research addresses documented racial disparities in educational settings (Pugach, Gomez-Najarro, Matewos, 2019). The study seeks to enhance understanding of racial biases in classrooms by exploring teachers' perspectives on racism and their actions to address it. While acknowledging the limitations of generalizability to schools with similar demographics, the study involved a survey administered to 50 middle school

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teachers. Data analysis was conducted using Google Forms, with the study's results applicable primarily to the inner-city school district in focus. Implicit bias is crucial to acknowledge, providing insights into the potential influence of unconscious attitudes and stereotypes on disciplinary decisions. The ultimate goal was to contribute to equitable classrooms, both at the individual and district levels.

GABRIELA ORTIZ

Faculty Mentor: Daphna El Roy

“Increasing Speech Using PECS Interventions”

The Picture Exchange Communication System (PECS) is a form of communication that encourages verbal language of children with Autism Spectrum Disorders (ASD) and other developmental disabilities. A literature review of intervention packages including PECS was conducted and a survey was developed to determine the extent of their use and effectiveness. Professionals employed by an organization providing ABA (Applied Behavior Analysis) services in school, clinic and home settings to individuals with autism took an anonymous survey on Google Forms. Four were RBTs (Registered Behavior Technicians)/BTs (Behavior Technicians), and one was a BCaBA, BCBA, or BCBA-D. All participants had experience working with children with ASD or other developmental disabilities in various settings and age groups. All reported having used two of the intervention packages: a) prompting and reinforcement strategies, including PECS, to teach a child with ASD to initiate and respond to peer requests; and b) using communication temptations (e.g. placing a desired toy out of reach) to occasion vocal requests through the use of PECS and utilizing PECS to teach children with ASD discrimination among pictures (e.g. presenting visuals of items and asking them to identify which picture represents an item). Participants rated both as effective or very effective.

ELIZABETH OSBORN

Faculty Mentor: Janet L. Fike

“Determining the Professional Development Needs and Interests of Teachers Who Work With Students with Emotional Regulation Impairment”

This research will determine the professional development needs and interests of teachers who work with students with Emotional Regulation Impairment. This study will examine if educators working with ERI students feel they are getting the proper professional development opportunities. If they feel as though they could get more professional development support and access, their learning experiences would look different. They will be able to identify specific topics they would like support and education about. There are two objectives to this study. The objectives of this study are twofold. The first objective is to analyze the data provided by the teachers to see if they feel they are getting the proper professional development opportunities in

their district. The second objective is to see what teachers' ideal professional development looks like or what they would like to focus on to best support their needs in the classroom working with ERI students. It is important because if teachers are receiving the necessary training, they will be more prepared when facing challenges in the classroom. The researcher hypothesizes that teachers who work with ERI students are not receiving adequate professional development opportunities provided to them by their districts. Once they are able to receive better professional development geared toward ERI students, they will be able to provide different ways to support their student population.

JOSEPH SHANAGHER-BRUNO

Faculty Mentor: Randi Sarokoff

“Techniques Utilized by Practitioners to Teach Skills to Adolescents and Adults with Disabilities”

Individuals with developmental disabilities transition to an adult services environment where the direct service providers (DSP,) the individuals will rely upon may possess a knowledge and training deficit for evidence-based practices (Gerhardt & Lainer, 2011). Utilizing instructional techniques for skill acquisition based outcomes help disabled adults continue to grow in their homes and communities. The purpose of this study was to determine which of the evidence-based strategies reviewed through literature review were perceived to be effective while being used in the field. A literature review was conducted to determine a sample of instructional methods that have shown to be effective for teens and adults with developmental disabilities. The purpose of this study was to determine which empirically supported instructional methods are being utilized by service providers to teach teens and adults with developmental disabilities various skills. The current study asked the sampled DSPs to supply their perceived effectiveness of the instructional methods they utilized to teach skills to their population. The survey and accompanying Likert scale was distributed to DSP workers at a large agency (over 500 employees) and across various departments that included residential, day program, community support, and school services. Participant responses were recorded, sorted, and analyzed to determine which methods were most utilized and which methods may require more awareness or training to implement. It is hypothesized that utilizing games, a task analysis, and picture exchange communication system will be the most utilized and will be perceived as most effective by the participants.

DE'MAREZ WEST

Faculty Mentor: Daphna El Roy

“Interventions Including Negative Punishment”

Negative punishment involves removal of something preferred after problem behavior occurs, and it can decrease problem behavior. There are different forms of negative punishment and some can be more effective than others, depending on the situation, including other strategies included in the intervention package. A survey was developed based on a literature search of effective interventions

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that included negative punishment. Participants were Board Certified Behavior Analysts (BCBAs) employed by an organization providing Applied Behavior Analysis (ABA) therapy to individuals with autism spectrum disorder (ASD) aged 5-21 years old. They completed the anonymous survey on Google Forms, indicating whether they used each strategy, and rated the effectiveness of each strategy they used. An example of an intervention package including negative punishment, that seven participants reported using was: a) verbally prompting a child to look at their work when the child began to engage in problem behavior (such as aggression to others and Self-Injurious Behavior), b) removing the token board immediately, and c) once the child engaged in appropriate behavior, continuing to provide tokens.

**MELISSACRUZ, JENNA KARCHER, QUINCY GAILLARD,
ANDREA MESA AND SARAT BUSARI**

Faculty Mentor: Norma Bowe

“Be the Change NJ Dream Big: Young Women’s Leadership Initiative”

It is estimated that over 1.6 million youth are homeless each year in the United States. Adolescence can be a challenging time, particularly for those dealing with issues of housing and food insecurity, family chaos and adverse childhood experiences. The Dream Big Program is a young women’s leadership initiative developed and implemented by Be the Change NJ. The Dream Big program will target young women ages 10-15 receiving services at the Elizabeth Coalition to House the Homeless in Elizabeth, NJ. A twelve week mentoring/educational program will consist of didactic, group discussion, and field trip experiences geared towards building self-esteem, self-efficacy and positive health outcomes. The main objectives of this program are as follows: to increase personal development and wellness, to learn leadership and teamwork skills, to engage mentorship volunteers in goal setting and positive educational outcomes, to increase community engagement, and to decrease risk factors associated with homelessness. Pre and post testing shows a significant increase in all study variables.

**MELISSA CRUZ, JENNA KARCHER, QUINCY GAILLARD,
ANDREA MESA AND SARAT BUSARI**

Faculty Mentor: Norma Bowe

“COVID 19 Variant Infections and Vaccine Hesitancy”

Vaccine hesitancy was a growing concern among public health officials even before the COVID-19 pandemic. Individuals expressed many concerns about some of the mandated vaccinations. This only grew more when informed about the COVID Mandates. Some determinants for hesitancy were identified by Johns Hopkins School of Public Health in April 2021 and included lack confidence in the vaccine, lack of trust of the public health system, need for convenience, complacency, risk calculation, and collective responsibility. Vaccine hesitancy is one of the major reasons for community spread of COVID-19 variant infections. This survey research was conducted to increase understanding of vaccine hesitancy and to develop educational interventions to target misinformation and myths about the vaccine. Educational materials included information on

Moderna, Pfizer, Pediatric Pfizer and Janssen Vaccines. Additional survey data was collected to determine infection status and correlation of illness with COVID-19 and if this increased likelihood of receiving vaccinations. Barrier data was also collected and analyzed.

MELISSA CRUZ, KATHERINE RODRIGUEZ AND MIRIAN DESOUZA

Faculty Mentor: Norma Bowe

“COVID-19 Infections and Food Insecurity”

There is much in the literature about the stressors regarding food insecurity and consequential negative health outcomes. COVID-19 has disproportionately affected populations with socio-economic challenges and people of color. Many people find themselves unemployed and utilizing social services for the first time. This project will include a comprehensive review of literature and will analyze the NJ COVID-19 cases to demonstrate patterns among the food insecure. This is a food justice and social justice project. The research aligns with the University Mission regarding community service and activism. The food distribution covers seven NJ counties from Hudson to Ocean. Many students who reside in these counties are directly impacted by COVID and food insecurity. This research will add to the body of knowledge regarding illness, disease and food justice. Likert data will be collected from existing surveys and analyzed using SPSS. Students and researchers will write reports of findings and recommendations. Students and researchers will create a resource guide to food and other needed items for distribution to the Pantry Recipients. The project will deliver a detailed analysis of food insecurity and its relationship to increased risk for COVID infections. It will add to the body of knowledge regarding NJ food insecurity during a pandemic and consequential negative health outcomes.

MELISSA CRUZ, JENNA KARCHER, QUINCY GAILLARD, ANDREA MESA AND SARAT BUSARI

Faculty Mentor: Norma Bowe

“Interventions in Elder Homelessness”

A group of individuals from Be the Change, NJ (Kean University) discovered an encampment in the woods where about 30 primarily older citizens resided. The encampment is located in Monmouth County, NJ. These individuals live in extreme conditions, relying on donations for food, water, and other urgent needs. These elders have complicated medical issues, and many need treatment. BTCNJ conducted a needs assessment. Thirty tanks of propane were filled for upcoming winter conditions. Referrals were made to (very sparse) social service agencies. This is a continuing project. Monmouth County, NJ, is located in the south-central region of the state of New Jersey and is made up of 59 distinct townships. The largest Monmouth County racial/ethnic groups are White (74.3%), followed by Hispanic (11.0%) and Black (6.3%). The median income in Monmouth County is \$110,356 (census data 2021). Those 62 (years) and older comprised a population of 1 416, 990 roughly 28.9%. The typical rent for housing is between \$1,900 and \$2400/ month. This does not include other living costs, such as

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food and necessities. Most senior citizens are on fixed incomes far below this threshold. 7.4% live below the poverty line.

DANICA D'ACHIARDI

Faculty Mentor: Randi Sarokoff

“A Synopsis of Using Functional Communication Training to Upskill Learners with Developmental Disabilities”

This study examines the application and effectiveness of Functional Communication Training (FCT) among professionals working with individuals with developmental disabilities (DD). Through a literature review examining FCT's efficacy in addressing problem behaviors, disruptive behavior, elopement, attention-seeking behavior, self-injurious behavior, and impulsivity is established. Studies from different researchers and years demonstrate the effectiveness of FCT in teaching communication skills and replacing maladaptive behaviors with functional communication responses (FCRs). Among some are Carr and Durand (1985) who are the pioneers of FCT. A survey was created to investigate if FCT was used as a successful tool to lower the rate of problem behaviors. It is hypothesized that the findings will demonstrate FCT's high effectiveness for the staff at a private agency. The survey was sent out to about 500 professionals, however, so far only 19 completed the survey. Insights gained from this study will inform future intervention strategies and contribute to the ongoing discourse on evidence-based practices for individuals with DD. I hypothesize that the professionals at the agency will have used FCT to help lower rates of elopement, self-injurious behavior and disruptive behavior due to the FCT intervention.

CHPHS | SOCIAL WORK

JENNA KARCHER, MELISSA CRUZ & MELISSA HOFMANN

Faculty Mentor: Norma Bowe

“An Interdisciplinary Approach to Athletes and Mental Health”

This research project investigates the interdisciplinary approaches to promote mental health and well-being among athletes of all levels. Recognizing the ongoing Stigma surrounding Mental Health and athletes, this study further examines how multiple disciplines collaborate to support athletes' mental well-being. Furthermore, the study uses a survey methodology to investigate the role of different sports organizations and support staff that foster different ways to prioritize mental health. This can be done through various mental health programs, educational opportunities, and support systems within athletic communities. A survey was given to a D3 Football Team to offer insight into these student-athletes' perceptions and mental health indicators. By incorporating feedback from the survey, we can identify the need to optimize mental health

outcomes and bridge gaps between different fields. The results of this study will show that collaboration between multiple disciplines contributes to creating a better Mental Health Space for athletes of all ages.

JENNA KARCHER, SUSAN BUSARI, MELISSA CRUZ, ANDREA MESA & QUINCY GAILIARD

Faculty Mentor: Norma Bowe

“Be the Change Changing the Landscape for Peace one Garden at A Time”

Newark is the largest city in New Jersey, with a population of 277,140. The crime rate in Newark is considerably higher than the national average with a rate of 46 crimes per one thousand residents. After conducting a social epidemiology project murder mapping all four Newark wards, garden projects were implemented in the high violent crime areas. Newark has 3.65 acres of parkland per 1,000 residents; National standards call for 325-500 acres for a population of this magnitude. Other high -density cities (New York, San Francisco, Chicago, Boston, Philadelphia, Miami, Baltimore and Los Angeles) averaged at 7.17 acres per 1,000 residents. “Be the Change” Kean University is actively engaged in peace efforts by “adopting” vacant lots in dangerous Newark NJ neighborhoods and turning them into “peace gardens”. These efforts have been highly successful in “bringing unity to the community” as one resident said and creating a dialog regarding peace and non-violence as well as demonstrable drops in violent crimes. These gardens promote visual improvements to city neighborhoods, empower residents to take back their streets and to understand the role that they can have in local issues that affect their quality of life and promote food justice. The pilot studies showed a significant decrease in violent crime in the Garden Impact Area (a radius of 5 blocks in all directions).

CHPHS | COUNSELING

CAITLIN BRAINE & KELLY MOEHLMAN-BENE

Faculty Advisor: Jane Webber

“The Lived Experiences of Threatened Afghan Scholars and Students: A Collective Case Study of their Journey from Trauma to Safety”

This study explored the lived experiences of threatened Afghan scholars and students journeying to a new country and university in Europe through the Global Campus Scholars and Students at Risk Project. The advocacy project has provided 34 participants the financial, logistical, and compassionate support to resettle in a European University to continue their teaching, research, or studies. Many were living under extreme fear for their activism and political views when they received the life- and career-saving opportunity through the advocacy of the Global Campus of Human Rights staff in Italy, guiding them through the complicated travel and visa journey to a new country where they are safely

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continuing their lives. Upon resettlement in their new country and university, participants received housing, a living stipend, and health care. Participants also received psychological support individually and in groups through the Global Campus, as well as support services by participating universities. This qualitative phenomenological study was composed of a written survey and semi-structured interviews that were part of a larger project evaluation. Of the 34 project members, 21 completed the survey and six completed the interview. The Global Campus Project Director in Italy conducted the interviews in English on the campus or via Zoom. As participants might shift to their native language during the interview, a staff member who was a native of Afghanistan and fluent in Dari and Pashtu was available. The interviews established a safe space for Afghan refugees to share their experiences of fleeing and resettling; chronicle the process of their journeying to safety and resettlement; explore experiences of resilience, and posttraumatic growth, as well as distress and trauma; and understand refugees' perspectives regarding met and unmet needs during and after the resettlement process. Interviews were audio-recorded and transcribed using Otter-ai. Data were analyzed by a research team composed of a Kean Counselor Education professor and two graduate Counseling students through a Kean Students Partnering with Faculty grant and collaboration with the Global Campus Project Director in Italy. The Kean SPF research team studied the history, culture, religions, and experiences of Afghanistan prior to reviewing the recordings and transcripts, and collaborated with the Global Campus Project Director to understand the religious and ethnic discrimination and struggles in the country. Six themes emerged: (a) family concerns; (b) waiting for visas; (c) distress and trauma experienced in Afghanistan; (d) exiting/fleeing Afghanistan; (e) struggles, transitions, and successes in a new country; and (f) uncertainty about the future. Qualitative themes were consistent with the participants' responses to the written survey. Participants' interview responses frequently integrated several of the themes, particularly struggles in adjusting to a new country; distress and trauma experiences before leaving Afghanistan, and uncertainty about the future. Participants' recommendations became part of the program evaluation for consideration.

KRISTINE IARUSSI

Faculty Advisor: Michael Bobbitt

“The Effect Professional Development has on Self-Efficacy Among School Counselors”

The purpose of this quasi-experimental design is to measure changes in self-efficacy, resilience, and perceived stress among school counselors when given the opportunity for self-selective professional development in the area of counselor education, as it relates to stress and burnout. The quantitative study will identify ways to improve competency through education training experiences for school counselors in a Pre-K through 12 school setting, and reduce stress and burnout. At this stage in the research, the study will look to address the short term and long term effects of stress due to lack of knowledge and understanding of topics necessary to be a successful school counselor. One's appraisal of demands and their assessment of their coping ability becomes a critical issue in relation to whether or not the demand will trigger a stress response. Self-

efficacy can be an important personal resource with a distinct role not only in how school counselors tackle and perform challenging duties, but also in how they experience organizational resources and even burnout (Bardhoshi & Um, 2021). Researchers also reported that higher collective self-esteem is associated with a higher sense of personal accomplishment and lower emotional exhaustion (Butler & Constantine, 2005), whereas higher levels of ego development are associated with higher personal accomplishment (Lambie, 2007). School counselors are asked to perform several tasks that very often they have not received training. This is in the counseling programs they attend as well as the professional development offered by school administration. An exploration of moving beyond stress and secondary trauma to the very nature of the commerce of resources and their utility (Hobfoll et al., 2018). As Hobfoll (1998) explains, the lack of resources will create a vulnerability towards stress, which could lead to secondary traumatization and eventually burnout. It can also negatively impact the students they are responsible for. When feeling less equipped, individuals shy away from tasks that seem overwhelming and not aligned to their skillset. Resilience can be maintained based upon the ability of the resources within the system to absorb the stressor (Hobfoll et al., 2015). Therefore, the Brief Resilience Scale will be administered to both groups as well in a pre and post assessment format. School counselors can learn from the research findings of ways to mitigate the negative effects of trauma on students through training that is based on current research. However, this can occur when the adults working with our youth have the adequate resources to address the myriad of needs. School counselors may not have the training in trauma-informed care and other related topics to know how to properly manage such reactions. The delivery of professional development, along with professional learning networks, remain an important component. School counselors better understanding how stress and anxiety impacts their ability to attune to their students as well as having knowledge on an array of related topics may shift the focus of the role of a school counselor in modern times.

AMINA MOSTAFA

Faculty Advisor: Michael Bobbitt

“Exploring Multicultural and Social Justice Counseling Competencies: An Intersectional Framework for Client Wellness”

This poster explores the significance of multicultural and social justice counseling competencies (MSJCC) in contemporary counseling practices, particularly in addressing the diverse needs of clients from marginalized communities. By examining the evolution of these competencies from the initial Multicultural Counseling Competencies (MCC) to the revised MSJCC, the research highlights the shift towards a more action-oriented and advocacy-focused approach in counseling. An exploratory literature review was conducted to examine the current literature of intersectionality framework as a lens to understand the complex and multifaceted experiences of clients with multiple identities. The MSJCC emphasizes the importance of counselors’ self-awareness, understanding of client worldviews, and the dynamics of the counseling relationship, alongside active advocacy interventions. And clients are not exempt from the influence of the sociopolitical climate, including systemic inequalities and discrimination,

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which certainly impact clients' mental health and counseling outcomes. Through the integration of intersectionality theory with MSJCC, counselors are encouraged to dismantle power structures and center clients' diverse experiences in therapeutic practices. The exploratory literature review underscored culturally responsive counseling approaches and social justice principles to promote wellness outcomes for clients of marginalized communities and oppressed backgrounds in today's society.

JIMMY PASSE

Faculty Advisor: Michael Bobbitt

“The Effects of Client Dropout on the Quality of Life of Clinicians new to the field of Mental Health”

Since the advent of community mental health agencies, the problems inherent in mental health programs have been evaluated to help mitigate client attrition. Swift & Greenberg (2012) define attrition (dropout/withdrawal) as an event where a client starts receiving mental health treatment and then withdraws from treatment prior to resolving the issues that led to their decision to enroll in treatment. Lorber & Satow (1975) considered certain factors that contribute to client attrition such as stratification, therapist frustration, and conflicts (ideological and organizational) in order to increase client retention and improve treatment outcomes. The literature also suggests that clients, therapists and community mental health agencies are also impacted significantly by client dropouts. For therapists, client(s) dropout can leave providers demoralized with feelings of failure and rejection (Swift & Greenberg, 2012). In terms of the impact on mental health clinicians, Farber (1983) researched the most stressful client behaviors according to psychotherapist and determined that the premature termination of treatment of client's ranked third amongst 25 other stressors (e.g., client suicide) indicating that it is a major stressor for mental health providers.

BHAKTI PEREZ & MORGAN FISHMAN

Faculty Advisor: Aditi Vijay

“Rejection Sensitivity as a Moderator of Sexual Victimization and Traumatic Stress”

Women encounter higher rates of sexual violence, with one in every two women having endured sexual violence including physical contact at some point in their lives (CDC, 2022). Sexual trauma correlates with more pronounced symptoms of depression, post-traumatic stress disorder, anxiety, dissociation, and enduring maladaptive beliefs about pain throughout the six months following the acute traumatic event. (Rowland et al., 2023). The precise nature of this connection is not fully understood. Various variables, such as emotion regulation, general psychological distress, mindfulness, self-compassion, rejection sensitivity, and interpersonal stress, have been suggested as potential moderators influencing the relationship between sexual victimization and symptoms of traumatic stress. These factors are also considered risk factors contributing to a

reduced perception of risk. Hence, this study pursued two objectives: Aim 1) to investigate moderators influencing the connection between sexual victimization and symptoms indicative of traumatic stress and Aim 2) to Explore the role of emotion regulation concerning risk perception within a sample of individuals who have experienced sexual victimization. This paper reports 1) findings from a screening sample (N=435) exploring links between emotion regulation, traumatic stress symptoms, psychological distress, mindfulness, self-compassion, and rejection sensitivity and 2) results from an experimental study on the impact of interpersonal responses in women with sexual trauma histories (N=68). Participants completed self-report measures, and in the experimental phase, they received validating or invalidating responses while completing a stressful task. Aim 1) Analyses revealed rejection sensitivity as a significant predictor of psychological distress. Aim 2) Negative affect significantly predicted response times when identifying threats in sexually risky situations. The findings highlight rejection sensitivity's role in influencing negative affect in interpersonally stressful contexts, offering clinicians insight to target rejection sensitivity for addressing negative affect and social distress causes. Managing rejection sensitivity and interpersonal stress is crucial in trauma victims to reduce revictimization risk.

BHAKTI PEREZ & MORGAN FISHMAN

Faculty Advisor: Aditi Vijay

“Did you know what you need? Predictors of Burnout in Dialectical Behavior Therapy clinicians”

Despite its effectiveness, the intensive nature of Dialectical Behavior Therapy (DBT) can lead to burnout for both therapists and clients. DBT burnout encompasses the depletion of physical, emotional, and mental resources due to the demanding nature of the therapy. Therapists may experience burnout from the emotional intensity of working with clients grappling with severe mental health issues, while clients may find the commitment and effort required overwhelming (Warlick et al., 2020). To address DBT burnout, therapists prioritize self-care and establish healthy boundaries. Regular supervision and consultation with other therapists provide vital support, preventing emotional exhaustion (Jergensen, 2017). Clients benefit from ongoing support, encouragement, and acknowledgment of progress to avoid burnout and enhance motivation for the therapeutic process. In this context, the consultation team emerges as a critical yet understudied component of the DBT model. We aimed to pinpoint measurable details within the DBT consultation team to assess their effectiveness within the group. Distinguished from supervision by a peer-oriented structure, the consultation team is led by an experienced DBT therapist who ensures adherence to DBT principles. Team members actively provide DBT to clients, assuring compliance with the four DBT modules. Regularly scheduled meetings, guided by a consultation agreement, address confidentiality, team commitment, and fidelity to the DBT model (Noll et al., 2020). The presentation will share data from a consultation team sample (N=35). Participants completed self-report measures on personal information, team characteristics, mindfulness, attitudes towards people with BPD, and burnout levels. Respondents, spanning various settings, indicated varying degrees of feeling heard, supported, and motivated after team meetings. Clinicians reported moderate burnout (M=36.58,

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SD=15.30) and mindfulness levels ($M=3.87$, $SD=.52$), with a significant negative association between burnout and mindfulness ($r = -.73$, $p = .03$). Institutional support emerged as a predictor of therapist burnout ($p=.00$, $F=9.48$). The study, addressing limitations in previous research, uses a larger team sample to evaluate therapist satisfaction and burnout. DBT stands as a powerful therapeutic approach, yet its intensity poses challenges leading to burnout. Recognizing the signs and implementing strategies for self-care and support, especially within consultation teams, is paramount to sustaining the effectiveness of DBT interventions for therapists and clients alike.

CHPHS | EXERCISE SCIENCE

LEONARDO CRUZ

Faculty Mentor: Pragma Sharma Ghimire

“Understanding the Role of High-Intensity Low Volume Training (HILV) in Athletic Performance”

A wealth of information within Exercise Science and Fitness has led to groundbreaking discoveries and innovative concepts. One such concept is High-Intensity, Low-Volume (HILV) training, which has gained popularity due to its efficiency in reducing workout duration while maximizing effectiveness. Research has demonstrated significant improvements in endurance fitness among sedentary and non-athletic individuals through HILV training. This approach emphasizes intensity and volume, enabling the body to elicit a growth response efficiently with fewer sets and repetitions while allowing adequate rest and recovery for muscles and the central nervous system (CNS). However, there is ongoing exploration into its applicability and efficacy in enhancing athletic performance. We hypothesize that HILV training will yield superior results in both overall health fitness and sports performance. However, studies are now trying to find if this training style can be applied and used successfully for athletic performance. A literature review was conducted, and the existing results were compiled. Although HILV alone may not be the most effective method for enhancing athletes' performance, incorporating it alongside other exercise principles could prove beneficial. While some studies suggest modest improvements in athletes' performance with HILV, a comprehensive analysis reveals a lack of substantial evidence to conclusively support its efficacy in significantly enhancing athletic performance. It's advisable to approach HILV as a component of a comprehensive training regimen rather than the sole method for maximizing athletic performance.

RAYMOND DIVIRGILIO

Faculty Mentor: Raymond Divirgilio

“ACL, MCL & Bilateral Meniscus Tear”

The ACL stabilizes the knee joint by preventing excessive anterior translation of the tibia. The MCL prevents the knee from excessive valgus movement. The meniscus increases stability for femorotibial articulation, distributed axial load, absorbs shock, and provides lubrication and nutrition to the knee joint. In most cases, when there is an injury to the ACL, the medial meniscus is usually torn too. The incidence of bucket-handle meniscus tears can be up to 30% of the overall meniscus tears cases. The case of both compartment (medial and lateral) bucket-handle meniscus rarely occurred. Recognition can be seen through special tests done immediately by an athletic trainer. To confirm anything, an MRI is required. O'Donoghue reported an incidence as high as 25% of athletic knee injuries, 22 patients with ACL, and MCL, also had a medial meniscus tear. Most cases require surgery and 6-9 months of recovery. Reconstruction and repair of ALL lesions should be considered to improve the control of rotational stability and future knee kinematics scores provided by ACL reconstruction.

OMODOLAPO GIWA-DARAMOLA

Faculty Mentor: Pragya Sharma Ghimire

“Impact of Tailored Exercise Prescription on Adherence to Cardiac Rehabilitation Programs Among Women”

Previous studies have highlighted this disparity, indicating that despite women having a greater need for CR due to cardiovascular disease being a leading cause of mortality among them, they are less likely to engage in these programs. Various barriers contribute to this, including lower referral rates, fear, embarrassment, discomfort in group or mixed-sex settings, and feelings of inadequacy or self-consciousness. Enhancing adherence among women requires addressing individual needs and preferences, maximizing the program's benefits, and achieving better outcomes. Tailoring exercise prescriptions to suit each woman's requirements in a supportive and comfortable environment can alleviate fears and enhance sustainability and enjoyment. Therefore, this study aimed to examine the impact of personalized exercise prescriptions on adherence to cardiac rehabilitation among women compared to standardized programs. Customizing exercise programs to women's preferences aims to narrow the gender gap in CR participation and promote equitable access to this essential healthcare intervention. A literature review was conducted, and the existing results were compiled. The research was concentrated on articles published in the past 15 years. Key. Keywords used while searching included women with cardiovascular disease, cardiac rehabilitation, enrollment rates, and adherence rates. The findings suggest that tailoring exercise programs towards women would result in increased engagement, adherence and also success in cardiac rehabilitation programs.

STUDENT POSTER ABSTRACT

ALYSSA COLON

Faculty Mentor: Nicole Lowy

“Achilles Rupture Following a Debridement of the Achilles”

An Achilles tendon rupture is a condition in which the Achilles tendon, which is a thick, strong cord-like structure located at the posterior ankle, tears or partially tears. The Achilles tendon is one of the strongest tendons in the human body and connects the calf muscles to the calcaneus. Re-rupture of the Achilles tendon is a serious complication of surgical or conservative treatment. The rate of re-rupture after operative treatment has been previously reported to be 1.7 - 5.6%, while the rate of re-rupture during conservative treatment is reported to be 11.7 - 20.8%. There are a number of complications that are associated with open surgical treatment for Achilles tendon ruptures, including wound detachment and re-rupture. Following surgery, the Achilles tendon is much less likely to rupture. The most common rupture of a tendon in the lower extremity is the full rupture of an Achilles tendon. Surgical or conservative treatment of the Achilles tendon should be avoided if possible due to the risk of re-rupture. Consequently, the athlete may have to discontinue his football career due to an Achilles rupture caused by debridement of the Achilles.

KYLE DEVANEY

Faculty Mentor: Pragya Sharma Ghimire

“Preventing and assessing mental health impacts of hamstring injuries”

Among the most debilitating injuries, hamstring injuries pose a considerable challenge, especially for football players, given their protracted healing process and heightened risk of recurrence. Research indicates that such injuries constitute a substantial portion, approximately 29%, of all sports-related injuries. Notably, these injuries impact National Football League (“NFL”) players, with statistics revealing that muscle strain accounts for 46% of practice injuries and 22% of preseason game injuries. Given the consequences of these injuries, including missed game time, financial losses, and the likelihood of subsequent injuries, extensive research has been undertaken to prevent and treat hamstring injuries among collegiate and professional football players. Moreover, beyond the physical ramifications, athletes also contend with mental health challenges. For example, being injured may cause an athlete to feel depressed, anxious, stressed, and or traumatized. Although previous studies and self-reported data from professional and elite athletes have indicated similar prevalence rates of mental health disorders compared to the general population, the relationship between physical injuries, especially among professional athletes like football players, and the subsequent impact on their mental well-being remains unexplored. This study aims to examine what connection, if any, exists between the physical injuries of athletes and the mental wellness of athletes. We hypothesize that lower body strength training will effectively decrease the incidence of hamstring injuries while also suggesting that hamstring injuries may elevate the likelihood of mental health disorders among football players.

TYLER HENDRICKSON*Faculty Mentor: James Stavitz***“Assessing and conservatively treating acetabular labral tears in young athletes”**

Hip Pain is a diminishing injury that is particularly prevalent among the elderly. This can diminish the quality of life for all age groups fighting through a hip injury. Daily activities such as climbing stairs, and getting in and out of a seated position can become such an excruciating task. Among a vast range of hip, groin, and hamstring injuries, acetabular labral tears stand out as the common enemy. Research indicates that a substantial percentage, ranging from 22% to 55%, of both athletes and patients suffering from hip pain exhibit symptoms attributed to labral tears. More specifically, athletes who are constantly engaging in activities such as running, cutting, and sprinting, these tears can be tremendously debilitating. Characteristics of this injury can be things such as pain, discomfort, clicking, popping sensations, and locking of the hip. Labral tears affect not only mobility but will also cause pain to emit near the groin due to their proximity. The conventional way to attack these injuries is a corrective surgery which will vary depending on the severity of the tear.

JASON JAGROOP*Faculty Mentor: Pragma Sharma Ghimire***“The Effect of Tart Cherry Supplementation on Exercise Recovery”**

Resistance training aims to induce muscle hypertrophy and enhance strength. However, prolonged strenuous activity may cause muscle fiber and ligament breakdown, leading to inflammation, free radical presence, exercise-induced muscle damage (EIMD), and delayed onset muscle soreness (DOMS). Considerable research has focused on accelerating muscle recovery and minimizing damage post-exercise, exploring factors like sleep quality, exercise frequency, and nutrition. Tart cherries extracted from Montmorency cherries are fruits rich in polyphenols such as anthocyanins, flavonoids, flavanols, and phenolic acids. These compounds are known for reducing swelling/inflammation and act as antioxidants. This study aims to understand the effect of tart cherry supplementation on aiding muscle recovery following strenuous resistance training. Prior research has shown Tart cherry supplementation to have a slightly beneficial effect on alleviating muscle soreness and reducing oxidative stress, with a moderate impact on restoring muscle strength and power after intense exercise on alleviating muscle soreness and reducing oxidative stress, with a mild effect on restoring muscle strength and power after intense exercise. Tart cherry supplementation appears to offer a promising alternative for post-strenuous exercise recovery compared to non-steroidal anti-inflammatory drugs (NSAIDs). Research suggests that tart cherry supplementation mitigates indicators of muscle breakdown, diminishes immune and inflammatory stress, and supports various facets of recovery following intense exercise.”

STUDENT POSTER ABSTRACT

JASON GILMAN

Faculty Mentor: James Stavitz

“Unprecedented Spinal Anomalies in a Young Adult Athlete”

The human spine, our primary axial structure, faces daily challenges from wear and tear. Disc herniations, stemming primarily from ongoing degeneration, are no rarity. However, they often facilitate less common conditions such as spinal cysts and stenosis to occur. Encountering a confluence of these conditions in a young individual, particularly an athlete, is an exceptional observation. While individual prevalence rates for each of the conditions faced by the athlete are documented — herniations (0.5%-2% annually in adults), facet joint cysts (approx. 3.95%, usually in those above 45), and spinal stenosis (exceedingly rare below age 30) — their collective manifestation in a young athlete is a medical marvel, presenting an unprecedented case for the medical community. The spine's intricate anatomy and functions make diagnosis and treatment a nuanced endeavor. Recognizing not just the primary ailment, but potential cascading consequences, is paramount. As demonstrated, a singular herniated disc can morph into a plethora of spinal complications. Diligent attention, comprehensive diagnostic approaches, and individualized care are imperative.

MICHELLE MANOCHIO & ALEXANDRA STRIBING

Faculty Mentor: Pragma Sharma Ghimire

“Understanding The Effects of Visual Impairment on Body Composition in Children”

Childhood and adolescent obesity are at an all-time high, especially in the United States as well as other countries around the world. Many factors cause childhood and adolescent obesity. One factor that has grown popular in research within the last several years is the interaction between visual impairment and body mass index (BMI) in children and adolescents. Previous research has shown that there is a correlation between visual impairment and BMI; specifically, children and adolescents with visual impairments tend to have a higher BMI than their peers without visual impairments. This study explores the complex relationship between BMI and visual impairment, considering a range of demographic and health-related factors such as age, sex, race, multiple disabilities, congenital nature of disabilities, level of visual impairment, and education level. In this non-randomized cross-sectional study, 74 school-aged students from multiple schools, ages 10-17, participated. The participant's height and weight were measured, and questionnaires related to race, various disabilities, and level of education were collected. An Independent Sample t-test was used to compare BMI between two age cohorts (10-13 years) and (14-17 years). There was a significant difference found between these two groups ($p=0.04$). However, no significant differences were found between sex, race, level of visual impairment, and education levels. Further investigation using a larger sample size is needed to understand the relationship between visual impairment and BMI in children and adolescents.

FISNIK ISUFI

Faculty Mentor: Nicole Lowy

“Patella Misalignment Due to Trochlear Dysplasia: Level III Case Study”

The trochlea is a groove at the distal end of the femur, where the patella sits. It is easiest to identify when bending the knee. The posterior part of the patella should be almost parallel to the trochlear groove, but there are chances of abnormalities within the trochlear groove. The normal shape of the trochlea groove is concave. The lateral side of the trochlea groove is higher than the medial part. This allows the patella to easily slide down the central section of the distal femur. The abnormal shape of the trochlea groove is convex or flat, which is known as trochlear dysplasia or an unstable kneecap. When treating trochlear dysplasia, it's essential to create a rehabilitation plan that will focus on strengthening the quadriceps muscles to help reduce that patellar instability, or a possible patellar dislocation. In more severe cases, some surgical approaches include a reconstruction of the dysplastic trochlea, or a medial patellofemoral ligament reconstruction. Trochleoplasty aims to reshape the bony anatomy of the trochlea, by either deepening the groove or elevating it, since the lateral wall of the trochlea should be higher than the medial side.

KIARA MARTINEZ

Faculty Mentor: Pragma Sharma Ghimire

“Effects of exercise training in lung cancer patients”

Aerobic activities like dancing, walking, and running have been shown to extend longevity and enhance lung cancer patients' quality of life. Cancer patients increasingly acknowledge the importance of physical activity, much like the rehabilitation endeavors observed in individuals recovering from injuries. Movement and exercise play pivotal roles in preserving mobility and combating the adverse effects of cancer. Research has directed attention towards physical activity to promote public health, especially in elucidating its correlation with lung cancer patients. Engaging in physical exercise enhances oxygen intake, improves blood circulation, and supplies muscles with vital nutrients. Lung cancer patients benefit from exercise as their bodies adapt to meet increased demands during physical exertion, resulting in more efficient oxygen utilization. This review article aims to comprehensively assess the evidence demonstrating the profound impact of exercise on lung cancer patients, underscoring its role not only in treatment but also in prevention. Despite the challenges posed by fatigue, patients with lung carcinoma stand to gain significant cardiovascular fitness benefits from exercises, such as walking exercises counting each step with a pedometer. Some exercises might be exhausting for the patient, this is why we recommend modified exercises. Some modified exercises are marching steps, to keep blood flowing and heart pumping. Given the evidence linking exercise and cancer, it's crucial for cancer patients to closely follow the guidance of healthcare providers and adhere to each exercise regimen prescribed to them.

JUSTIN HUGHES

Faculty Mentor: James Stavitz

“An unexpected twist: Anterior Bundle of Ulnar Collateral Ligament tears beyond the Pitcher’s mound - A Football Player’s conundrum”

Over the past three decades, Ulnar Collateral Ligament (UCL) injuries have gained notoriety predominantly within the baseball community. Notably, in throwing sports, the mechanism of injury predominantly results from repetitive microtrauma, engendered by the incessant valgus load on the elbow. However, the etiological narrative differs significantly for athletes involved in non-throwing contact sports. Herein, UCL injuries often originate from sudden, traumatic elbow loads. Our case study delves deep into an intriguing instance of a high-grade UCL tear in a non-throwing contact athlete, a realm less explored, yet equally critical. While UCL injuries have become synonymous with baseball, particularly pitchers, our study emphasizes that these injuries can manifest in contact sports via distinct etiological pathways. Non-throwing athletes presenting with UCL injuries necessitate a keen clinical eye. A rigorous assessment, spanning from history to physical examination, including strength, motion, and sensory evaluations, is the keystone. Benchmarking against the contralateral extremity offers invaluable insights, ensuring holistic care.

ALIYA SAYYED

Faculty Mentor: Pragma Sharma Ghimire

“Comparing the gait biomechanics in stroke patients who have higher incidence of falls vs stroke patients who have less incidence of falls”

Stroke survivors face an increased risk of falls, persisting beyond the acute phase and impacting their lifelong quality of life. Falls and resulting fractures contribute significantly to post-stroke morbidity and mortality, mainly due to the increased susceptibility of individuals with stroke to hip fractures and subsequent loss of independence. Reduced bone mineral density post-stroke further compounds this risk. Assessing gait biomechanics serves as a critical tool in identifying fall risk among older adults. Previous studies have outlined differences in gait parameters between older adults who experience falls and those who do not, highlighting reduced gait speed, stride length, single limb support time, and increased gait variability. While some stroke patients exhibit a higher susceptibility to falls, others are less prone to such incidents. However, there remains a gap in understanding whether differences in gait biomechanics exist among stroke patients with varying fall incidences. Therefore, this study aims to address this gap by comparing the gait biomechanics of stroke patients with high and low incidences of falls. Through the analysis and comparison of gait parameters across these groups, our objective is to identify any variations that can help design interventions to reduce fall risks among stroke survivors.”

MICHAEL SHAPIRO*Faculty Mentor: Pragma Sharma Ghimire***“Does Ice-Water Submersion Improve Athletic Performance?”**

During training and competitions, athletes are required to maximize their performance while managing fatigue and soreness in short periods of recovery. Cold-water immersion helps increase hydrostatic pressure and/or reduce body tissue temperature. Enhanced recovery, facilitated by altered blood flow, post-exercise fluid retention, and increased metabolism, reduces muscle damage, swelling, inflammation, spasms, and pain. Improved recovery promotes better overall performance. Research has shown that ice water submersion can enhance and speed up recovery. This study aims to determine the effects of ice water submersion on upper-body muscle performance. 20 participants from the Kean University Men’s Lacrosse Team between the ages of 18-23 years will complete the ice water submersion with the training protocol. Participants will take grip strength measurements for both dominant and non-dominant hands for the pre-assessment portion. Subsequent visits involve determining each participant’s 1 Rep Maximum (1RM) of dumbbells for bicep curls, bench press, and shoulder press, establishing relative intensity percentages (70%-90% of 1RM). The protocol includes arm immersion in ice-cold water for specific durations and frequencies. Participants will then perform 10-12 bicep curls with the designated weight, ensuring proper form. Data will be analyzed, measuring pre-test and post-test results within and between treatment and control groups. We expect that ice-water submersion will enhance muscle performance.

ANDY TAPIA*Faculty Mentor: Pragma Sharma Ghimire***“Does having a lower RHR mean less cardiovascular risk factors?”**

Evidence suggests that resting heart rate (RHR) is a significant indicator of mortality risk. Consequently, exercise emerges as a crucial tool for improving RHR and promoting overall health. Endurance training and yoga have been shown to reduce RHR and effectively support lifestyle modifications beneficial to health. Cardiovascular diseases (CVDs) rank as the leading cause of death worldwide. Treatments such as blood thinners and beta blockers can alleviate these conditions. One often overlooked factor is the relationship between resting heart rate (RHR) and mortality. Studies have reported a semi-logarithmic relationship suggesting that heartbeats per lifetime remain relatively constant. However, humans, with an average life expectancy of around 80 years, deviate from this pattern, potentially due to factors like medication, scientific advancements, and lifestyle choices. A clear association exists between higher RHR and elevated risk factors. By focusing on lowering RHR, individuals may potentially alleviate the risk of obesity and hypertension, thereby improving cardiovascular health. This study aims to understand the significance of RHR as a predictor of mortality and advocates for lifestyle interventions, including exercise, to improve cardiovascular health and prolong life expectancy.

STUDENT POSTER ABSTRACT

MYLES J. WILLIAMS

Faculty Mentor: Pragma Sharma Ghimire

“Tracking Posterior Chain Development in Elite Freshman Football Athletes after an 8-week Strength & Conditioning Developmental Program.”

American football is a very explosive sport and requires sudden movements at maximum effort. A large part of what is required for a football athlete to succeed during any phase of training or competition involves the strength of the posterior chain and the ability to function under load. This study aimed to analyze the newcomer strength training program created for freshmen football players at Florida State University and track the posterior chain development based on data from Nordbord. This study was focused on two 4-star athletes, one running back and one defensive back. The Nordbord test hamstring strength was used during an eccentric movement. Each athlete produced three total reps dropping the chest as close to the ground as possible in a controlled movement during each Nordbord session. The two athletes differed in average force production for the left and right legs. We also found a difference in asymmetry between two athletes. The results suggest that a visual representation of the maximum force each athlete produced was the most important factor related to what's required of the sport of football. In conclusion, a collegiate freshman football athlete going through a beginner strength training program at Florida State with a focus on ingraining neural patterns, efficient movement, and force production will develop into a stronger athlete and allow them more force production from the posterior chain.

ANGELINA DOUGHERTY

Faculty Mentor: Raymond Divirgilio

“Bridge-Enhanced Anterior Cruciate Ligament Repair (BEAR)”

A seventeen-year-old male high school football athlete suffered a right knee anterior cruciate ligament rupture during a non-contact football practice. During the initial evaluation, the athlete complained of pain in his knee after running a play and applying a valgus and external rotation to the knee and had no previous history of issues with that knee. The athlete had a positive anterior drawer and was referred to the physician, where he was cleared for play with a hinge brace. In the following competition, the athlete felt a sharp pain in the second half of the game that eventually subsided, and he continued. He then tried to make a sharp break during the game and the athlete states he felt as though his knee shifted out and went back into place and had intense pain but could walk off the field. He was immediately taken out of the game and referred for magnetic resonance imaging (MRI). Surgeon wanted to go with the BEAR implant due to its significantly better hamstring strength two years postoperatively and its ability to restore your ACL to its original anatomical location. There are still complications that may arrive where the BEAR Implant may not be fitting for that patient's case. The BEAR Implant is having great success and becoming more of a route surgeons take for ACL surgery. However, it still needed to be looked upon as to how severe each case may be to make the right call for the athlete's wellbeing.

MATTHEW LEMA

Faculty Mentor: Raymond Divirgilio

“Pulmonary Embolism Caused by Tibia Fibula Fracture”

Pulmonary embolisms are commonly formed by blood clots in the legs that form due to prolonged sitting or inactivity that travel up to the lungs. Still they can also form because of fat emboli that circulate in the blood. These fat emboli can be released due to a long bone fracture or, in some rarer cases, soft tissue damage. Pulmonary embolisms are most commonly detected using a CTPA or computed tomographic angiography. Despite having specific tests to detect them, pulmonary embolisms are often misdiagnosed. While pulmonary embolisms are significantly more common in older age groups, it is still possible for people to get them at all stages in life. Pulmonary embolisms that are not caught early can be deadly, they claim approximately 60K-100K lives per year. It is crucial to run a wide variety of tests to rule out or reduce the chances of misdiagnosis. Pulmonary embolisms are not expected but should be more carefully monitored when it comes to fractures of long bones in the lower half of the body. A faster diagnosis can save lives and potential medical issues for a patient's future.

RAYMOND MOSQUERA VERA

Faculty Mentor: Nicole Lowy

“Safety Measurement to Prevent Seizures in Athletes with Epilepsy”

Epilepsy is commonly associated with somatic, cognitive and psychiatric comorbidities such as anxiety and depression, which negatively impact quality of life. There are case studies that say that physical activity reduces the chances of stress which could decrease the chances of an athlete having a seizure while playing sports. If an athlete has good control of their medical condition it is possible for them to participate in sport safely. The majority of physical activities or sports are safe for people with epilepsy to participate in with special attention to adequate seizure control, close monitoring of medications, and preparation of family or trainers. There are rare cases of exercise-induced seizures, studies have shown that physical activity can decrease seizure frequency. Also there is limited data to show that epileptics and their fellow athletes are at increased risk of injury. Athletes with epilepsy should not have any problem or risk while participating in sports, taking in consideration that they know how to control the seizures and how to prevent it. Athletes with epilepsy often have been excluded from sport and exercise due to fear and misperception. This case study shows that athletes can participate in sports if they maintain a physical activity and medication adherence.

STUDENT POSTER ABSTRACT

BRYCE MUNDY

Faculty Mentor: Raymond Divirgilio

“Presence of Ramp Lesion Tear and Pivot Shift Contusion with Potentially Intact ACL”

Ramp lesion tears of the meniscus are found in nearly 20 percent of all ACL tears when the posterior horn of the medial meniscus tears vertically, resembling a ramp. A pivot shift contusion pattern can be seen in 80 percent of ACL tears. This occurs due to the ACL tearing and being unable to prevent excessive anterior translation of the tibia, which causes the lateral femoral condyle to strike the tibial plateau during a pivot motion. In this case there are multiple indications that would lead one to believe the ACL is not torn. However, the verbiage in the MRI report of high-grade sprain instead of tear complicates the case. That, in conjunction with multiple negative Lachman tests, would indicate that the ACL is intact. Other factors would signal the contrary, beginning with the ramp lesion tear seen in the medial meniscus in combination with the pivot shift contusion pattern seen on the MRI. The combination of the high sensitivity of the Lachman test and the MRI which is considered the gold standard for injury should make the surgical plan more definitive, but the athlete will be going into surgery not knowing if he will have ACL reconstruction along with his meniscal repair.

ALEXANDRA ROQUE

Faculty Mentor: James Stavitz

“The Elusive Morel-Lavallée Lesion: Disentangling Its Clinical Conundrums”

The Morel-Lavallée lesion stands as a paragon of closed soft tissue degloving injuries, traditionally precipitated by post-traumatic events. This pathology embodies a detachment of subcutaneous tissues from the fascia beneath, resulting in a notable hemolympathic collection. Though sporadically reported, male individuals present with a statistically higher predisposition (2:1 ratio) to this lesion. The trochanteric region emerges as the primary site, with incidence rates ranging between 8.3%-8.9% in association with acetabular fractures. Additional frequent sites encompass the thigh and knee. Originating predominantly from high-velocity or blunt trauma, sports like wrestling, football, and baseball serve as prevalent backdrops. Diagnostically, the magnetic resonance imaging (MRI) modality offers unequivocal insights. The lesion's scale determines the treatment strategy: minor cases prefer drainage, whilst sizable lesions necessitate surgical intervention. Ignoring this condition may escalate to necrosis. Sclerodesis, which entails the infusion of fibrosis-inducing agents, emerges as the pivotal therapeutic recourse, boasting a 95% success rate. Morel-Lavallée lesion is seen in twice as many males than females and is seen mostly in the trochanter region. Its identification mandates sophisticated imaging modalities. The lesion's magnitude and severity dictate the therapeutic trajectory, potentially culminating in surgery. A laissez-faire attitude may plunge patients into the ominous realms of necrosis. Recognizing the lesion's origins, primarily blunt and high-velocity trauma remains imperative.

JEANINE VERESS

Faculty Mentor: Nicole Lowy

“Distal Triceps Rupture In High School Football”

Distal triceps rupture occurs when the tricep tendon detaches from its attachment point on the olecranon process of the ulna resulting in partial or complete weakness of elbow extension. This injury is rare and has an incidence rate of 0.8%. There are multiple risk factors for sustaining a distal triceps tendon rupture, however, this injury can occur simply as a result of trauma. Typically the signs and symptoms of this injury include pain, hearing or feeling a “pop” in the elbow at the time of injury, swelling and ecchymosis. There are different repairs for this injury and unless the patient is unfit for surgery, surgery is typically recommended. With this injury being so rare, when it does occur it requires immediate surgery in order for the best outcomes. The distal insertion of the triceps can rupture from a block activity involving sports such as football. Immediate imaging is required for appropriate diagnosis and surgery is necessary to repair the tear.

ANTONIO VESKOV

Faculty Mentor: Raymond Divirgilio

“Collegiate Football Player’s Meniscal Cyst and Tear”

Meniscal cysts are relatively rare knee joint abnormalities. They are relatively rare with reported incidence ranging from 1-8% in both histologic and magnetic resonance imaging (MRI) studies. Cysts can develop as a result of underlying meniscal tears or joint degeneration and may contribute to increased pain and discomfort. These tears create openings or fissures in the meniscus, allowing synovial fluid (the lubricating fluid within the knee joint) to escape from the joint space which can cause knee pain, swelling, and problems moving the knee. The rarity of meniscal cysts is due to the fact that not all meniscal tears lead to the formation of cysts. If a meniscal cyst or a meniscal tear results in significant joint swelling and inflammation, this can affect the overall stability and mechanics of the knee. Both the cyst and tear require careful evaluation and appropriate treatment by healthcare professionals to address pain, restore knee function, and prevent further complications. Meniscal cysts can be diagnosed through imaging such as an MRI and would most likely require surgery to repair the knee.

LIZ TEEL

Faculty Advisor: Lorin Tredinnick

“Evaluation of Satisfaction Surveys for Leadership Workshops”

The college experience is a time of self-identity formation and career development (Navarro et al., 2020). For a student-athlete, dedication and time is split between sports and schoolwork, leaving little room for critical personal growth and vocational preparation. At Kean University, this problem was addressed by the creation of CLAWs, or Cougar Leadership Academy

STUDENT POSTER ABSTRACT

Workshops. CLAWs provided student-athletes the opportunity to develop the necessary skills for life after sport. In its second year of the program, CLAWs introduced new requirements for participation, including attending two or more Cougar Leadership Academy workshops, one alternative event, and one volunteer activity. There were a total of 63 applicants to the program for the 2023-2024 academic year, but, due to scheduling conflicts, there were dropouts. The workshops varied in topics according to academic level, with the freshman class focusing on transitioning to Kean, while higher level workshops addressed student-athlete wellbeing, career exploration, networking, and, finally, job application and interviews. To gauge CLAWs' success, the participants were issued a satisfaction survey following discussion. The data included in this evaluation was pulled from a total of 66 satisfaction surveys (duplicated). Each survey contained nine questions, opening with demographic information such as class year and gender identity. A rating from a scale of one to five was surveyed with regard to the workshop itself. Another question asked whether the participant previously attended a workshop with the same focus. The results were evaluated for a relationship between the two aforementioned questions. All surveys were anonymous which allowed for participants to answer openly and honestly. Preliminary findings from this evaluation will be discussed.

CHPHS | PUBLIC HEALTH

CHARLENE HIGGS

Faculty Advisor: Joshua Burnett

"Stress, Self-Esteem, and Health Outcomes"

The purpose of this investigation was to establish whether individuals who have high self-esteem were less likely to fall ill in a given year than individuals who express low self-esteem. Additionally, this research sought to evaluate the relationship between stress and self-esteem, as well as stress with health outcomes for potential correlational relationships. The study was achieved by having respondents fill out an online questionnaire about their biometric data, current self-esteem levels, current/former stress levels, and current/former health status. The results of the survey found a potential connection between intensity and frequency of stressful experiences with the rate of chronic illness within the sample population, but did not conclusively determine whether self-esteem affects health status. Interestingly, this research may also point to the potential of significant changes in the relativity of self-reported stress levels and/or self-esteem compared to studies that investigated these factors before the initiation of the Covid-19 pandemic in 2020. Given the results of this examination in conjunction with previous research, it could be concluded that chronic stress does have an impact on immune status. Further research in greater detail with more controls is warranted in order to thoroughly investigate the relationship between stress, chronic illness, and health outcomes.

JANIAH FLADGER

Faculty Advisor: Kalasia Ojeh

“Reproductive Justice and Equity: A Historical Analysis of Racism Towards Black Women in the U.S.”

In June 2022, Roe v. Wade was overturned, removing the federal standard protections of abortion access in the U.S. This sparked nationwide protests and newly founded public discourse about who has the right to abortion and overall reproductive healthcare. This change is perceived to be something new, however a historical analysis of racism and reproductive justice indicates that rescinding Roe v. Wade is one inequitable event in a series of many inequitable events geared towards limiting reproductive healthcare, especially for Black women. The meaning of womanhood and reproductive control must account for the patterns of instability in reproductive healthcare for Black women from before the early 20th century to the present. Using a content analysis, I found that racism continues to shape health experiences, but more attention is needed to understand the myriad ways racism has impacted reproductive health over time. An investigation of both systemic and structural racism is key to dismantling health inequities seen in the medical system and across various institutions.

CHPHS | NURSING

LORNA ABERNATHY

Faculty Advisor: Ibtihal Al Makhzoomy

“Evidence-based Lifestyle Modifications for Improving Vasomotor Symptoms in Menopausal Women”

Menopause is a naturally occurring process that starts with the permanent cessation of the menstrual cycle due to loss of ovarian function. Many women experience vasomotor symptoms at this stage of life, ranging from minor discomforts to severe and debilitating symptoms such as hot flashes, and night sweats. Other menopausal symptoms include weight gain, vaginal dryness, decreased sex drive, painful intercourse, irritability, headaches, insomnia, depression, forgetfulness, and palpitations. Living through the period of menopausal symptoms impacts the quality of life, physical and emotional health, and social well-being. Evidence-based strategies are explored, including proven lifestyle modifications that help improve vasomotor symptoms. Purpose/Aim: This systematic review examines the effect of diet and exercise on the frequency and severity of menopausal symptoms in perimenopausal, menopausal, and postmenopausal women. The PICOT question guiding this review is: In menopausal women, do diet and exercise reduce the frequency and severity of symptoms? Combined searches were also performed to find studies addressing one or more keywords. Randomized controlled trials, cross-sectional systematic reviews, and qualitative and quantitative studies that examined the effects of physical activity or dietary intervention on the frequency and severity

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of vasomotor symptoms were selected for review. Women in menopause, perimenopausal, and postmenopausal women were included, and women who were on hormonal replacement therapy (HRTs) were excluded. Each article was evaluated for the effect of diet and physical activity on reducing vasomotor symptoms. The number of studies selected from each design includes six RTCs, two cross-sectionals, three systematic reviews, one quantitative, and one qualitative. The articles from this systematic review answered the PICOT question and showed that dietary interventions and physical activities can reduce menopausal symptoms and improve the quality of life in menopausal women. The results also support the use of nutrition and physical interventions as promising tools for managing vasomotor symptoms in women during the menopausal years. Dietary and exercise interventions reduce the frequency and severity of vasomotor symptoms in menopausal women. Supporting evidence from the systematic reviews confirms that one of the best ways to control menopausal complications and improve the overall quality of life is to design interventions and implement educational programs that will reduce the frequency and severity of the symptoms associated with menopause.

IBADAH BURHANI

Faculty Advisor: Ibtihal Al Makhzoomy

Social Determinants of School Health and Attendance- An Educational Program for School Nurses

School nurses play a crucial role in fostering students' health and academic success by engaging with students, parents, and school staff. Current nursing research has been exploring the social determinants of health and their impact on school populations. This poster aims to demonstrate an educational program designed for school nurses, focusing on identifying the social determinants of health within school populations. It explores strategies for addressing these determinants and their impact on reducing absenteeism while enhancing overall well-being. In school-aged children, can school nurse-led educational programs play a role in reducing absenteeism and enhancing overall well-being? Inclusion criteria focused on US-based, English-written articles on school health, while non-US studies were excluded due to differing educational and healthcare contexts. The reviewed articles exhibited diverse types, with Level 6 research articles comprising 36% (n=8), followed by Level 3 data at 27% (n=6), and Level 1 data at 10% (n=2). The remaining 27% (n=6) encompassed various study designs, including randomized controlled trials, cross-sectional, and cohort studies, all conducted in the United States. In 14 studies, school nurse interventions were associated with decreased absenteeism and improved health. These studies showed that school nurse interventions led to decreased absenteeism and improved health in students. It provides the groundwork for educating school nurses about addressing social determinants of health in their professional development.

SNEHAL PATEL

Faculty Advisor: Ibtihal Al Makhzoomy

“The Nurse’s Role in Advocating Children and Adolescents with ADHD”

Raising a child with ADHD presents unique challenges that require additional support in various areas of their life such as daily activities, education, emotions, interactions, and social connections. Studies have shown that these children often experience frequent outbursts and challenging behaviors which can be overwhelming for both parents and caregivers. To alleviate this burden, the CDC recommends a variety of strategies, including comprehensive healthcare follow-up, medication, and non-pharmacological approaches such as therapy, exercise, and lifestyle modifications. By adopting a holistic approach that encompasses physical, mental, emotional, and social well-being, individuals can significantly enhance their overall quality of life. However, the shortage of psychiatrists can make it more challenging to diagnose and treat ADHD. To address this issue, a new study has shed light on the vital role that nurses can play in managing ADHD in children, with a particular focus on improving academic outcomes. The study involved a comprehensive literature review.. The findings underscore the importance of non-pharmacological therapies such as behavioral interventions and educational support and highlight the important role that nurses can play in delivering these interventions for children and adolescents with ADHD.

CHRISTINA HICKS

Faculty Advisor: Ibtihal Al Makhzoomy

“A Race Utilizing the RACE Score to Optimize Prehospital Triage in Large Vessel Occlusion”

The American Heart Association (AHA) established the “Target Stroke” program to enforce stringent targets for hospitals nationwide, aiming to enhance outcomes for stroke patients eligible for thrombolytic therapy or Endovascular Therapy (EVT). Phase III of this program assesses door-to-needle time for IV thrombolytics and door-to-device time for EVT. According to the “mothership” model, prehospital identification of Large Vessel Occlusion (LVO) can lead to improved patient outcomes and reduced transport time by directing patients straight to a Comprehensive Stroke Center (CSC) providing EVT (Holondinsky et al., 2017). Research supports the Rapid Arterial Occlusion Evaluation (RACE) scale as a valid tool for Emergency Medical Services (EMS) stroke triage (Carrer, D., Campell, B., et al., 2019). This project will involve a 15-hospital network in New Jersey. EMS will assess patients using the RACE stroke scale, transporting those with a score higher than five immediately to a nearby comprehensive center if within a 45-minute driving distance. Timing and outcomes will be recorded to determine the time from first medical contact to endovascular treatment and the rate of over-triage. This review aims to provide insights into the urgency of prompt stroke treatment, the role of EMS in prioritizing and transporting patients to appropriate stroke treatment, and recommended implementation strategies. Using the PRISMA framework, a systematic review of published literature was conducted. Inclusion criteria encompassed ground-based EMS, prehospital

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stroke triage scales, and improved transportation times for possible LVO cases. Rapid critical appraisal led to the selection of 12 studies. Following the Iowa model, an educational intervention will be delivered to the EMS department, covering Primary Stroke Centers (PSC), CSC, and proper application of the RACE stroke score. Instruction will also address when to initiate bypass of a PSC and transport patients directly to a CSC. EMS training will focus on using the RACE stroke scale to prioritize patients with LVO and transport them directly to a CSC for EVT. Strategies for evaluating intervention outcomes will be devised, including first medical contact-to-treatment time and over-triage rate. The adage ‘time is brain’ underscores the critical role of prompt EMS action in directing patients to appropriate facilities. Inter-facility transfers can consume valuable time. EMS education on utilizing the RACE score to prioritize LVO patients and transport them directly to a CSC for endovascular clot removal is paramount.”

CHPHS | OCCUPATIONAL THERAPY

**ZACHARY CAPOTE, SANDRA BULUS, ERIC GONZALEZ,
CHRISTOPHER MCGUIRE & NALANI VELEZ**

Faculty Mentor: Victor Camacho

“Exploring Equitable Technology Use in Higher Education”

Limited research has been given to exploring how technology impacts higher education students, in contrast to previous focus on primary and secondary education within the literature. While younger students often receive support for equitable technology access through public funds, those in higher education usually have to self-fund, potentially affecting their ability to access and benefit from technology. This disparity underscores the importance of investigating digital device access and skills in higher education. This study aims to identify possible factors contributing to these inequalities within the current higher education systems by exploring student perceptions from one higher education state institution in New Jersey. A quantitative approach was selected to achieve this, employing a survey-based descriptive design to examine the characteristics of the undergraduate population at various Kean University campuses (Union, Skylands, and Ocean) and those enrolled in online degree programs (Kean Online). A comprehensive survey assessed students’ experiences with technology (physical hardware and networking) and technological resources (digital software that supports education) access and the impact these have on their education. Upon preliminary data analysis from approximately 170 undergraduate students, we identified limitations in accessing devices, open education resources (OER), and learning management systems (LMS). These initial findings suggest a lack of awareness among students regarding Kean University’s provision of free technological resources. Most student respondents emphasized the significance of technology in education, expressing concerns that a lack of device access would significantly hinder their academic achievement. These insights could be valuable information for university administrators in identifying and creating solutions to address campus technology equity. Future research should further

explore technology access in higher education across the United States, investigating the benefits of OER, the role of institutions in mitigating technology inequalities, and the overall student experience with technological challenges.

ELIZABETH WYNN, CLAIRE HUNTER, ALEXIS FARIA, SAMANTHA FISCH, KRISTINA MALKIN, DIANA MISZCZUK, ALEXA MONTALVO, SARA OROBE, CYNTHIA REYES & MARGARET SWARBRICK

Faculty Mentor: Jennifer Gardner

“Sensorizing Your Sleep: Exploring the Feasibility and Impact of a Sleep-based Intervention for Adults Experiencing Sleep Disturbances”

The purpose of this multi-methods study was to assess the feasibility and impact of an occupational therapy-based intervention informed by the Wellness Model for adults 18+ who experience general sleep disturbances. The intervention involved guided facilitation through a co-produced sensory-based workbook across four virtual, one-hour sessions. Participants are being recruited from community based centers in New Jersey. In order to address the primary objective of determining feasibility quantitative data was collected via a researcher developed, Sleep Program Feasibility Survey, and qualitative data was collected via one-on-one virtual interviews. In order to address the secondary objective of measuring impact, data was collected pre- and post-intervention via the Wellness Inventory and Pittsburgh Sleep Quality Index (PSQI). Spearman correlations will be utilized to analyze the scores of the PSQI and Wellness Inventory and emergent coding procedures will be utilized to analyze open-ended and interview responses. Clinical implications of the research include utilizing participants' feedback regarding the co-produced workbook to inform larger scaled future studies. It is expected that participants will experience improved sleep quality and sleep quantity one-month post intervention.

CHRISTINE LASKOWSKI, DANIELLE ARRABITO, STEPHANIE COREA, GABRIELLA KIPP & KARMENA TAWFEEK

Faculty Mentor: Jennifer Gardner

“What Are The Needs of College Students on Campuses?: Police Response to Neurodiverse Emergencies”

The purpose of this research study aims to understand crisis response procedures and the potential role of occupational therapists in crisis response teams on an urban-based college campus. The study will investigate the experiences of university-employed police officers and students facing emotional/mental distress at Kean University (KU). The inclusionary criteria for participants is aged 18 years or older, connected to KU, and proficient in English. This includes up to 100 students interacting with KU police officers during an emotional/mental crisis. The police officer inclusionary criteria include officers employed at KU and responding to emergency calls regarding student(s) in emotional distress/crisis. Outcome measures were developed for each participant group, including demographic surveys, personal experience surveys,

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which consist of multiple choice and open-ended questions, and semi-structured interviews to explore strategies for enhancing the mental well-being of students and improving campus police response. Descriptive statistics will be used to summarize the results of the demographics and feasibility surveys. The Person-Environment-Occupation-Performance (PEOP) model guided the development of the semi-structured interview questions and will guide the deductive, qualitative coding.

SHAUNA CORBET, DERVAIN MATTOS & MEAGHAN PANNASCH

Faculty Mentor: Amanda Sarafian & Mansi Brat

“Effectiveness of an Interdisciplinary Community-based Parent-child Program Promoting Mental Health and Social Participation in Children 5-7 years-old”

Evidence supporting initial positive relationships between a parent and child has brought about parent education programs designed to improve parent-child relationships (Duch et. al, 2019). These programs are guided by attachment theory, social learning theory, and objective skills such as broadening parent-child connections by advancing parent-child play, praise, and positive reinforcement. Education related to neurobiology and positive parenting fosters understanding and application. Interpersonal Neurobiology (IPNB) is an interdisciplinary approach to understanding how secure relationships affect the brain focusing on ways relationships and the brain interact to shape the mind, drawing from cognitive and affective neurosciences, developmental psychology, and wisdom traditions (Beijan, 2020). The Nurtured Heart Approach (NHA) is a therapeutic method for teachers, parents, educators, and clinicians to recognize and promote positive behaviors and connected relationships. Evidence supports the NHA to improve well-being for parent and child, positive attention to their children, decreased responding with negativity, and an increase in parent confidence (Brennan, et al. 2016). The objective of this community-based participatory research study is to evaluate the benefits of multidisciplinary community-based group interventions including NHA education and activities based in interpersonal neurobiology (IPNB) to note differences in emotion regulation, and social participation amongst children with inadequate access to mental health care. This pre-test post-test study employs a mixed-methods approach, combining standardized assessments, group observations, and qualitative interviews to comprehensively evaluate the effectiveness of the 10 week parent-child program at an urban community center. Participants are drawn from community gate-keepers, ensuring a representative sample that encompasses marginalized identities.

HAYLEY FOGLIA, KATTELEYA GO, WEISSER MILLIEN, RACHEL PIERRE & ANTONELLA RUBIO

Faculty Mentor: Victor Camacho

“Elevating the Community/Elevando Nuestra Comunidad”

The ethnic/racial makeup of the allied healthcare professions, specifically occupational therapy (OT), lacks concordance with the U.S. population,

specifically with those who seek healthcare services. Diversification of the occupational therapy field will lead to improved patient care and decrease healthcare disparities resulting in overall improved patient health outcomes for underrepresented minority (URM) communities. This research study aims to understand the impact and feasibility of early vocational exposure for Latino and/or Hispanic and Black and/or African American undergraduate students through a one-day experiential learning program to explore areas of the occupational therapy field. The population for this study is Kean University undergraduate students who are at least 18 years old, classified as a freshman or sophomore, are proficient in either English and/or Spanish, and self-report their racial/ethnic identity as Black and/or African American or Hispanic and/or Latino. This single-group research study with a pre/post survey design explored barriers URM undergraduate students faced entering higher education, their knowledge of OT, interest in OT, and self-efficacy in pursuing a career in OT. Participants who completed the pre-survey were invited to attend a 90-minute educational, interactive, hands-on learning experience about occupational therapy. Pre-program data reports participants having an interest in occupational therapy, however, having limited knowledge, and a low sense of confidence in pursuing a career in occupational therapy. Post-program participant data displayed an increase in interest, knowledge, and self-efficacy in pursuing a career in OT as a result of attending the program. This research serves to inform future healthcare pipeline programs of the value of equipping URM students with the knowledge and resources needed to address their own barriers to education. Programs that follow this structure can support students in making an informed career choice. The study limitations include a small sample size due to limited attendance, affecting generalizability, and exploration of heterogeneity. Future vocational exploration programs should consider the length of programming, providing more accessible time frames for individuals with different availability, and virtual programming.

MIARA JOY MANDAP, SANA MIR, DERVAIN MATTOS, BRIANNA SOMMA, JENAL RANA & KARLEA ZAZAPOULOS

*Faculty Mentor: Zahava Friedman, Sabrina Kenny, Kenny Sullivan, John Lee,
Keri Giordano, Kate Nealon & Jessica Latawicz*

“Empowering Families Through Interprofessional Collaboration: A Qualitative Investigation of Caregiver, Clinician and Student Experiences in the Raising Families Project”

Background: Interprofessional collaboration (IPC) describes the team-based operations of a group of clinicians in service. At the same time, it is also important to consider the individuals, families or populations served as vital members of the care team. Few studies consider the roles of both caregivers/families and pre-clinical students in the context of interprofessional education and practice. Purpose: This research study looks at an interprofessional, developmental caregiver-child support program called the Raising Families Project (RFP) which sought to develop a scalable, interprofessional model of family support to improve child development, parent self-efficacy and IPC among team members. This research study seeks to understand caregiver, clinician and student perceptions of IPC and the effectiveness of the RFP in addressing

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its mission. Furthermore, this study also seeks to make a unique contribution to research and practice, by theorizing a novel and inclusive family, child, clinician and student collaborative model in support of young children and their families. We hypothesize that while caregivers, students, and clinicians value this project, they also have feedback to further enhance the effectiveness of inter collaborative programs and improve models of caregiver support. Methods: This study utilized a mixed methods design to understand perceptions of caregivers, students, and clinicians involved in the RFP. This study collected mixed-method program evaluation data across three cohorts from May 2023, to April 2024, in the form of focus groups, interviews, surveys and the Interprofessional Collaborative Competencies Attainment Survey (ICCAS), a 20-item Likert-style survey of interprofessional competency. Results and Discussion: Preliminary results reveal increased motivation in interprofessional work as a support for future practice in this area, while a notable barrier was limited time allotted to learn about, from and with caregivers and other professionals. Implications for further research include building additional opportunities of collaborating with caregivers during the curriculum development process. Additionally, more carefully considering student, practitioner and caregiver time can allow for structured and unstructured learning to occur across various stakeholder groups."

**LAUREN NEDILSKY, SHAUNA CORBET, HANNAH CRIOLLO,
BIANCA DESOUSA, REBECCA GASIN & MICHELLE VAZQUEZ**

Faculty Mentor: Amanda Sarafian

"Caregiver Well-Being & Connectedness to Nature: A Cross-Sectional Survey Study"

Caregivers of individuals with disabilities report social isolation and restricted leisure activities as common challenges in daily life. Emerging evidence indicates that nature-based interventions nurture social connectedness and as a result pro-health behaviors and well-being. Review of the literature indicates that there is a lack of current research on the experiences of caregivers of adults with developmental disabilities (DD), leisure participation, and health promotion within the scope of community-based occupational therapy for this population. Therefore, occupational therapy nature-based interventions aimed at fostering social connections, promoting mental health, and building supportive communities are warranted. The Caregiver Well-being and Connectedness to Nature study is a quantitative, non-experimental, cross-sectional survey design. The aim of this study is to explore the experiences of caregivers of adults with DD, including their well-being and connectedness to nature. Part I of this study examined the content validity of the researcher developed survey. Part II of the study included distribution of the anonymous survey to community practices through social media via convenience sampling and data analysis. This study will analyze both quantitative and qualitative data, and gather demographic information. Anticipated results of this study include a valid survey with items that represent and are sensitive to the lived experiences of caregivers; demographics and current mental, physical, and social well-being of caregivers of adults with DD; caregiver's level of connectedness to nature or close relationship to natural surroundings; supports and barriers to participation in natural surroundings

and nature-based activities; and level of interest of caregivers in nature-based interventions. Limitations include a limited time frame within the context of a course. Significance of the Study/ Anticipated Outcomes: The results of this survey will guide future investigation into caregiver perspectives of nature-based leisure activities and effectiveness of nature-based interventions to improve mental and social health.

CHPHS | PHYSICIAN ASSISTANT STUDIES**HOPE BUCHAN, KAITLYN MCTERNAN, KARI MILCH,
LAURA SPIAK & NICOLE VASSALLO**

Faculty Mentor: Wendy Ritch

**“The Role of Education in the Underdiagnosis of Skin Cancer
in African Americans”**

Skin cancer is statistically more common in Caucasians than African Americans, which in turn has led to an underrepresentation of how skin cancer appears in African Americans in textbooks and other educational materials. Previous research has found evidence to suggest that socioeconomic factors, lack of access to healthcare, the presence of bias, and deficient skin cancer education among non-White populations as well as lack of physician training may contribute to the disparity in African American skin cancer mortality rates (Rizvi Z, Kunder V, Stewart H, et al., 2022). The purpose of the proposed research is to determine whether skin cancer diagnosis is delayed in African Americans compared to Caucasians due to lack of examples provided during medical education and how this affects patient outcomes. It is hypothesized that a lack of education on how skin cancer presents in African Americans, leads to a delay in diagnosis in these patients and therefore poorer health outcomes when compared to Caucasians. To explore this claim, a survey was sent to all physician assistant programs in the United States and additional medical and nurse practitioner programs. The survey was disseminated via existing networks, emails to program directors to distribute to students, and social media via Instagram. The survey was completed anonymously by human subjects (N=376) through Qualtrics and asked questions aimed at evaluating their knowledge regarding how skin cancer presents in African Americans and diagnosis within this population. We found that 239 (63.6%) of those surveyed responded that their medical training did include different presentations of skin cancer in different populations, and skin colors. When looking at whether respondents were aware of what skin cancer looks like 314 (83.5%) said they are aware of what it looks like in a Caucasian person and 204 (54.2%) said they are aware of what it looks like in African Americans. Comparing those who were confident in diagnosing skin cancer 214 (56.9%) said definitely or probably yes to feeling prepared in diagnosing a Caucasian person versus 71 (18.9%) who felt prepared to diagnose African Americans. We did find that many respondents who said they know what skin cancer looks like in African Americans also reported having previous clinical experience in a dermatology setting. Ultimately our results show that the majority of students are being

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taught about what skin cancer looks like in different populations, but they are not confident when it comes to diagnosing. Given the importance of early diagnosis of skin cancer for increased patient outcomes, more research is needed to better understand the impact medical education has on the diagnosis of skin cancer in African American patients.

**ELIZABETH CANCELLIERE, MATTHEW ELKO, GABRIELLA HERBERT,
SHREJA PATEL, JESSICA STAVAR & KEVIN VALCARCEK**

Faculty Mentor: Wendy Ritch

“Effect of SES vs Race on Childhood and Adulthood Weight”

Childhood obesity is becoming more prevalent in the United States and has tripled since 1978. Based on information collected by the CDC between 2017 and 2020, approximately 14.7 million children and adolescents are obese. Previous research has identified various contributing factors, such as race, ethnicity, socioeconomic status, education level, etc. Analyzed literature has indicated that low socio-economic status influences childhood obesity more than just race alone. However, it remains unclear which of these variables have the greatest effect on the prevalence of childhood obesity and adult comorbidities. In this study, both socioeconomic status and race were analyzed as factors to obesity to determine which is more contributory. Along with this, the research analyzes these factors over the lifespan determining which factor is more contributory in childhood versus adulthood. A survey was conducted asking individuals over the age of 25 questions about their race, childhood income, childhood weight, adult income, adult weight, and a variety of other questions about diet and obesity related illnesses. The survey was sent out online via craigslist, facebook, reddit, and other social media platforms. Flyers were distributed throughout Union, Secaucus, Ocean County, and Staten Island. A literature review was also conducted to analyze past research to determine if race or socioeconomic status contributes more to childhood obesity and higher rates of comorbidities in adulthood. The relationship between childhood weight and race was analyzed using a Kruskal-Wallis test. It determined that the mean rank of childhood weight was significantly different between races with a P value of 0.004. Statistical analysis of other factors included the relationship of childhood weight and income, adult weight and income, and adult weight and race did not show significance. This indicates that there were similar weights reported across differing levels of childhood and adult income as well as race. An Anova was also conducted and did not show statistical significance which indicated that adult BMI were similar among levels of race and SES. In conclusion, our study shows that there were no significant findings to support our original hypothesis to determine if race or SES has a more significant role on childhood obesity and comorbid conditions in adults.

NASRIN JAHAN & MARAM ASALIEH*Faculty Mentor: Wendy Ritch***“Pain and Treatment Outcomes Among Hispanic, non-Hispanic Black and non- Hispanic White women”**

Racial bias affects the health of minority groups such as African Americans and Hispanic women. Oftentimes, their pain is dismissed as they struggle to find proper treatment and care to address their health concerns. Among various racial groups, different management and treatment plans in the health care setting are often driven by racial bias leading to lack of available resources, appropriate pain management, and overall undertreatment of their pain. Given the disparity that exists, our study investigated the relationship between race/ethnicity and pain management among women belonging to minority groups within a population based sample of US adults. Our secondary objective was to evaluate if these associations were dependent on the nature of the patient-provider relationship. We conducted the study using a 10-minute survey consisting of 13 questions via Qualtrics. Data collected included 184 responses from US adults who identified as women. We also used the Visual Analogue Scale to mark the patients pain level prior to and after their treatment. Our survey was administered in both English and Spanish and all participants were enrolled in a raffle to win a \$25 Visa gift card. The survey was posted on multiple social media platforms such as Craigslist, Facebook, and Instagram. Additionally, it was sent out to participants via email. We used the analysis of variance (ANOVA) test to analyze differences in the treatment of pain between populations of women. Among the three most prevalent female populations- African Americans, Hispanics/Latinos, and Whites/Caucasians there were a total of 37 respondents who identified as African American, 61 respondents who identified as White, and 29 respondents who identified as Hispanic. Out of the 37 respondents who are African American, 18 respondents (48.6%) rated their satisfaction after treatment anywhere between a 1 to 5 out of 10, and 12 respondents (32.4%) rated their satisfaction after treatment anywhere between a 6 to 10 out of 10. Our data revealed that African American females had lower levels of satisfaction after treatment compared to the other populations. In conclusion, the study highlights significant disparities in pain management among women in minority groups in the United States. As indicated by the results of this study, satisfaction with treatment differs among African American, Hispanic/Latino, and White/Caucasian women, with African American females having the lowest level of satisfaction compared to other populations. This suggests that racial and ethnic background may influence the perception and management of pain, which highlights systematic biases within healthcare systems. Addressing these disparities and the need for targeted interventions is crucial for healthcare providers and policymakers to recognize and ensure equitable healthcare experiences; mitigating the impact of racial bias and improving satisfaction among all women, regardless of race or ethnicity.

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**EMILY JEFFERSON, JOSEPH BRODEUR, BRIAN CHABALLA,
TYLER MANLANGIT, EDDIE MENDEZ & BRIAN ROSEN**

Faculty Mentor: Wendy Ritch

“Demographic Factors and Body Temperature Variability in a Diverse Community: Kean University Students”

Body temperature is a vital physiological parameter that is often utilized in clinical settings to assess health status. However, existing temperature data may be influenced by various factors, including illness, environmental conditions, and individual demographics. This research aims to investigate the association between average body temperature and demographic factors among the diverse community of Kean University students. The primary objective of this study is to explore the relationship between average body temperature and demographic variables such as age, race, ethnicity, and sex within the Kean University Community. Additionally, the study seeks to examine the correlation between body temperature and lifestyle factors, including commute time, employment status, exercise routines, sleep duration, and stress levels. By elucidating these relationships, the research aims to provide insight into the factors influencing body temperature variability in a diverse population. Data collection was conducted between 2/06/24-2/23/24 by recruiting voluntary participants at the Kean University library. Participants scanned a QR code with their mobile device to answer a 13 question demographic questionnaire. Their temporal temperature was then measured using the same infrared thermometer each time. Data analysis was done by using Analysis of Variance (ANOVA) to determine the statistical significance of the differences in mean temperature by race. The study contained 100 Kean University students. By self-identification, this included 12 white males, 30 white females, 8 hispanic males, 16 hispanic females, 4 black males, 7 black females, 3 asian males, 6 asian females, 2 other males, and 3 other females. 9 surveys were excluded after failure to submit the response correctly. Hispanic males had the highest mean temperature of 98.95F, while Asian males had the lowest mean temperature of 96.86F. This variance was shown to be statistically significant with $P=0.00047$, $F=3.82$. These findings suggest that there is a significant difference between mean temperature by race in Kean University students. Hispanic males had the highest mean temperature, while Asian males had the lowest mean temperature. This study is limited by small sample size, and only examined the Kean student population. Further studies should be done to see if these racial differences in temperature are reflected nationally and globally in order to better understand human physiology and to treat diverse patient populations.”

JESSICA ANGOWSKI, HAILEY PIEMONTE & ANDRIA REBER

Faculty Mentor: Jennifer Gentile & Jenna Tucker

“Presentation of Iliohypogastric Nerve Pain in an 8-week Postpartum Woman: A Case Report”

The iliohypogastric nerve (IHN) traverses the abdominal wall, pierces the transverse abdominis, internal oblique and external oblique, and then travels anteroinferiorly on the trunk before terminating in the suprapubic region where it provides cutaneous innervation. This path places the IHN at risk for injury during pregnancy due to increased tension on the abdominal wall from the gravid uterus. The purpose of this case is to review the findings from a patient presenting with suprapubic pain from IHN entrapment. The patient was a 29-year-old who was presented with pain in the suprapubic region during exercise. Prior to pregnancy, she engaged in 20-30 minutes of exercise 4 times each week. She was diagnosed with placenta previa early in her pregnancy and stopped all exercise. Following exercise clearance at her 6-week postpartum visit, she began gentle core strengthening and walking. With each bout of exercise she reported pain above her pubic bone. Clinical findings included decreased local core strength, decreased load transfer, pain to palpation in deep pelvic floor (PF) muscles, discoordinated PF muscle/core activity and facial restrictions in lower left quadrant. She demonstrated decreased ability to control pelvic position followed by symptom exacerbation. Further examination revealed a consistent and repeatable trigger of her suprapubic pain with left psoas palpation. Physical Therapy (PT) interventions were performed to address PF discoordination, hyperactivity, and core and iliopsoas weakness. The patient received 4 PF PT visits over 3 months including manual techniques, therapeutic exercise, neuromuscular reeducation including diaphragmatic breathing and patient education. At discharge, she reported 0/10 pain and a full return to her exercise program without symptoms. Interventions aimed at addressing the IHN entrapment at the psoas are effective in addressing nerve related symptoms and can assist in resolving impairment for return to full function.

MARK BONARDI, DR. CAITLYN BOYKO & DR. THOMAS KOC

Faculty Mentor: Thomas Koc & Dr. Caitlyn Boyko

“Metal Allergies for a Total Knee Replacement, What Patients Need to Know: A Scoping Review”

Total Knee Arthroplasty (TKA) revisions due to metal allergies are becoming more prevalent, resulting in increased cost and decreased patient outcomes. This study aimed to assess all factors involved in undergoing a TKA and TKA revision so that candidates may make the best possible decision. Methods: Studies were identified through MEDLINE, Google Scholar, and CINAHL. Selection was based on level of evidence, publication date, and topics pertaining to TKA revision cost, revision outcomes, and metal allergy testing prior to TKA. Results: TKA revisions led to increased recipient cost and a decrease in patient outcomes. No conclusive

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evidence was found that dermal patch testing or lymphocyte transformation test (LTT) can predict complications prior to a TKA. Conclusion: Metal allergy screening should be done prior to undergoing a TKA to assess possible risk and decrease potential costs. Potential recipients should be aware of costs, complications, and alternative treatments if metal allergies are found through testing.

JESSICA ANGOWSKI, MACIE DITILLO & MEAGHAN DOWDELL

Faculty Mentor: John Lee & Carla Enriquez

“How Prevalent is Neck/Shoulder Dysfunction in Patients with Chronic Low Back Pain?”

To determine the prevalence of patients with CLBP who also present with neck/shoulder dysfunction in the outpatient orthopedic physical therapy setting to try to better understand the cause of these musculoskeletal conditions presenting at the same time. The participants with a chief complaint of low back pain were recruited from three different outpatient physical therapy clinics in New Jersey. All participants completed a 21-question survey. The questions determined whether or not the participants experienced CLBP and concurrent neck/shoulder dysfunction. In addition, it assessed participants' demographics, occupation, recreational activities/hobbies, activity levels, history of autoimmune diseases, and prevalence and type of low back pain and/or neck/shoulder pain. Of the 24 individuals who completed the survey, 76.47% reported both LBP and neck/shoulder dysfunction. The majority of the individuals with concurrent chronic LBP and neck/shoulder pain described the onset of their LBP pain as “gradual onset not following a specific incident” (46.15%), however the onset of their neck/shoulder pain was described as “sudden onset following a specific incident” (38.46%) and “gradual onset following specific incident” (30.76%). A majority of the participants with concurrent chronic low back pain and neck/shoulder pain reported physical activity levels greater than three times a week (n=10, 76.92%). Only three participants reported activity levels less than 3 days a week (23.07%) (Table 5). Amongst participants who had chronic LBP, there was a prevalence of concurrent neck/shoulder dysfunction of 76.47%. Our hypothesis that there will be a high prevalence of neck/shoulder dysfunction in individuals who experience chronic LBP has been supported within our study. We recommend physical therapists and other clinicians to screen for neck/shoulder dysfunction when evaluating patients with LBP, and vice versa.

FRANK BENNETT, DEJAN KOSKOSKI, ALEXANDRA SCHIAPPA & TIFFANY TICHIO

Faculty Mentor: Carla Enriquez & John Lee

“The efficacy of retro-walking regarding improving knee osteoarthritis pain and functionality in comparison to conventional therapy: A systematic review”

This research paper analyzes the correlation that exists between knee osteoarthritis and retro walking in regard to improving pain and functional mobility deficits compared to conventional physical therapy (clinical ambulation,

Long Arc Quads, sit to stand, bridges, etc.). In order to address this question, we performed a systematic review and determined specific criteria to find articles that compared scores of clinically significant outcome measures such as the WOMAC and the TU to determine the effects of retro walking. Our results showed that there was statistically clinical significance with patients with knee osteoarthritis and retro walking in conjunction with conventional physical therapy in order to reduce pain and improve functional mobility. The implications of this study could be used to provide alternative interventions to improve overall quality of life and to discover new and more effective treatments for the condition in order to maximize the benefits patients can gain from exercise.

GIANA GIORELLO, DYLAN CUMELLA & MEAGHAN DOWDELL

Faculty Mentor: Jenna Tucker & Jennifer Gentiles

“Are youth athletes with post-concussive dizziness or postural instability more likely to experience protracted recovery?”

This study assessed if symptoms of dizziness and/or postural instability may predict protracted recovery in youth athletes post-concussion. Youth athletes with a diagnosed concussion were selected. A literature search was conducted with inclusion criteria: published between 2018-2023; participants 21 years old. Results: All 5 studies reported that acute dizziness following a concussion was associated with prolonged symptom duration. Three of these studies reported individuals with postural instability with/without dizziness following concussion have protracted recovery time. In addition, those who reported initial dizziness also demonstrated decreased performance on postural stability assessments. The current evidence suggests that early assessment of youth athletes within 10 to 14 days post-concussion reveals acute onset of dizziness as well as postural instability are linked to prolonged symptom duration. This aligns with recent literature indicating symptoms of dizziness and postural instability as valuable prognostic factors for all concussed individuals. Identifying risk factors associated with protracted recovery, such as dizziness and/or postural instability, may help develop preventative and post-concussion treatment strategies that facilitate quicker recovery and improve outcomes.

NATALIA KRASOWSKI, NOORHAN ELHADDAD & SKYLA KING

Faculty Mentor: Carla Enriquez & Dr. John Lee

“The Transition to Remote Work: The Increased Prevalence of Onset Low Back Pain Due to COVID-19”

The United States government placed a stay-at-home order on March 20, 2020, in an effort to reduce the spread of the COVID-19 pandemic. This movement inevitably led many businesses/workplaces to shift from in-person to remote employment. Due to this rapid shift in circumstances, many workers had to adapt to unpleasant working conditions such as an increase in working hours, poor work environments, and burnout. Our research sought to determine how the rapid shift from office work to working from home due to the pandemic increased the prevalence of onset of low back pain. This study aims to look

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at the relationship between working from home and the onset of LBP for participants who have desk-bound jobs. Although the prevalence of LBP is not fully understood, we hypothesize that there will be an increase in the onset of LBP in participants who worked from home since the stay-at-home order was implemented. We will be looking at the ergonomic changes from working in an office setting to working from home during the COVID-19 pandemic and how they affected musculoskeletal conditions, physical activity levels, rest, and productivity. The materials and methods used were a Google form survey and participants were recruited remotely through social media. Surveys that did not meet inclusion and exclusion criteria were discarded from the final results of the data analysis. Our data concluded that low back pain significantly increased when compared to pain prior to remote working due to the pandemic. However, our data was inconclusive as to whether ergonomic features of work from home space contributed to the increased prevalence of low back pain.

ELISABETH CARTE & KAMIL NYKIEL

Faculty Mentor: Dr. Caitlyn Boyko & Thomas Koc

“Management of Achilles Tear via Telehealth and Remote Programming: A Case Report”

Telehealth care is increasing in popularity after a significant increase in use during the Covid-19 pandemic. Physical therapists have challenges when it comes to implementing telehealth treatment, including inability to provide manual therapy and physical assistance to patients during a session. This case report provides evidence for usage of telehealth when indicated by physical therapists. The patient was a 34 y/o cis male who presented to PT with complications from an Achilles tear which had occurred six months prior while on a run. The patient was extremely active prior to injury as a member of the United States Navy and did not have the ability to attend traditional in person physical therapy three times a week. The injury went untreated for six months and the patient was unable to complete his military duties. The patient was evaluated via telehealth PT and deemed a candidate for remote programming. Objective findings on evaluation were deficits in ankle dorsiflexion, pes planus, marked differences in single leg calf raise test, and deficits in functional measure scores (Foot and Ankle Measure and Lower Extremity Functional Scale). The patient completed a therapeutic exercise program in his home or gym with asynchronous communication with the PT as needed. Progress notes were completed at regular intervals to guide exercise progressions. The patient was discharged with full strength and ability to complete all heavy military duties. The treatment duration was longer than average but in this case the traditional model of physical therapy was not possible, and telehealth with remote programming became a successful alternative.

MICHAEL NOTARMASO, JEREMY BATE & HESHAM ELLATAR

Faculty Mentor: John Lee & Carla Enriquez

“The Correlation Between Postural Habits and Perceived Neck Pain and Disability in Graduate Students”

The purpose of this study was to investigate the relationship between positional habits among students with insidious neck pain and the amount of perceived neck pain and disability they experienced. Participants (n=14) from Kean University's Doctor of Physical Therapy program who had experienced insidious onset of neck pain in the past 12 months provided self-reported information regarding demographics, daily postural and work habits, as well as their perception of the severity and disability associated with their instance of neck pain via a Google Forms survey. These outcome measures have been utilized in previous studies to determine correlations between ergonomics/computer usage and neck pain intensity. Data collected from the survey was extrapolated to determine correlations between variables including NDI scores, hours seated throughout the day, neck pain intensity (NPI), weekly physical activity hours, and average daily breaks taken. Pearson Correlation Coefficients were calculated for the above variables using the "R" statistical software program. It was determined that there was poor positive correlation between hours spent seated and perceived neck disability ($r = 0.139$), as well as a poor positive correlation between breaks taken throughout the day and perceived neck disability ($r = 0.125$)."

TOMMASO MAZZEO & NICHOLAS ZAPATA

Faculty Mentor: John Lee

“A Comparison of Joint Kinematics Measurements of Treadmill Walking and Even Ground Walking with a Sensor-Based System: Progress Report”

The integration of digital insoles in health and wellness fields offers promising avenues for enhancing patient care through advanced monitoring of gait, posture, and activity levels. This study aims to examine the efficacy and applications of digital insole technology, specifically comparing its use on even ground and treadmills. Potential participants are identified through a preliminary questionnaire distributed via the Co-Principal Investigators' email, followed by scheduling for a 30-minute data collection session in the Physical Therapy Lab. Safety screenings are conducted before participants walk on even ground for 30 seconds and on treadmills for 2 minutes, wearing shoes equipped with digital insoles. The study focuses on a detailed evaluation of walking with the DigitSole digital insoles in two different settings. It assesses multiple gait parameters, such as inversion and eversion angles, as well as foot progression angles. By comparing the use of digital insoles on even ground and treadmills, this research will provide insights into the versatility and effectiveness of these technologies in real-world settings. Further dissemination of the research findings will follow the completion of the project, aiming to inform future developments in digital health tools.

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KAMIL NYKIEL, SHIRLEY OCHOA & MEGHAN REDMOND

Faculty Mentor: Carla Enriquez & John Lee

“Prevalence of Carpal Tunnel Syndrome Symptoms in Musicians”

The purpose of this study is to help determine the prevalence of Carpal Tunnel Syndrome (CTS) symptoms among musicians using an online survey with questions inspired by the Boston Carpal Tunnel Syndrome Questionnaire (BCTQ) and the Kamath and Stothard's Questionnaire. The research investigates various internal and external factors that may influence the severity and type of CTS related symptoms. Factors including age, years of experience, and number of instruments played were compared with the severity of symptoms during the day and at night including tingling, numbness and weakness. The results of this study suggest that a few factors produce a statistically significant impact on the prevalence of CTS symptoms in musicians. Limitations to this study include a sample size, lack of qualitative data, and subjectivity of responses, therefore, further research is needed to identify and understand the impact of different factors on the prevalence of CTS symptoms in the underserved population.

JULIANA LEFANO

Faculty Mentor: Alka Bishnoi

“Association of Heart Rate Variability with Cardiovascular Disease risk in Healthy adults: Framingham Heart study”

Heart rate variability (HRV) is the variance estimated between each heart beat and can be utilized to assess autonomic nervous system function (1). The Framingham Risk Assessment (FRA) tool investigates the risk factors associated with cardiovascular disease (CVD), which is a leading cause of mortality in older adults (2). Previous research has shown that HRV is significantly associated with hypertension risk in hypertensive and normotensive adults (3). However, the association between HRV and FRA variables is poorly understood in healthy adults. The objective of this study is to explore the relationship between HRV and FRA variables including CVD risk score, hypertension risk and heart age in healthy adults, and if low HRV can serve as an early indicator for CVD risk. We hypothesized that high HRV would be correlated with low CVD risk, low heart age, low hypertension risk. In this retrospective cohort study, we had 38 healthy adults (49.34±19.85 years) including 15 females with body mass index (BMI) of 23.63±4.02 kg/m², waist circumference of 85.96±10.43 cm, resting HR of 86.47±14.55 bpm and mean arterial pressure of 96.36±10.86 mmHg. Participants came to the lab one time and wore a Hexoskin smart shirt. Data was collected using 1-lead ECG equipped in the Hexoskin smart shirt (Carre Technologies Inc., Quebec, Canada), which has been demonstrated for both accuracy and reliability in HR measurements. A time-domain variable was studied: standard deviation of normal RR intervals (SDNN) to measure HRV, extracted through Kubios HRV analyzer. FRA variables were calculated using the resting blood pressure, age, gender, BMI, previous history of diabetes, hypertension, parental hypertension and smoking (2). For statistical analysis, we did Pearson's correlation analysis between SDNN and CVD risk score, heart age, hypertension risk at 4, 2 and 1 year.

HAILEY PIEMONTE*Faculty Mentor: Jennifer Gentile***“Coital Incontinence in a 37-year-old Postpartum Patient: A Case Report”**

Coital incontinence (CI) is an underreported condition affecting 2- 18% of women. It is defined as the loss of urine during intercourse upon vaginal penetration or orgasm. Urinary incontinence is common in the postpartum period but if untreated can lead to increased healthcare spending, including out of pocket expenses. Postpartum CI rates have been reported at 1.2%, however symptomatic women reported a high level of bother. Symptoms related to the pelvic floor (PF) are common during the postpartum period, yet little attention is given to sexual dysfunction, including CI . The purpose of this case report is to outline the impairments noted during a PF physical therapy (PT) examination of a postpartum woman, and the interventions performed to address these impairments, leading to resolution of her PF symptoms which included CI. This case report is the beginning of a research subject that requires future research in order to develop structured guidelines for PT treatment of coital urinary incontinence, which would ultimately improve efficiency of treatment and reduce cost of care.

MEGHAN REDMOND & KAMIL NYKIEL*Faculty Mentor: Jenna Tucker***“E-stim, Dry Needling, and the combination as an intervention to reduce spasticity in patients post-CVA”**

Spasticity is a result of damage to the upper motor neurons characterized by an increase in muscle tone that is velocity dependent with increased resistance to stretch. Spasticity is often seen in patients who have experienced a CVA. There are multiple treatment approaches to reducing spasticity in this patient population including the use of e-stim and dry needling. A more recent treatment approach is simultaneous use of e-stim and dry needling. This systematic review aims to investigate the effectiveness of this new combined treatment and compare it to the effectiveness of using e-stim and dry needling separately. The use of the combined treatment has been shown to decrease the H/M ratio of the gastroc-soleus complex, decrease MAS score, improve strength, and increase Brunnstrom recovery stage in spastic stroke survivors. These studies portray the effectiveness of this treatment and support its implementation into traditional treatment approaches. Although there is ample research to support e-stim and dry needling as separate interventions, since it is a relatively new form of treatment, future studies on the combined intervention should be conducted to further support its use and to find any potential risk factors. Using the results of these studies as support for the combined intervention, healthcare teams may consider adding it to their treatment plan in the CVA patient population. It is recommended that more future studies continue to identify the impact of these interventions of various post-stroke spasticity presentations and potentially other spastic diagnosis. If future studies continue to support this intervention, it may be incorporated into clinical practice guidelines and potentially change the treatment approach to reducing spasticity.

GRACE DEL PINO

Faculty Mentor: David Brandwein

“The Association Between Specific Learning Disabilities, Stress Levels, and Negative Emotionality/Neuroticism Scale among College Students Based on MMPI-3 Scores”

This study aims to explore the association between Specific Learning Disabilities (SLDs), stress/worry (STW), and negative emotionality/neuroticism (NEGE) levels among college students as measured by the Minnesota Multiphasic Personality Inventory-3 (MMPI-3). Despite extensive research on academic challenges faced by students with SLDs, the objective and standardized measurement of using the MMPI-3 remains unexplored. This research aims to bridge this gap by using the STW and NEGE scale from the MMPI-3 to compare levels between students with and without SLD diagnosis. This offers a more holistic understanding of the psychological impact of SLDs in academic settings. The significance of this study lies in the potential to enhance understanding of the mental health challenges unique to college students with SLDs. According to Hovanitz (1986), these challenges can compromise academic success or correlate with psychopathology. Shin (2017) concludes that perceived stress has a significant direct effect on the well-being of college students. Expanding upon prior studies, MMPI profiles can help guide mental health counselors to attend more carefully to student behaviors (King & Bailly, 2002). While Gregg et al., (1992) notes significant differences in MMPI-2 profiles of individuals with learning disabilities in university settings from those of normally achieving college students, this study is meant to understand specific differences in STW and NEGE scores. These findings have the ability to inform the development of targeted support services and intervention strategies for college students with SLDs, which can reduce stress, anxiety, insecurity, worry, fear, preoccupation with disappointment, and difficulty with time pressure. This could provide valuable insights into the prevalence and intensity of distinguishing between those with and without SLDs, in turn improving academic outcomes. According to Cosden & McNamara (1997), college students with SLDs appear more vulnerable to academic stress and failure compared to their peers without SLDs. This emphasizes the importance of understanding the connection between the diverse needs and experiences of students with SLDs, as identified by Sparks & Lovett (2009). In support of this previous research among university students conducted (Heiman, 2006; Heiman & Precel, 2003; Wright, 1967), anticipated results include elevated STW and NEGE scores experienced by students with SLDs.

MORGAN FISHMAN, CATHERINE BOSTIAN & AVI ROTHWACHS

Faculty Mentor: Aditi Vijay, Dr. Jennifer Block-Lerner & Dr. Donald Marks

“Psychological and Physiological Responses to Social Interactions”

The societal disruption caused by the COVID-19 pandemic underscored the importance of interpersonal relationships and social interactions (Long et al., 2022). Social interactions may elicit emotional responses that are further shaped by feedback in the form of validation or invalidation. A validating response communicates that a person’s thoughts, feelings, and/or behaviors are understandable and acceptable given his or her context (Linehan, 1997; Shenk & Fruzzetti, 2011). This legitimizing response, while not synonymous with agreement or appeasement, facilitates emotion regulation, feelings of safety, frustration tolerance, and realistic goal setting (Fruzzetti & Worrall, 2010). An invalidating response instead trivializes or punishes one’s experiences and is associated with negative affect, psychological distress, increased heart rate and skin conductance, and emotion dysregulation (Shenk & Fruzzetti, 2011). Bringing a stance toward one’s emotional experiences characterized by mindful compassion (i.e., kind and curious attention to the present moment) may help one move through difficult experiences, such as those that are invalidating (Neff, 2023). In the present study, we hypothesize that adopting a mindful and/or compassionate stance toward one’s emotions may protect against the harmful emotional effects and physiological changes associated with invalidation, especially in the face of social rejection. To assess this, undergraduate students will be exposed to moderate levels of social ostracization via a computerized challenge task (i.e., Cyberball) in a 2x2 factorial design to 1) examine the effects of validation and invalidation on emotional experience and ways of relating to it; 2) assess whether mindful compassion mitigates the maladaptive effects of invalidation; and 3) pilot the use of the near infrared neuroimaging (NIN) scan (NINscan) device (Strangman et al., 2018) to explore autonomic data (e.g., skin conductance, electrocardiogram, electromyography) and functional near-infrared spectroscopic cortical data for each of the four conditions (i.e., mindful compassion/validation; mindful compassion/invalidation; control induction/validation; control induction/invalidation). The findings will inform future research on the use of mindful compassion-based interventions for invalidating circumstances and act as a model for the use of a non-invasive, ambulatory neuroimaging device (i.e., the NINscan) to monitor cortical tissue hemodynamics that reflect neural activity in a broad range of psychological studies.

KRISTENSCHIAVO, KATHLEEN ALLBERT, MEITAL OSHRI

Faculty Mentor: Keri Giordano

Examining the Relationship Between Parent and Child Social Emotional Competence Levels

Social-emotional competence (SEC) has been shown to be crucial for a young child’s success (Domitrovich et al., 2017). Previous research has demonstrated improvement in children’s social and emotional behavior after parents completed training, where they gained a greater understanding of how

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regulating their own emotions can improve the behavior of their children (Darling et al., 2019). However, limited research exists exploring the association between parent and child SEC. The present study compares parents' SEC levels to the SEC levels of their children. It is hypothesized that parental level of SEC will predict child level of competence. Data will be collected from parents using the Collaborative for Academic, Social, and Emotional Learning (CASEL) Personal Self Reflection measure and from children using the Social Skills Improvement System Social-Emotional Learning Edition (SSIS-SEL) measure. Participants will be recruited through flyers posted in communities in the northeastern part of the U.S. (expect 100 participants in the final analysis). We will also look to see if demographic factors predict the match between child/parent SEC levels. This research can help determine whether targeting adult SEC levels is a vital first step in increasing the SEC of young children.

**NICHOLE DATA, JENNIFER BLOCK-LERNER, JOEL BOCANEGRA,
MICHAEL CAMACHO, VANESSA GAMARRA & AMANDA NUNES**

Faculty Mentor: Aaron Gubi

“Diversifying the Health Professions Pipeline: A Multi-component Psychoeducational Workshop Approach”

Homes, schools, and other spaces thrive on a spirit of active, warm acceptance of diverse experiences. Culturally diverse rooms not only empower marginalized populations but invite all to be themselves (Turi et al., 2022). Yet, from cultural norms to tuition costs, numerous factors within graduate-level program admissions may function as barriers to fostering vibrant communities and a practitioner pipeline representative of our broader society. Responsive, empathetic training that accounts for historical harm, exploitation, and systematic disadvantage of minoritized populations is critical (Mohatt et al., 2014). Recent scholarship focuses on diverse recruitment and general awareness of school psychology; this work suggests that representation and whole-person contexts are essential (Bocanegra et al., 2015; Grapin et al., 2016; Dieker et al., 2013). However, specific, scalable solutions with a whole-person view have not been proposed. This project centers around a multi- component psychoeducational workshop for a diverse recruitment population that features faculty representation from target programs, to share information, and a reflective discussion on the values and needs of individuals and their communities. This study aims to explore the feasibility, acceptability, and preliminary outcomes of this psychoeducational workshop to hone related offerings in the service of recruiting a diverse community of health professional trainees.

**RUTH STOLOVITZ, SHOSHANA LINFIELD,
AMANDA NUNES & ISABELLA TAORMINA**

Faculty Mentor: Adrienne Garro & Jessica Trindade

“The Piloting of a Mini Social-Emotional Program for Kindergartners”

Social-emotional competence sets the foundation for young children and has lasting positive effects on academic success and well-being (Graziano et al., 2007). Previous research has found that less than 50% of children have the

skills to manage and understand their emotions (Ashdown & Bernard, 2012). Social-emotional learning (SEL) curricula teach students how to identify and regulate their emotions (Mondi et al., 2021). The current project implements an emotion-focused curriculum for kindergarteners, emphasizing awareness and understanding of emotions. The program was developed as a tier 1 intervention that consolidates research on mindfulness and emotion regulation techniques (Hemmeter et al., 2016; Sun et al., 2021). The piloting of the program began in January 2024 in a public kindergarten classroom in a metropolitan area of NJ. Students learn about six emotions: happiness, sadness, anger, fear, worry, and embarrassment. The remaining sessions focus on emotion recognition and regulation. Graduate students use books and art-based activities to engage students in the lessons. To assess the feasibility of the program and carry out quality improvement, qualitative data is gathered through survey and interview feedback from teachers and parents. While the goal of this phase is to improve upon the existing curriculum, some data was collected for internal use. Students' emotional awareness skills were assessed with an emotion identification task before introducing any content (Sidera et al., 2017). The next phase of the project will assess the effectiveness of the curriculum in improving students' emotion recognition and regulation skills using a pretest-posttest within-groups design. It is hypothesized that there will be an improvement in students' skills after participation in the program. The long-term goal of this project is to provide a short, easily administered curriculum that educators, school psychologists, and/or counselors can implement with younger children to support emotion-based learning.

HALLIE KATZMAN, JONATHAN CEDEÑO & CHANA SILVER

Faculty Mentor: Donald Marks & Jennifer Block-Lerner

“Nourishing Our Lives”: Exploring the Roles of Food for College Students Through A Compassion-Focused Mindful Eating Intervention”

Self-compassion is defined as having an open, understanding, and nonjudgmental attitude towards one's suffering and failures, and experiencing kind and caring feelings towards oneself (Neff, 2003). This metacognitive process requires mindfulness, which is a practice that encourages individuals to be intentionally aware of the moment (Shapiro, 2009) and observe thoughts and feelings without trying to change them (Neff, 2003). Previous research has explored the impact of both mindfulness and self-compassion on eating behaviors (Fan & Wang, 2022; Jordan et al., 2014). Findings have indicated that mindfulness and self-compassion are individually associated with healthy eating behaviors (Jordan et al., 2014; Rahimi-Ardabili et al., 2017) and may also have a joint impact on eating attitudes, healthier eating, and decreases in disordered eating (Shaw & Cassidy, 2021). This topic has also been studied among college students (Anderson et al., 2015; James et al., 2016; Taylor et al., 2015), as the vulnerable and transitioning nature of this population heightens the propensity for changes in eating behaviors (Shaw & Cassidy, 2021). While previous literature has examined the sociocultural influences of food practices (D'Sylva & Beagan, 2011; Mingay et al., 2021; Monterrosa et al., 2020; Reddy & van Dam, 2020), to our knowledge, discussions of culture and personal experiences with food are not typically included in related psychological interventions. We propose a brief

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compassion-focused mindful eating group intervention for college students that emphasizes cultural and personal experiences with food. The proposed group intervention will be adapted from compassion focused-acceptance commitment therapy (CF-ACT; Tirsch et al., 2014). It will consist of four 60-minute weekly sessions administered via a secure telehealth platform. Pre- and post-intervention measures assessing mindfulness, mindful eating, self-compassion, relationships with food, and connectedness will be administered. Attitudes about the intervention's cultural element will be assessed with open-ended questions following the intervention. Consistent with previous research from across the world (D'Sylva & Beagan, 2011; Reddy & van Dam, 2020), this exploratory study will have implications for the future of mindful eating intervention work and encourage the inclusion of cultural components in prevention and intervention approaches involving eating behaviors.

CHPHS | SPEECH-LANGUAGE PATHOLOGY

MARWA AHMED, ALESSIA BILBAO, YANILES NUNEZ-JAQUEZ & JENNIFER A RODRIGUEZ

Faculty Mentor: Shivani Raina

“Relationship Between Microskills and Session Management Skills in Speech-Language Pathology”

The objective of this quantitative research study is to examine the correlation between micro-skills and session management abilities among graduate students enrolled in the speech-language pathology program. Given previous research indicating insufficient utilization of counseling skills in this field, the study seeks to delve into how graduate students perceive their micro-skills and session management abilities as components of self-efficacy. Two questionnaires were utilized: the Counseling Self-Estimate Inventory (COSE; Larson & Suzuki, 1992) and the Counselor Activity Self-Efficacy Scales (CASES; Victorino & Sprinkle, 2019). The results will demonstrate the correlation between micro-skills and session management abilities. Micro-skills are encompassed within the COSE scale, while session management skills are assessed through the CASES. Understanding the relationship between these skills will provide insights into SLP students' self-efficacy perceptions and their effectiveness in employing these skills. Ability to apply micro-skills empowers SLPs to confidently address communication challenges, establish rapport, and tailor interventions. Competence in session management skills further reinforces their confidence in guiding through a structured therapeutic process (Shwetha et al., 2022).

**JACLYN BOUGADES, CATHERINE CRANE, CINTHIA SQUILLACE
& DANIA TWAM**

Faculty Mentor: Shivani Raina

“Relationship Between Helping Skills and Counseling Process in Speech-Language Pathology”

Research presents insufficient training that may significantly affect speech-language pathologists' self-efficacy for counseling-related abilities. Although the field of speech-language pathology requires counseling for various presenting conditions, studies have shown that clinicians feel inadequately prepared to offer counseling for communication disorders. The objective of this study was to gain further understanding of how graduate students perceive their counseling skills to improve clinical knowledge and counseling practices in the area of speech-language pathology. The counseling process and helping skills were examined explicitly. Qualtrics was utilized to administer the Counseling Self-Estimate Inventory (COSE) and the modified Counselor Activity Self-Efficacy Scales (CASES) to participants. These surveys evaluated how students felt about their talents and level of self-efficacy in several counseling domains. The COSE uses a 6-point Likert scale to gauge participants' self-perceptions of their counseling abilities. The CASES evaluates self-efficacy for five domains of counseling that also includes helping skills. Confidence in these skills are rated between a scale of 0 through 5. These measures are indicative of students' confidences in their current skill levels and areas for development. The relationship between helping skills and the counseling process, as perceived by graduate students in speech-language pathology, will be measured.

ERIN CERVELLI & ANGELINA SPRICIGO

Faculty Mentor: Iyad Ghanim

“Anxiety related to the production of errors in heritage speakers”

The purpose of our study is to identify factors that contribute to the anxiety related to making errors when speaking a heritage language. There is limited research on how anxiety impacts language production among heritage language speakers, especially due to the variability in heritage language proficiency. Therefore, in this study, a 92-item survey distributed to 66 college-aged heritage Spanish-English bilinguals residing in New Jersey was analyzed alongside qualitative interviews among 7 participants. Questions probed for their degree of cultural identity, their perceived importance of assimilation to a heritage-speaking society, the motivations of needing to communicate with elders, pressure from family and friends, self-perceived proficiency, and degree of worry over production and perception errors. Results of regression analyses indicated that pressure from family to use the heritage language and the worry of assimilating with other heritage language speakers results in increases to heritage language anxiety. Interestingly, a strong cultural identity and the necessity of speaking to elders did not significantly predict speakers' anxiety in speaking a HL. The results of this study expand on previous work by demonstrating the effects of family pressure and societal assimilation on specifically the anxiety associated with making errors in heritage speakers. These

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findings underscore the need to create a supportive environment for bilingual and bicultural populations.

ERIN COUGHLIN, JENNA CAROLA, NIAMH HOWLETT & SAMANTHA MILLER

Faculty Mentor: Iyad Ghanim

“The Impact of Artificial Intelligence (AI) and ChatGPT in Education”

Artificial intelligence (AI) is any computer software that uses external data and interprets it to make predictions or decisions in its system. In this study, we evaluate current perceptions of AI in education settings as reported by school-based SLPs and SLP students. Previous research regarding AI in educational settings discussed its advantages to students and educators, as well as underscored the need for a cautious and thoughtful integration in academic settings. The purpose of this study is to better understand the impact of AI on the world of education in light of its rapid development. To assess this, 36 participants in the respective field were surveyed in a 100-question survey to understand perceptions of AI. Participants answered questions regarding thoughts, feelings, and the utilization of AI in therapeutic practices which allowed us to understand participants' personal experiences with AI and impact on education and practice. Survey data were scaled and analyzed with Spearman's correlations. Preliminary results indicated that participants with higher knowledge of and familiarity with AI and ChatGPT had more positive perceptions about its abilities, including its utility for students and for helping teachers' jobs, and also believed that students were not using AI frequently. These results indicate a need for more training and knowledge for ChatGPT to decrease extreme viewpoints.

RICK ESNER

Faculty Mentor: Karen Woodruff & Daniela Shebitz

“Kean University Students Knowledge, Beliefs, and Behaviors About Climate Change”

This study examines Kean University students' knowledge and beliefs on climate change to establish a baseline of climate literacy at Kean University. The NJ State Board of Education adopted the 2020 Student Learning Standards, including interdisciplinary guidelines for teaching climate change across seven disciplinary content areas, making climate change education a state-wide priority. As such, a portion of current undergraduate students at Kean should have entered the college level with preliminary knowledge and beliefs on climate change. The participants of this research study are a voluntary subsample of the population of undergraduate Kean students, studying across all disciplines offered at the university. We seek to understand how prepared Kean students are on topics of climate change as we develop initiatives to support the integration of climate change education. Our survey includes questions developed and tested by the Yale Program on Climate Change Communication, regarding Kean students' beliefs about global warming, risk perceptions, and behaviors related to climate

change and sustainability. The Yale Program Survey has been administered nationally and includes state and county-specific findings. Our research includes a survey of 1000 Kean students and compares their answers against national and New Jersey-specific data from the Yale Program. Preliminary results from this study indicate that the vast majority of students believe that global warming is happening, that human action is responsible, and are worried about global warming's effects.

**EMILY IMIOLEK, JULIANNA AUSTIN, KEITH BENAS,
SARA CAICEDO & ANNA PIEKUTOWSKI**

Faculty Mentor: Iyad Ghanim

“Perceptions of Artificial Intelligence in Speech-Language Pathology”

Artificial intelligence (AI) is used to describe software systems that perceive, interpret, and learn from their collected data to act on the request at hand (Sutrop, 2019). Existing research regarding the use, perception, and future applications of AI technology such as ChatGPT have highlighted the promising uses of these applications in assisting healthcare, and in supporting the administrative tasks of professionals. Despite the overwhelming consensus that AI research is fast-paced and rapidly evolving, additional research and development is warranted to explore the pervasiveness of these impacts. In this study, we explored the perceptions and personal experiences of individuals in the field of speech-language pathology on existing AI technologies. To assess this, 107 practicing Speech-Language Pathologists or undergraduate/graduate students completed a 44-question survey that focused on understanding participants' personal experiences, comfort, and concerns associated with AI, impact on theoretical job replacement, and potential use in clinical practice. Spearman's partial correlations indicate that those who were more knowledgeable about AI used it more frequently in their careers, believing it can facilitate assessment and diagnostics, but also that AI was not able to replace jobs in SLP. Sutrop, M. (2019).

ERIKA LUCAS & ERIN CERVELLI

Faculty Mentor: Iyad Ghanim

“Hemispheric processing of word pairs in bilinguals and monolinguals”

The present study investigates semantic (meaning-related) processing in English monolinguals and highly proficient Spanish-English bilinguals. Previous research shows that monolinguals use semantic information to help processing, as evidenced by faster responses to related words compared to unrelated words. Bilinguals, however, seem to not benefit from related words, which points to a more limited ability to use semantic context as compared to monolinguals. Additionally, there is prior research to support that each hemisphere of the brain performs a different task in sentence processing. Therefore, in this study, we investigated how different speakers processed related and unrelated words presented very quickly (50-54 ms) to the left and right cerebral hemisphere.

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Participants completed a divided visual field (DVF) semantic priming task in which a target word was displayed 2.8° offset from center after a prime was shown. After viewing a prime word which flashed on screen, participants saw a related or unrelated target word followed by two words. Participants were asked to identify which word was related to the target: a faster response time to complete this task indicated that the semantic relationship between the words facilitated processing. Preliminary results indicate that bilinguals are indeed slower than monolinguals at semantic processing with a greater effect occurring in the left hemisphere. This supports prior research which indicates that the left hemisphere prioritizes the processing of close semantic associates.

**JALYSSAMATOS, HANNAH CARBONE, DANI CASTELLI,
MICHELE CURRENTI, MICHAEL KAITERIS, BRIAN MAGUETA,
MADELYN SALVATORE, CHRISTINA SHEAFER & SARAH WEINER**

Faculty Mentor: Darya Hinman

“Investigating the Perception of Conflict Management Styles in Supervisory Relationships within SLP”

Speech-language pathologists (SLPs) are required to engage in work-based education as part of their graduate degree programs, which includes a minimum of 400 hours of supervised clinical experience. Supervisors hold their position due to their clinical experience. Novice clinicians need supervisors to help guide their clinical skills so that they can also be better prepared in their scope of practice. Multiple generations will likely interact on a daily basis in supervisory relationships. Conflict is inevitable in any relationship, and the supervisor-supervisee relationship is not immune to this, therefore, it is imperative to investigate what may positively and negatively impact working relationships. Generational conflicts are bound to happen in an environment where professionals of different generations work so closely. Conflict can arise from a multitude of reasons, ranging from differences in personality, gender, experience, and so forth, where many of these topics have been investigated in the present literature, but not as they relate to speech-language pathology.

**YARA SOLIMAN, KATE CLANCY, TAYLOR FASANO, RACHEL KIM,
VICTORIA RUSSO & MATTHEW STONE**

Faculty Mentor: Sarah Patten

“Communication Supported by Visual Cues in Neurodivergent and Neurotypical Adults”

Speech perception is a multi-modal process which includes auditory, visual, kinesthetic, motor and cognitive/linguistic skills (Getz & Toscano, 2021). Adults' use of the integrated audiovisual percept to support spoken language comprehension has long been the subject of investigation (McGettigan, 2012; Summerfield, 1979), through a phenomenon known as the McGurk effect (McGurk & MacDonald, 1976). The participants were Neurotypical and

Neurodivergent adults between the ages of 18 and 35 years currently attending courses in higher education. This research considered the performance of participants when presented with the McGurk effect, captioned videos and participant survey. The survey gathered the participant's views regarding their utilization of visual cues to support spoken language comprehension. Anticipated results include variations of visual-auditory speech perception between Neurodivergent and Neurotypical adults, a comparison in usage of written supports in captioned videos, and a trend in Neurodivergent and Neurotypical adult's perception of their auditory and visual skills required for speech perception. The purpose of this research is to further explore the communication requirements for effective understanding among neurodivergent and neurotypical adults.

JUAN VICTORIA, REBECCA SISK & AREANNA VARGAS

Faculty Mentor: Sarah Patten

“Neuro-Diverse and Neuro-Typical Children: A Comparison of Responses To The McGurk Effect”

This study aims to investigate responses to the McGurk effect by both neurotypical and neurodiverse children. The McGurk effect examines audiovisual perception by assessing individuals' responses to conflicting visual and auditory stimuli (Rosenblum & Saldaña, 1996). In experimental settings, a speaker is recorded saying one syllable (e.g., 'ba'), and the visual component is then replaced with a video of someone uttering a different syllable (e.g., 'ga') while retaining the original audio. The discrepancy between what is heard ('ba') and seen ('ga') can lead individuals to perceive the sound as 'ba,' 'da,' or 'ga,' depending on their reliance on visual cues or the integration of visual and auditory systems. While extensively studied in neurotypical populations (Brancazio et al., 2003), its exploration in neurodiverse groups remains limited. Neurodiverse individuals, such as those with Autism Spectrum Disorder (ASD), may exhibit unique challenges in interpreting visual cues. Participants are aged between 5-15 years and are required to respond to videos of the McGurk Effect. Simultaneously, parents were asked to respond to a survey eliciting their views on their child's perception abilities. Results anticipated include a variation of responses between neurotypical and neurodiverse children and possible discrepancies between parental reports and McGurk effect performance.

JENNA ELBANNA

Faculty Mentor: Sharmistha Das Iyer

“Social Culture: Gym Culture and #GymToks Effects on Young Males”

Gym culture and #GymTok are linkages to masculine ideals, dissatisfaction with body image, suicide, and unhealthy gym culture. #Gymtok has not been unpacked in terms of its effects on the mental and physical health of young males. The study surveyed a total of 51 male participants between the ages of 18-24 who attend the gym three times a week or more and have videos with

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#GymTok frequently on their “For You Page.” The participants answered a Google form regarding gym culture and #GymTok’s negative effects on young males. The study sought to find: Toxic Masculinity Rooted in Gym Culture, Dissatisfaction with Weight/Shape, Links Between Societal Ideal Body Type & Inflexible Dieting, Links Between #GymTok Negative Self Body Image & Inflexible Dieting, Links Between Suicidal Thoughts & Attempted Suicide, Feelings of No Sense of Belonging & #GymTok Negative Mental Health, and Gym Culture (Avoid Social Interaction) & #GymTok (Not Doing Enough). Muscle dysmorphia was found inconclusive, but it is believed that if the correct scale was used, the research participants would have shown symptoms of muscle dysmorphia. The results confirmed there is a positive link between [TM], [BI], and unhealthy gym culture, but there was no correlation regarding suicide.

LILIA PARK & JASMINE MOSIER

Faculty Mentor: Iyad Ghanim

“The effectiveness of speech therapy sessions increasing social confidence levels of elementary school children who stutter”

The purpose of this study is to assess how speech therapy affects stuttering elementary school pupils and how it relates to their social confidence. Previous research has demonstrated the positive effects of interventions on children’s fluency; however, there is limited information on children’s self-reported changes to their confidence levels following these interventions. The study aimed to understand primary school kids’ social confidence levels during and after therapy by using a 6-item Rosenberg scale that measures self-esteem, as well as a Self-Efficacy Questionnaire for Children, where they will rate their responses on a scale of 1-5 (1 being not at all and 5 being very well). The results of these surveys were compared with surveys from the child’s speech-language pathologist. Thus, this study investigates the vital role speech therapy plays in supporting the social growth and overall well-being of elementary school children with speech-language disorders. In the end, the main goal is to provide elementary school pupils with the resources they require to enhance their self-awareness and communication abilities, bolstering their basis for success in these crucial early years of education. While data collection is still ongoing, preliminary results with children aged 7 to 12 indicated a positive change during the course of their scheduled intervention. Additional data will be collected to compare before and during therapy in order to determine the effects of therapy on self-reported child confidence levels.

**BRIANNA GALLAGHER, EMILY ARENA, MICHAELA DIAZ, RACHEL LEE,
MARISSA MCGREGOR, ALEJANDRA MONTUFAR, ANTHONY NOVELLO
& ISABELLA TROIA**

Faculty Mentor: Dr. Ursula Glackin

“The perceptions of early childhood educators and school-based speech-language specialists collaborating to teach phonological awareness from Pre-K to 1st grade in New Jersey public schools within the Multi Tiered System of Supports (MTSS)”

This research investigates the collaborative efforts of speech-language specialists (SLS) and early childhood educators within the Multi-Tiered System of Supports (MTSS) to improve emergent literacy in New Jersey public schools. Objectives include examining MTSS knowledge, gauging the impact of interdisciplinary collaboration on referral reduction and early identification of literacy difficulties involved in emergent literacy instruction. Employing a survey approach, a sample was recruited through word of mouth, as well as teacher-specific and SLS-specific social media pages. Anticipated outcomes of this research include insights into impacts of collaboration on referral reduction, and evidence supporting the necessity of interdisciplinary collaboration. Implications extend to implementing policies and guiding effective collaboration strategies for teaching emergent literacy within MTSS. The online survey targeted 29 educators and school based SLPs within the Pre-K to first-grade range in New Jersey public schools. Survey questions accounted for subject demographics, MTSS knowledge, emergent literacy, collaboration practices, and role-specific queries for educators. The Likert-scale format provided quantitative data, supplemented by open-ended responses.

MAKENZIE KUNTZ

Faculty Advisor: Joshua Feliciano-Sanchez Moser

“Performing ESL Dialects: From Research & Analysis to Practical Application & Achievement”

Dialects are defined as varied forms of a language spoken by members of a certain language-speaking population, and are typically specific to a region or area. Essentially, the author seeks to explore how features of one's native languages can influence the English language. The author's involvement has two main components- the first is acting as a student researcher on a new dialect book focused on Spanish-speaking communities. The book has the working title of Performing Accents & Dialects of the Spanish-Speaking Diaspora and will be published in two volumes through Routledge: Taylor & Francis. The second is fulfilling the role of Assistant Voice and Dialect Coach in Kean University Theatre Conservatory's production of Once On This Island, where the dialect of French Speaking Caribbean will be explored. Participation in both of these areas will allow for the collection of qualitative information regarding the overarching topic. Using recorded speech samples, the International Phonetic Alphabet (IPA) and the software PRAAT, the author will carry out an in-depth analysis of the different features respective to each dialect. This information will in turn be used as a guide for teaching actors how to achieve a dialect quickly and accurately.

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GIANNA RODRIGUEZ

Faculty Advisor: Alan Gertner

“Teachers Awareness of Types, Degrees, and Classroom Impact of Hearing Loss”

This study focused on examining teacher recognition of different types, degrees, and classroom impact of hearing loss. It described how well teachers are equipped to maximize the educational experience of hard of hearing students. A mixed method research design was used for this study. A 15-item questionnaire was sent to New Jersey public school teachers regarding their knowledge and awareness of hearing loss. It included multiple choice questions as well as questions answered on likert scales. The questionnaire received nine responses from educators. The researcher hypothesized that teachers would not be knowledgeable of the type and degree of hearing loss, but would understand the classroom impact of hearing loss and would state that their time at college/university did not adequately prepare them to be confident in teaching a student that is hard of hearing. Analysis of the data found that teachers were not adequately prepared by their college/university to teach students with hearing loss. It was also found that teachers do not feel confidently prepared to teach students with hearing loss, which was expected by the researcher. The data also showed that educators were knowledgeable of types of hearing loss, but not hearing loss degrees or classroom impact, which was unexpected.

BRIAN BEJARANO, AIDA PEROVIC, KATHLEEN TOBIN, ERIN CERVELLI

Faculty Advisor: Alan Gertner and Iyad Ghanim

“Role of Literacy in Heritage Language Maintenance”

Heritage bilingualism often results in the attrition of a home language as a result of increased use of a societal language. Previous studies explored reasons for this phenomenon and largely identified culture and language use as the major factors to maintain a heritage language. However, these reasons may not be maintained in linguistically and culturally diverse areas, and few studies have explored the factors that contribute to language maintenance in diverse communities that align with the speaker’s cultural identity and upbringing. In this study, we use surveys and interviews to explore the phenomenon of heritage bilingualism in communities that are linguistically and culturally diverse in central and surrounding regions of New Jersey. Similarly to existing work, results indicated that bilinguals still experience attrition of Spanish when the community of residence is already bicultural and bilingual; however, differently from previous work, speakers’ cultural identity provides a lesser motivation to use heritage Spanish into adulthood than described in previous literature. Themes from interviews enriched these results and demonstrated a distinction between the in-group and out-group of Spanish speakers that was not dependent on culture.

CLAUDIA JACKSON*Faculty Advisor: Jill Fischer***“Burnout Among Non-Direct Patient Care Genetic Counselors: Correlation with Job-Related Attitudes and Work Environment”**

Work-related burnout, defined by depersonalization, exhaustion, and reduced personal accomplishment, has a significant impact on the retention of genetic counselors in the workforce. Existing literature predominantly focuses on burnout among direct patient care genetic counselors, leaving a notable gap in understanding the experiences of those in non-direct patient care roles. This mix-methods study aims to address this gap by investigating various work-related and personal factors contributing to burnout in non-direct patient care genetic counseling roles via a 41-question survey, providing crucial insights for the evolving landscape of the profession. Descriptive statistics were generated via IBM SPSS Statistics 27 for OSX and burnout was measured using the Maslach Burnout Inventory General Survey (MBI-GS), and 13 themes were generated from the qualitative analysis. The MBI-GS is a validated measure that uses three subscales to measure burnout: cynicism, professional efficacy, and exhaustion. Results from both statistical analysis and qualitative responses indicate that participants perceive burnout to be largely linked to leadership and management concerns. Additionally, variable demographic factors are identified as contributing factors, as detailed in this paper. The demographic profile and burnout scores of 27 non-direct patient care genetic counselors are summarized, exploring the interplay between professional experiences, demographics, and burnout in this evolving sector of genetic counseling.

MADISON PERRY*Faculty Advisor: Jill Fischer***“Education and Training Preferences of Medicolegal Death Investigators in Collecting Family History for Cases Surrounding Sudden Unexpected Death”**

Sudden unexpected death (SUD), is a circumstance that more commonly occurs in otherwise healthy-appearing individuals. Approximately five million lives are lost per year globally to SUD. With that, in up to a third of comprehensive medicolegal investigations, no identifiable cause of death can be found. When SUD occurs, the death is typically reported to local coroner or medical examiner's offices. In this case, medicolegal death investigators (MDI) are the first to be in contact with the family to interview for history. If no physical identification of death can be found at the preliminary investigation, the concern for genetic testing increases. This study is to determine the experience of medicolegal death investigators in training in regard to family history collection surrounding a sudden unexplained death case. This study will also gauge the level of confidence MDIs have in obtaining family history. Learning styles in which medicolegal investigators prefer to be trained were also investigated. The results are predicted to accept the null hypothesis in that there was not enough significant data to reject that MDIs are not trained to

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ask basic family history questions surrounding a sudden unexplained death, and, therefore, do not ask questions in their initial death investigation that allow for basic assessment of risk for sudden death.

GABRIEL GOLDSTEIN KOSLOW

Faculty Advisor: Jill Fischer

“An Assessment of the Influence of Race and Gender on Risk Perception Determined from Pictographs”

Pictographs are pictures, used as visual aids, to communicate ideas. Often used in healthcare, they are a way to present data in an easily understandable format, especially for those who may have a hard time understanding the numbers or statistics required to make important healthcare decisions. This study explores how racial and gender concordance (between participants and a pictograph), can influence risk perception based on a hypothetical scenario. Participants were Kean University students recruited through their professors. We presented participants with a hypothetical risk scenario, depicted the risk involved using a pictograph, and collected participants' demographic information. Pictographs of people with various races and genders were randomly assigned to participants, and their perceived risks based on these pictographs were recorded. No significant differences were observed between concordant and discordant groups. No significant differences were found between gender or racial groups. We interpret these findings as evidence that it is effective to use visual aids depicting various races and genders without fear of generating undue or incorrect risk perception.

CARISSA HUBER

Faculty Advisor: Jill Fischer

“To Tell or Not to Tell: The Influence of Disclosure on the Psychological Impact of Oocyte Donation”

Oocyte donors are individuals who give their oocytes to a recipient individual or couple for embryo creation and pregnancy. Oocyte donation may cause lasting positive or negative psychological effects for the oocyte donor, however there is limited and conflicting research on the long-term impact of oocyte donation. The purpose of this study is to explore the experiences of oocyte donors and investigate the influence of disclosure on the psychological impact of oocyte donation. Research participants were recruited from two Facebook groups. Nine oocyte donors participated in semi-structured interviews via the Zoom online communication platform. Interview transcripts were coded and the principal investigator analyzed the data using content analysis and thematic analysis. Thematic analysis revealed four main themes regarding the psychological effect of oocyte donation: 1) positive psychological effects, 2) negative psychological effects, 3) neutral psychological effects, 4) ethical concerns. All nine participants disclosed their donation experience to individuals in their lives. Four main themes regarding the participants' disclosure decisions and support emerged: 1) positive reaction from others, 2) disclosure increased strength of support

system, 3) strong support increased positive emotions, 4) social media support. Participants recommended that healthcare providers treat donors with more respect and kindness. Four participants (44.44%) met with a genetic counselor during their donation and found it valuable to have someone explain their genetic results and check in on how they were doing. Oocyte donors should be informed of the potential positive and negative effects of oocyte donation and that strong support systems may lead to more positive psychological effects.

CORINNE SCHENONE

Faculty Advisor: Jill Fischer

“Pregnancy Termination For Fetal Abnormality: Genetic Counselor Understanding of Patient Coping”

Termination of pregnancy for fetal abnormality, also known as TOPFA, is a procedural intervention that deliberately ends a pregnancy affected by anomalies affecting bodily structures or functions. Though genetic counselors frequently see patients for TOPFA, there are currently no specific guidelines for treating these women. The aim of this study is to fill the gap and explore genetic counselors’ perspectives and understanding of women coping with TOPFA to aid in the provision of optimal care for women. Participants were recruited through National Society of Genetic Counselors (NSGC) via an email blast. Nine prenatal genetic counselors participated. Qualitative content analysis identified eight major areas of discussion regarding genetic counselors’ perception and understanding of the patient experience with TOPFA: 1) role of the genetic counselor, 2) resources, 3) follow up, 4) patient coping, 5) impact of TOPFA, 6) barriers to care, 7) impact of the Dobbs decision, 8) advice for genetic counselors. This exploratory study highlights the inconsistencies in care that genetic counselors provide to TOPFA patients, as well as their understanding of such patients’ experiences. The findings of this study emphasize the need for precise genetic counseling guidelines for the practice of provision of care for TOPFA.

CAROLINA CONTI

Faculty Advisor: Laura Limone

“Language Concordance In Genetic Counseling: Counselor Training, Education, And Workplace Requirements To Provide Care To Patients With Limited English Proficiency”

Individuals with limited English proficiency (LEP) face challenges communicating effectively with healthcare professionals in the United States, contributing to existing healthcare access and outcome disparities for this population. Communication entirely in the patient’s preferred language without an interpreter improves patient communication and helps achieve in-session genetic counseling goals. Although research supports that language concordance should be encouraged in genetic counseling graduate programs and continuing education opportunities, there is a gap in research on the educational and personal experiences of multilingual genetic counselors and the support

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available in this context. This mixed-method study aims to fill this gap by shedding light on the training, support, and resources available to multilingual genetic counselors practicing in the US who conduct language-concordant sessions. A total of 13 multilingual genetic counselors participated in the study, revealing that the vast majority obtained limited formal training specific to genetic counseling in languages other than English, with little to no resources in a language other than English. This study underscores the need for comprehensive training and support mechanisms for multilingual genetic counselors throughout their careers in various educational and professional settings.

DAHLIA SHAABAN

Faculty Advisor: Laura Limone

“Evaluation of Alternative Model of Cancer Genetics Service Delivery at St. Luke’s University Health Network (SLUHN)”

In March 2021, the Cancer Risk and Genetics Program (CRGP) at St. Luke’s University Health Network (SLUHN) piloted an alternative service delivery model (ASDM) for patients ages 60 and younger who were recently diagnosed with breast cancer. The program is designed to expedite the turnaround time (TAT) of STAT genetic testing (GT), allowing patients to receive critical genetic information sooner and facilitate their surgical decision-making process. In a collaboration between the CRGP and Kean University, the PI seeks to investigate whether patients are satisfied with the STAT GT process. In the program evaluation, the research team believes that the survey data collected and analyzed will demonstrate that the CRGP staff at SLUHN have effectively designed and implemented an ASDM with moderate-to-high levels of patient satisfaction. The research team specifically assessed levels of patient satisfaction regarding: interactions with the CRGP genetics team; participation in the STAT GT process; and patient appreciation of the clinical utility of genetic information; including the genetic contributions to cancer risk, long-term disease management for themselves, and long-term disease management for their families. A total of 504 patients received the survey. At a response rate of 10.1%, the total sample size for the study was 51 respondents, and, based on inclusion criteria, the responses of 40 participants were included in data analysis. Statistical methods included descriptive and correlation analysis to assess relationships between reported levels of patient satisfaction and contextual data including age at the time of diagnosis, cancer staging at the time of diagnosis, time since diagnosis, and genetic test results. Participants generally reported high levels of agreement with satisfaction measures, irrespective of their contextual variables. Findings from this study suggest that the CRGP effectively designed a STAT genetic testing program for meeting patient needs during their recent diagnosis of breast cancer, and the ASDM may effectively be replicated for other indications.

REBECCA HOOK

Faculty Advisor: Laura Limone

“Clinical Utility and Incremental Yield of Expanded Prenatal Molecular Genetic Screening for the Detection of Clinically Relevant Fetal/Newborn Disease in the General Population”

Non-invasive prenatal testing (NIPT) is the process of sequencing placental DNA from the maternal bloodstream to assess the likelihood of a fetus being affected with a given chromosomal condition. Per professional guidelines, NIPT is considered standard of care and should be offered to all pregnant patients, regardless of age, to enable early risk assessment for the most common chromosomal conditions identified in liveborns. While previous studies have demonstrated the benefits of expanded NIPT platforms that assess fetal risk for additional chromosomal and genetic conditions, there is limited information on these methodologies within the general-risk population. The purpose of this study was evaluate the positive predictive value (PPV) and application of two expanded NIPT platforms designed for genome-wide and single-gene use, within the general obstetric population of a U.S. regional perinatal center. A retrospective chart review was conducted for approximately 12,250 patients who pursued expanded NIPT, with or without reported risk factors, between January 2020 and July 2023. Data analysis was performed with test-positive results and available diagnostic testing results from at-risk pregnancies. Approximately 130 pregnancies screened positive on genome-wide NIPT and 14 screened positive on sgNIPT. PPV was calculated as the total number of true positives divided by the number of true positives combined with the number of false positives. PPV was calculated as 54.08% (genome-wide NIPT) and 61.54% (sgNIPT). While most affected pregnancies were associated with either advanced maternal age, ultrasound findings, and/or family history, several had no indications and were identified only through routine screening. The findings of this study suggest that implementation of expanded NIPT as part of standardized prenatal screening within the general obstetric population allows for early fetal disease risk assessment of a range of chromosomal and genetic conditions, regardless of identified risk factors.

RAYMOND MOSQUERA VERA

Faculty Mentor: Nicole Lowy

“Safety Measurement to Prevent Seizures in Athletes with Epilepsy”

“Epilepsy is commonly associated with somatic, cognitive and psychiatric comorbidities such as anxiety and depression, which negatively impact quality of life. There are case studies that say that physical activity reduces the chances of stress which could decrease the chances of an athlete having a seizure while playing sports. If an athlete has good control of their medical condition it is possible for them to participate in sport safely. The majority of physical activities or sports are safe for people with epilepsy to participate in with special attention to adequate seizure control, close monitoring of medications, and preparation of family or trainers. here are rare cases of exercise-induced seizures, studies have shown that physical activity can decrease seizure frequency. Also there is limited data to show that epileptics and their fellow athletes are at increased risk of injury. Athletes with epilepsy should not have any problem or risk while participating in sports, taking in consideration that they know how to control the seizures and how to prevent it. Athletes with epilepsy often have been excluded from sport and exercise due to fear and misperception. This case study shows that athletes can participate in sports if they maintain a physical activity and medication adherence.”

ALYSSA COLON

Faculty Mentor: Nicole Lowy

“Achilles Rupture Following a Debridement of the Achilles”

An Achilles tendon rupture is a condition in which the Achilles tendon, which is a thick, strong cord-like structure located at the posterior ankle, tears or partially tears. The Achilles tendon is one of the strongest tendons in the human body and connects the calf muscles to the calcaneus. Re-rupture of the Achilles tendon is a serious complication of surgical or conservative treatment. The rate of re-rupture after operative treatment has been previously reported to be 1.7 - 5.6%, while the rate of re-rupture during conservative treatment is reported to be 11.7 - 20.8%. There are a number of complications that are associated with open surgical treatment for Achilles tendon ruptures, including wound detachment and re-rupture. Following surgery, the Achilles tendon is much less likely to rupture. The most common rupture of a tendon in the lower extremity is the full rupture of an Achilles tendon. Surgical or conservative treatment of the Achilles tendon should be avoided if possible due to the risk of re-rupture. Consequently, the athlete may have to discontinue his football career due to an Achilles rupture caused by debridement of the Achilles.

JASMIN BUJARI

Faculty Mentor: Raymond Divirgilio

“ACL, MCL & Bilateral Meniscus Tear Athletic Training”

The ACL stabilizes the knee joint by preventing excessive anterior translation of the tibia. The MCL prevents the knee from excessive valgus movement. The meniscus increases stability for femorotibial articulation, distributes axial load, absorbs shock, and provides lubrication and nutrition to the knee joint. In most cases, when there is an injury to the ACL, the medial meniscus is usually torn too. The incidence of bucket-handle meniscus tears can be up to 30% of the overall meniscus tears cases. The case of both compartment (medial and lateral) bucket-handle meniscus is rarely occurred. Recognition can be seen through special tests done immediately by an athletic trainer. To confirm anything, an MRI is required. O'Donoghue reported an incidence as high as 25% of athletic knee injuries, 22 patients with ACL, and MCL, also had a medial meniscus tear. Most cases require surgery and 6-9 months of recovery. Reconstruction and repair of ALL lesions should be considered to improve the control of rotational stability and future knee kinematics scores provided by ACL reconstruction.

ANGELINA DOUGHERTY

Faculty Mentor: Raymond Divirgilio

“Bridge-Enhanced Anterior Cruciate Ligament Repair (BEAR)”

A seventeen-year-old male high school football athlete suffered a right knee anterior crucial ligament rupture during a non-contact football practice. During the initial evaluation, the athlete complained of pain in his knee after running a play and applying a valgus and external rotation to the knee and had no previous history of issues with that knee. The athlete had a positive anterior drawer and was referred to the physician, where he was cleared for play with a hinge brace. In the following competition, the athlete felt a sharp pain in the second half of the game that eventually subsided, and he continued. He then tried to make a sharp break during the game and the athlete states he felt as though his knee shifted out and went back into place and had intense pain but could walk off the field. He was immediately taken out of the game and referred for magnetic resonance imaging (MRI). Surgeon wanted to go with the BEAR Implant due to its significantly better hamstring strength two years postoperatively. As well as its ability to restore your ACL to its original anatomical location, enabling your knee joint to feel “normal” and to function more naturally. There are still complications that may arrive where the BEAR Implant may not be fitting for that patient’s case. The BEAR Implant is having great success and becoming more of a route surgeons take for ACL surgery. However, it still needed to be looked upon as to how severe each case may be to make the right call for the athlete’s wellbeing.

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JASON GILMAN

Faculty Mentor: James Stavitz

“Unprecedented Spinal Anomalies in a Young Adult Athlete”

“The human spine, our primary axial structure, faces daily challenges from wear and tear. Disc herniations, stemming primarily from ongoing degeneration, are no rarity. However, they often facilitate less common conditions such as spinal cysts and stenosis to occur. Encountering a confluence of these conditions in a young individual, particularly an athlete, is an exceptional observation. While individual prevalence rates for each of the conditions faced by the athlete are documented — herniations (0.5%-2% annually in adults), facet joint cysts (approx. 3.95%, usually in those above 45), and spinal stenosis (exceedingly rare below age 30) — their collective manifestation in a young athlete is a medical marvel, presenting an unprecedented case for the medical community.

The spine’s intricate anatomy and functions make diagnosis and treatment a nuanced endeavor. Recognizing not just the primary ailment, but potential cascading consequences, is paramount. As demonstrated, a singular herniated disc can morph into a plethora of spinal complications. Diligent attention, comprehensive diagnostic approaches, and individualized care are imperative.”

TYLER HENDRICKSON

Faculty Mentor: James Stavitz

“Assessing and conservatively treating acetabular labral tears in young athletes”

Hip pain is a diminishing injury that is particularly prevalent among the elderly. This can diminish the quality of life for all age groups fighting through a hip injury. Daily activities such as climbing stairs, and getting in and out of a seated position can become such an excruciating task. Among a vast range of hip, groin, and hamstring injuries, acetabular labral tears stand out as the common enemy. Research indicates that a substantial percentage, ranging from 22% to 55%, of both athletes and patients suffering from hip pain exhibit symptoms attributed to labral tears. More specifically, athletes who are constantly engaging in activities such as running, cutting, and sprinting, these tears can be tremendously debilitating. Characteristics of this injury can be things such as pain, discomfort, clicking, popping sensations, and locking of the hip. Labral tears affect not only mobility but will also cause pain to emit near the groin due to their proximity. The conventional way to attack these injuries is a corrective surgery which will vary depending on the severity of the tear.

JUSTIN HUGHES

Faculty Mentor: James Stavitz

“An unexpected twist: Anterior Bundle of Ulnar Collateral Ligament tears beyond the Pitcher’s mound - A Football Player’s conundrum”

Over the past three decades, Ulnar Collateral Ligament (UCL) injuries have gained notoriety predominantly within the baseball community. Notably, in throwing sports, the mechanism of injury predominantly results from repetitive microtrauma, engendered by the incessant valgus load on the elbow. However, the etiological narrative differs significantly for athletes involved in non-throwing contact sports. Herein, UCL injuries often originate from sudden, traumatic elbow loads. Our case study delves deep into an intriguing instance of a high-grade UCL tear in a non-throwing contact athlete, a realm less explored, yet equally critical. While UCL injuries have become synonymous with baseball, particularly pitchers, our study emphasizes that these injuries can manifest in contact sports via distinct etiological pathways. Non-throwing athletes presenting with UCL injuries necessitate a keen clinical eye. A rigorous assessment, spanning from history to physical examination, including strength, motion, and sensory evaluations, is the keystone. Benchmarking against the contralateral extremity offers invaluable insights, ensuring holistic care.

FISNIK ISUFI

Faculty Mentor: Nicole Lowy

“Patella Misalignment Due to Trochlear Dysplasia: Level III Case Study”

The trochlea is a groove at the distal end of the femur, where the patella sits. It is easiest to identify when bending the knee. The posterior part of the patella should be almost parallel to the trochlear groove, but there are chances of abnormalities within the trochlear groove. The normal shape of the trochlea groove is concave. The lateral side of the trochlea groove is higher than the medial part. This allows the patella to easily slide down the central section of the distal femur. The abnormal shape of the trochlea groove is convex or flat, which is known as trochlear dysplasia or an unstable kneecap. When treating trochlear dysplasia, it's essential to create a rehabilitation plan that will focus on strengthening the quadriceps muscles to help reduce that patellar instability, or a possible patellar dislocation. In more severe cases, some surgical approaches include a reconstruction of the dysplastic trochlea, or a medial patellofemoral ligament reconstruction. Trochleoplasty aims to reshape the bony anatomy of the trochlea, by either deepening the groove or elevating it, since the lateral wall of the trochlea should be higher than the medial side.

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MATTHEW LEMA

Faculty Mentor: Raymond Divirgilio

“Pulmonary Embolism Caused by Tibia Fibula Fracture”

Pulmonary embolisms are commonly formed by blood clots in the legs that form due to prolonged sitting or inactivity that travel up to the lungs. Still they can also form because of fat emboli that circulate in the blood. These fat emboli can be released due to a long bone fracture or, in some rarer cases, soft tissue damage. Pulmonary embolisms are most commonly detected using a CTPA or computed tomographic angiography. Despite having specific tests to detect them, pulmonary embolisms are often misdiagnosed. While pulmonary embolisms are significantly more common in older age groups, it is still possible for people to get them at all stages in life. Pulmonary embolisms that are not caught early can be deadly, they claim approximately 60K-100K lives per year. It is crucial to run a wide variety of tests to rule out or reduce the chances of misdiagnosis. Pulmonary embolisms are not expected but should be more carefully monitored when it comes to fractures of long bones in the lower half of the body. A faster diagnosis can save lives and potential medical issues for a patient's future.

BRYCE MUNDY

Faculty Mentor: Raymond Divirgilio

“Presence of Ramp Lesion Tear and Pivot Shift Contusion with Potentially Intact ACL”

Ramp lesion tears of the meniscus are found in nearly 20 percent of all ACL tears when the posterior horn of the medial meniscus tears vertically, resembling a ramp. A pivot shift contusion pattern can be seen in 80 percent of ACL tears. This occurs due to the ACL tearing and being unable to prevent excessive anterior translation of the tibia, which causes the lateral femoral condyle to strike the tibial plateau during a pivot motion. In this case there are multiple indications that would lead one to believe the ACL is not torn. However, the verbiage in the MRI report of high-grade sprain instead of tear complicates the case. That, in conjunction with multiple negative Lachman tests, would indicate that the ACL is intact. Other factors would signal the contrary, beginning with the ramp lesion tear seen in the medial meniscus in combination with the pivot shift contusion pattern seen on the MRI. The combination of the high sensitivity of the Lachman test and the MRI which is considered the gold standard for injury should make the surgical plan more definitive, but the athlete will be going into surgery not knowing if he will have ACL reconstruction along with his meniscal repair.

DINA DOKIC

Faculty Mentor: Matthew Niepielko

“Exploring the Impact of Germ Granule Diversity on Germline Development in *Drosophila*”

“The development and maintenance of the germline, the set of highly specialized cells responsible for passing on genetic material to the following generation, is

essential for animal reproduction. Germline function and maintenance require the formation of highly conserved ribonucleoprotein (RNP) granules called germ granules. Germ granules are biomolecular condensates that contain many types of mRNAs and proteins that have important roles in germline differentiation, proliferation, and maintaining transcriptional quiescence through post-transcriptional gene regulation. In animals including *Drosophila*, *Xenopus*, and zebrafish, germ cell specification relies on the inheritance of germ granules that reside at a specific location within the egg. Despite the conserved function of germ granules and their components, how quantitative changes in germ granule mRNA content influence germline development remains unclear. We hypothesize that changes in germ granule mRNA content lead to differences in germline development and reproductive health. To test our hypothesis, we analyzed the natural diversity of germ granule mRNA content and germline development that occurs in *Drosophila* species as a model system. Using a combination of single molecule in situ hybridization, computational modeling, and immunofluorescence, our preliminary results suggest a connection between changes in germ granule mRNA content, reduced number of primordial germ cells in the developing gonads, and increased presence of defective primordial germ cells in the *Drosophila* embryo. Together, our findings demonstrate how germline development relies on genetic mechanisms that have the capacity to fine-tune germ granule mRNA content.”

JEANINE VERESS

Faculty Mentor: Nicole Lowy

“Distal Triceps Rupture In High School Football”

Distal triceps rupture occurs when the tricep tendon detaches from its attachment point on the olecranon process of the ulna resulting in partial or complete weakness of elbow extension. This injury is rare and has an incidence rate of 0.8%. There are multiple risk factors for sustaining a distal triceps tendon rupture, however, this injury can occur simply as a result of trauma. Typically the signs and symptoms of this injury include pain, hearing or feeling a “pop” in the elbow at the time of injury, swelling and ecchymosis. There are different repairs for this injury and unless the patient is unfit for surgery, surgery is typically recommended. With this injury being so rare, when it does occur it requires immediate surgery in order for the best outcomes. The distal insertion of the triceps can rupture from a block activity involving sports such as football. Immediate imaging is required for appropriate diagnosis and surgery is necessary to repair the tear.

ANTONIO VESKOV

Faculty Mentor: Raymond Divirgilio

“Collegiate Football Player’s Meniscal Cyst and Tear”

Meniscal cysts are relatively rare knee joint abnormalities. They are relatively rare with reported incidence ranging from 1–8% in both histologic and magnetic resonance imaging (MRI) studies. Cysts can develop as a result of underlying

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meniscal tears or joint degeneration and may contribute to increased pain and discomfort. These tears create openings or fissures in the meniscus, allowing synovial fluid (the lubricating fluid within the knee joint) to escape from the joint space which can cause knee pain, swelling, and problems moving the knee. The rarity of meniscal cysts is due to the fact that not all meniscal tears lead to the formation of cysts. If a meniscal cyst or a meniscal tear results in significant joint swelling and inflammation, this can affect the overall stability and mechanics of the knee. Both the cyst and tear require careful evaluation and appropriate treatment by healthcare professionals to address pain, restore knee function, and prevent further complications. Meniscal cysts can be diagnosed through imaging such as an MRI and would most likely require surgery to repair the knee.

ALEXANDRA ROQUE

Faculty Mentor: James Stavitz

“The Elusive Morel-Lavallée Lesion: Disentangling Its Clinical Conundrums”

“The Morel-Lavallée lesion stands as a paragon of closed soft tissue degloving injuries, traditionally precipitated by post-traumatic events. This pathology embodies a detachment of subcutaneous tissues from the fascia beneath, resulting in a notable hemolympathic collection. Though sporadically reported, male individuals present with a statistically higher predisposition (2:1 ratio) to this lesion. The trochanteric region emerges as the primary site, with incidence rates ranging between 8.3%-8.9% in association with acetabular fractures. Additional frequent sites encompass the thigh and knee. Originating predominantly from high-velocity or blunt trauma, sports like wrestling, football, and baseball serve as prevalent backdrops. Diagnostically, the magnetic resonance imaging (MRI) modality offers unequivocal insights. The lesion’s scale determines the treatment strategy: minor cases prefer drainage, whilst sizable lesions necessitate surgical intervention. Ignoring this condition may escalate to necrosis. Sclerodesis, which entails the infusion of fibrosis-inducing agents, emerges as the pivotal therapeutic recourse, boasting a 95% success rate. Morel-Lavallée lesion is seen in twice as many males than females and is seen mostly in the trochanter region. Its identification mandates sophisticated imaging modalities. The lesion’s magnitude and severity dictate the therapeutic trajectory, potentially culminating in surgery. A laissez-faire attitude may plunge patients into the ominous realms of necrosis. Recognizing the lesion’s origins, primarily blunt and high-velocity trauma, remains imperative.”

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CLA | COMMUNICATION, MEDIA AND JOURNALISM

LILIANA CARREDO, KEVIN STONE

Faculty Mentor: Joshua Guitar

“Representative Authoritarianism: A Critical Rhetorical Analysis of 2023 Speaker of the House Discourse”

Our study reifies where authoritarianism manifests within the US political discourse. Utilizing ideographic criticism informed by the radical democratic and Anarchist philosophies of Agamben and Bakunin, we contextualize how the ideograph within the Speaker of the House nomination speeches leveraged authoritarian rule while being masked within a discourse of democracy. Through our analysis, we demonstrate how the Speaker of the House nomination rhetoric positioned the speakership role as a normalized element of democracy. In particular, the rhetoric warranted the presence of a strong, centralized power. We advance three scholarly contributions in our study. First, we articulate how it operates as an ideograph. Although previous research has identified iterations as ideographic, we advance this realization by specifying the ideograph within the context of American politics. Second, we urge Anarchist thought and critique, within a framework of radical democracy, closer to the center of political rhetoric scholarship by demonstrating how it can assist in interrogating the subtextual presence of authoritarianism within political discourse. Whereas the advancement of democracy necessitates the dissolution of centralized power, we argue that rhetoric that augments such centralization, like the 2023 Speaker of the House nomination speeches, counteracts democratic progress. Third, in compiling these two charges, we reveal how agents, discourses, and systems that posture or are positioned as democratic can covertly operate in the interests of authoritarianism.

LILIANA CARREDO

Faculty Mentor: Joshua Guitar

“Separation Through Togetherness: “Community” in media and its unintended consequences”

The term “community” is often used in the modern framework as a reference for American minority groups. The “___ community” phrase is often accepted as respectful when referencing “the LGBT community” or “the black community,” for instance. Through critical rhetorical analysis methods, I argue that the use of the word “community” as a reference to American minority groups poses more negative implications than positive. In particular, the conventional use of the term perpetuates a societal acceptance of in-group sameness and homogenization, and simultaneously, reinforces social divide. This study looks into the implications around the use of the word “community” as a reference to American minority groups in popular news articles, as well as juxtaposes the use of the word as a reference to non-minority groups. More commonly utilized and seen in recent decades, popular news media enhances the use of the term in other settings, underpinning “community” following an American minority

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group as the accepted and normalized term. However, its normalization, even its usage amongst these minority groups, maintains social division rather than social pluralism, a necessity to forward democratic systems.

BRIANNA DEJESUS

Faculty Mentor: Joshua Guitart

“Child Carnage as a Rhetorical Construct: Examination into Western Media Addressing the Palestinian/ Israel Conflict”

In 2023, the contested areas of Palestine and Israel plunged again into violent chaos. Despite decades of warfare, Western news media agencies accentuated the local scenes of war and terrorism as citizens around the globe grapple with this ongoing tragedy. The complexities of this crisis maintain such a heavy rhetorical weight at the intersection of religion, culture, politics, and oppression, that journalists have struggled to capture and convey the depth of the narrative fully. Although the events have provided no shortage of content for news, journalists have focused upon the carnage of children as one of the more common means of communicating the situational reality of the conflict. These narratives build from the classic rhetorical archetype of the innocent child. In this research, we critically analyze “child carnage” as a rhetorical construct within the contemporary news of the Palestine/Israel conflict. Using critical rhetorical analysis focused on narratives and archetypes, we demonstrate how contemporary iterations of the innocent child archetype inform meaning-making processes at the complex intersection of this conflict. We also trace the evolution of the innocent child archetype, noting its rhetorical adaptations within this contemporary context. With this scope, our analysis will help illuminate how Western news media remains complicit in perpetuating an ideology of ethnocentrism.

ROBYN EPSTEIN

Faculty Mentor: Wenli Yuan

“Gender Stereotypes in Films”

From the moment of birth, scholars argue that stereotypes are automatically assigned to society. Children learn from a young age how to behave and what society deems as proper actions. When a child chooses to associate themselves with something that is deemed for the opposite sex, they tend to be ridiculed for their actions. The media plays a significant role in children’s perceptions of gender roles. Whether subconsciously or not, movies continue to use stereotypical characteristics and relationships, teaching children how to behave based on society’s expectations. When children see stereotypical behaviors from their favorite movie characters, they assume they must act accordingly. Previous false stereotypes in Hollywood blockbusters tend to include men being more dominant than females and females are always secondary characters to men. Today these characteristics are less common however Hollywood films still struggle with gender stereotypes as it is a worldwide phenomenon. This presentation aims to explore the accuracy of stereotyping in the mainstream media and whether that has an effect on an individual’s perception of others.

Outside factors such as one's gender, upbringing, and the types of films they watch all play a role in what films individuals choose to watch. Everyday observations would suggest that individuals will succumb to preconceived biases whether deliberate or not.

KEVIN STONE

Faculty Mentor: Joshua Guitar

"Police Criminality"

While scholars and journalists alike have interrogated a wide array of topics surrounding violent police misconduct, attention to the rhetorical framing of the people in the stories remains deficient. Our argument here is not to insinuate that we should be apathetic about questionable citizen behaviors, but rather that very few, if any, actions should warrant immediate public execution. As critical rhetorical scholars, we are particularly interested in the meaning-making and meaning-sustaining processes that inform social injustice. In this specific study, we are intensely interested in the character frames that saturate news discourses of police violence. Most notably, we center our attention upon the term "suspect" as a narrative rhetorical construct. As such, we aggregated and reviewed recent news reports on police violence. We narrowed our focus to juxtapose the rhetorical framing of police who committed violent action with the victims of that violence. Through our review, we found that despite the potential criminality of their actions, police are almost never framed as suspects. Conversely, civilians, even when innocent or not proven guilty in a court of law, are regularly framed as suspects. We find, though, that despite its definitional characteristics of unproven guilt, the term "suspect" nevertheless denotes criminality, which not only convicts the civilians in question, it covertly indemnifies police for their violent behavior. We contend that these revelations illuminate the authoritarian structures rooted in our discursive norms which allow police violence to persist.

CLA | ENGLISH STUDIES

YI YUAN

Faculty Mentor: Mieke Paulsen Bahmer

"Yongtai Tomb Murals in Tang Dynasty"

"This paper will explore the tomb mural paintings in the Tang Dynasty, particularly the mural Ladies of the Palace in the tomb of Princess Yongtai. It is important to do so because this will help readers to understand the history and art of the Tang Dynasty, especially about and for women, more authentically and vividly under the condition that few scroll paintings from the Tang Dynasty have survived, most of which are difficult to be distinguished from the later copies, and that the Tomb of Yongtai has been the largest well-preserved female tomb from the Tang Dynasty excavated since the founding of the People's Republic of China. The paper will provide a visual analysis of the mural in terms of its subject and style, and then

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examine the purpose of the piece and the sociopolitical context it reflects, such as conception towards burial and death, political factors etc. Also, the paper will compare the similarities and differences between Yongtai tomb murals and the murals in the contemporary tomb of Crown Prince Yide, the brother of Princess Yongtai. Both tombs are built according to an exceptional funeral system—“hao mu wei ling” [treating a tomb as a mausoleum], established by Emperor Zhongzong of the Tang dynasty, father of Princess Yongtai and Crown Prince Yide, as an expression of the profound grief, in which the deceased were buried with the same rites and accompaniments as an emperor, and therefore are of great research significance.

YI YUAN, CHEN LUMING

Faculty Mentor: Jennifer Marquardt

“Literary Influence and Creative Writing”

This project will analyze the literary influence of several pairings of short story writers, including William Faulkner and Haruki Murakami, Edgar Allan Poe and Horacio Quiroga, Sam Shepard and Jennifer Marquardt. Each pair contains the stimulation and realization of literary inspiration. The project will also produce two pieces of original creative short stories applying the narration pattern, character development, writing perspectives, styles, and techniques these writers use and explain why the creative works use them and what the works are trying to convey. It is important to do so because this will help the audience understand how and why the authors studied are influential in literature and help the audience create their own work from what they read. Good writers borrow, great writers steal. This project will explore the literary influence of preeminent authors, help build connections with the readers and promote literary creation, therefore, be of great research significance.

JINGYU LIU, MIN LIN

Faculty Mentor: James McDougall

“Exclusion Act Literature in Late Qing Poetries”

This research comes from a Wenzhou-Kean University research group’s attempt to create the first published translations of early literary representations of North America, and Overseas Chinese by Qing-dynasty authors. One of the first poems to discuss Overseas Chinese, and an early look at the geographic imaginary of North America by a mid-nineteenth century Chinese Official, Zhang Weiping’s poem, Jinshan Pian, is a literary text that gives an unusual glimpse at early thoughts on the initial wave of migration to the United States during the Gold Rush. This paper examines the poem and its rhetorical features to see how Zhang Weiping uses the United States and the treatment of overseas Chinese to appeal to changes in the Qing government after the first Opium War. The paper will discuss the relevance of the “Pian” as a doggerel verse essay, that not only develops through the most basic conventions of the genre—such as couplets, fixed character length, and rhyme—but also how common the use of expected tropes like overstatement, antithesis, and contrast are used to construct arguments about governance,

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fairness, and human nature that look to traditional sources for dealing with a new modern situation, connecting Opium War contexts with the California Gold Rush. This paper argues the representation of the plight of immigrants in North America as seen in the rhetorical gestures used in the poem are central to understanding modernity during the Qing dynasty. The paper will also discuss ongoing translation efforts of these important literary texts and how through translation we can better understand how global perspectives were formed in late-Imperial Chinese literature. This paper contributes to scholarship on Asian American Studies, late-Imperial Chinese literature, and Global American Studies. This project is in conjunction with a SPF Grant at Wenzhou University on Exclusion Act Literature.

CLA | FORENSIC PSYCHOLOGY

EMILY ALCID

Faculty Mentor: Christine Doyle

“Third Party Liability in Determining Suicide Determination”

As a society, there are mixed views on individuals who are suicidal. Seeking treatment could be considered one of the more difficult tasks an individual can do after experiencing a traumatic event. Stigmatization in and of itself can dissuade an individual from seeking help and cause them to isolate or possibly lead them to attempt or complete suicide. Factors on why one may contemplate taking their own life include genetics, loneliness, unemployment, or cyberbullying. The study highlights the importance of understanding suicide, suicide ideation, mental health, and to determine whether third parties should be held responsible for a victim's attempt or completion. A total of 41 random adults, ranging from different age groups, consented to take part in the study by completing a survey created and distributed through Qualtrics, a survey generator. The survey consisted of the consent form, debriefing form, 4 demographic questions, and 2 made up scenarios. A Chi-square revealed that when presented with a scenario about a relationship, the participants who responded would not charge the girlfriend in the case, however those same participants would charge the cyber bullies in that scenario, $\chi^2(2, N=39) = 7.69$.

HALEY ALLEN

Faculty Mentor: Christine Doyle

“The Influence Animals Have on College Students Mental Health”

Do animals influence college students' mental health? Animals tend to be a major portion of many peoples lives and most believe that animals play a role in their mental health. There were 44 participants, who were asked to answer demographic, multiple choice, scale, and select all that apply survey questions in relation to mental health and animal interactions. Out of the participants, 4.5% experience moments of stress, anxiety, depression, etc. not much at all,

while 27.3% experience it daily. When these participants interacted with animals, 2.3% mentally felt stressed, where 62.8% felt content. A series of Independent Sample t-Tests were used to analyze the hypothesis that animals have a positive influence on college students mental health. An alpha level of .05 was used on all statistical tests. There was no significant difference between people who had an emotional support animal (M=4.17, SD=.753) and those that didn't (M=3.55, SD=1.16) in terms of daily stress or anxiety, $t(42)=1.253$, $p=.ns$. There was no significant difference between people who had an emotional support animal (M=4.83, SD=.408) and those that didn't (M=4.35, SD=.978) after interacting with an animal, $t(41)=1.181$, $p=.ns$. With the limited sample size, the study is not significant, but is trending toward significance.

MARINA CIGARROA

Faculty Mentor: Christine Doyle

“Pawsitive Influence: Exploring How Support and Service Animals Enrich Lives”

Service animals play a vital role in the lives of individuals who rely on them. As a result, service animals have become increasingly recognized and accepted in public and work spaces. Laws such as the Americans with Disabilities Act (ADA) have been put in place to protect those who use service animals. However, it is important to mention that many individuals who rely on service animals still face challenges while out in public. This paper aims to explore the emotional, physical, and social benefits service animals provide their owners. As well as identifying the ways in which these animals help improve mental health and independence. Using a survey given using Qualtrics as a measurement tool, this study aims to determine whether there is a relationship between service animals and the quality of life for individuals dependent on them. Domains include history and experiences with service animals, type of service animal, and the adequacy of public accommodations for those with service animals.

CAITLIN DANSACK

Faculty Mentor: Christine Doyle

“The Impact of Race and Age on Bystander Intervention”

This study seeks to examine if the race and age of both the bystander and the victim influence the likelihood of bystander intervention. Fifty-eight participants were recruited directly by sharing a link to an online survey. Participants were presented with a hypothetical scenario detailing a medical emergency, which was accompanied by a randomized image from 1 of 4 conditions, in which the age and race of the victim varied. After, participants were asked to fill out a short questionnaire rating their likelihood of engaging in several helping behaviors. A series of ANOVAs were formed to analyze the data. An alpha level of .05 was used on all statistical tests. The results were not significant, regardless of the age of the victim. For all of the helping behaviors, there was no main effect for the ethnicity of the bystander or the ethnicity of the victim. Additionally, there was no interaction between the ethnicity of the participant and the ethnicity of the victim for any of the helping behaviors. However, the results did find that

the participants were less likely to help as the level of involvement required increased, regardless of age or race. This shows that people are more willing to provide basic assistance to someone having a medical emergency but are not willing to get involved any further. For future research, this study could be conducted using confederates to see if these results would be replicated in an actual emergency.

ISABEL DESANNO

Faculty Mentor: Paul Casey

“Assessing Barriers in Student Internship Success”

Colleges classify internships as foundational in preparing students for future career paths and opportunities after graduation. Interns refer to students or trainees who work in an organization, sometimes without pay, to gain work experience or satisfy requirements for a qualification. In many cases, students complete internships as an unspoken criterion or requirement of being qualified to work in a specific field after graduation. Internships teach many skills that are only learned in out-of-classroom settings. Like countless other career centers at universities around the United States, Kean University's Office of Career Services stresses the importance of students completing internships to increase marketability, workplace relationships, career direction, and overall career readiness. In recent years, numbers would suggest many Kean students are not participating in out-of-classroom internships and other experiential learning opportunities. In an effort to continue to serve the student population, Career Services is working towards breaking barriers students may face when finding and completing internships. The present study utilizes data gathered from Kean University students and recent alumni to determine specific obstacles keeping these individuals from completing internships. Results from this study will be used to further develop Career Services' reach to Kean students.

SELENA DOMINGUEZ

Faculty Mentor: Christine Doyle

“Romantic Relationships' and College Students' Well-Being”

This study aimed to determine whether college students are influenced by their involvement or non-involvement in romantic relationships and if this influence indicates a difference in positive or negative impacts. Students between the ages of 18-30 were selected to participate. Participants completed an electronic survey to assess their marital status and were grouped into 2 different categories, students in a relationship and students who were single. Both groups were then asked questions based on 4 different sectors of well-being. A series of Independent Sample t-Tests were performed to analyze the hypothesis that the quality of college students' romantic relationships will significantly influence their well-being. There was a significant difference between students in a relationship ($M=3.38$, $SD=.824$) and students not in a relationship ($M=2.85$, $SD=.875$) when asked if their overall life satisfaction has taken a negative impact since they entered their relationship, $t(42)=2.046$.

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BIANCA FLORES

Faculty Mentor: Christine Doyle

“Internal and External Stress and The Effects on Undergraduate and Graduate Students”

Stress has been acknowledged to impact almost all undergraduate and graduate students during their academic career. The stress being experienced by students can be categorized into two subtypes known as internal stress and external stress. Each type of student may suffer from one or the other, or even both external and internal stress. Internal stress entails feelings of low self-worth, low self-esteem, and rigid thinking, while external stress focuses on outside issues such as family issues, financial problems, and job pressures. This research aims to investigate if internal stress impacts undergraduate students more while conversely aiming to research if graduate students suffer more from external forms of stress than their counterparts. An online Qualtrics survey will be posted and promoted through social media, given to classmates, and will be spread through word of mouth to acquire responses from undergraduate and graduate students regarding what types of stress has impacted them the most.

TAJIRA HARMON

Faculty Mentor: Christine Doyle

“Stress Management Among DCF Workers”

The stressful nature of the work completed by child welfare workers continuously challenges them regardless of experience. Stress caused by the work has been linked to mental and physical health problems, burnout, low job satisfaction, and high turnover. These problems can be made worse when a worker is given cases that max out their caseload, therefore increasing the amount of work they will need to do. Conversely, increasing ways workers can relieve stress, which entail healthy coping mechanisms, can reduce likelihood of burnout and help retention of workers. This in turn would reduce the workload as cases are spread out across the workforce. This paper aims to identify effective strategies in managing work related stress and burnout among child protective service workers. Additionally, this study seeks to gain an understanding of turnover among the child welfare workforce. Focusing on the factors that lead to burnout and identifying effective methods of managing stress can lead to a better understanding of retention and turnover in the profession.

MEGAN KUHLES

Faculty Mentor: Christine Doyle

“The Effects of A Gap year on College Students and Mental Health”

The purpose of this experiment was to see if students had less mental health related issues as a result of taking a gap year or gap semester. Participants were asked a series of questions related to a gap year and also demographic questions. There were a total of 68 participants aged 18-65+. The participants

were first asked to fill out a consent form before the survey. The participants then filled out a series of demographic questions and questions related to their knowledge of a gap year. An Independent t-Test was performed to analyze the hypothesis that people who took a gap year would be less stressed than people who did not take a gap year. An alpha level of .05 was used for all statistical tests. There was no significant difference between people who took a gap year ($M=3.75$, $SD=1.00$) and those that did not ($M=3.35$, $SD=1.06$), $t(52)=1.440$, $p=ns$. A lack of participants skewed the research. For future studies, more participants are required.

SHANIA MATOS

Faculty Mentor: Christine Doyle

“Understanding Students’ Perceptions on Campus Safety and Security”

The purpose of the study was to determine who felt safer on campus, commuters or students who live on campus. Based on the survey 85.7% of the participants were commuters and 14.3% lived on campus. The gender of the participants who took part of the research were 20% men, 6.7% non-binary, and 73.3% women. The data for this research had been conducted through a Qualtrics survey which consisted of questions that pertained to the topic of safety and features that could be implemented to help secure the school. A series of Independent Sample t-Tests were performed to analyze the hypothesis that commuters would feel safer on campus than campus residents. There was no significant difference between commuters ($M=3.25$, $SD=.622$) and campus residents ($M=4.00$, $SD=.00$) when asked how safe they felt on campus, $t(12)=1.65$, $p=ns$. There was no significant difference between commuters ($M=3.33$, $SD=1.435$) and campus residents ($M=2.00$, $SD=1.414$) when asked if they ever worried about their safety at school, $t(12)=1.218$, $p=ns$. The significance of this study was to understand how students felt about their safety and what other safety features could be implemented to make them feel safe and secure. Participants expressed the need for more safety training, drills, and they wanted to see more of a police presence on campus. Some issues with this study were the lack of participants who responded to the survey. An idea for the future would be to send the survey out to more students who attend the college so there could be more responses.

KENNETH MATHEWS

Faculty Mentor: Christine Doyle

“The Effects on Training Skills for Autism Spectrum Disorder”

Common challenges in society are miscommunication between a wide spread of cultural differences. A common way to fix this ongoing issue is to receive more training regarding lots of different cultures. Research has shown that receiving the proper hands-on training could help with understanding someone else’s culture or current lifestyle. Therefore, the purpose of this study is to gain a better understanding of whether or not individuals are receiving the appropriate training from work or from personal life experiences. The aim of this study is to gain appropriate knowledge of the effectiveness of workplace training versus

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personal life experience using a Qualtrics Survey. Participants were asked to watch a video of a person with an Autism Spectrum Disorder at work. Participants were asked their willingness to help when the store worker begins to struggle. Participants were also asked demographic questions, including if they have been trained in working with people with Autism Spectrum Disorders. The potential benefit of the study is to show the importance of training in different abilities.

MAKAYLA MELENDEZ

Faculty Mentor: Christine Doyle

“The Power of Fear in Relation to Past Traumatic Events”

Fears are common, almost inevitable. A fear is an unpleasant feeling caused by the belief that something is dangerous. It is known that everyone has fears, but where do they stem from? A bad childhood experience? Learned from adults in life? Or has it just always been that way? In this study participants consisted of men and women above the age of 18. Participants were asked to state if they had fears and if they would consider themselves a fearful person. Participants were asked a number of questions to try and support the hypothesis that fears stem from a traumatic childhood experience. There was no significance reported in people having a fear caused by a bad/traumatic childhood experience and people that reported always being afraid of said fear in relation to thinking about the fear or experiencing the fear. These findings do not support the hypothesis that fears stem from traumatic childhood experiences. Humans experience fear in a multitude of different ways. Fears also arise in many ways, some in ways people never even notice. A limitation in this study would be that since the survey was conducted online, participants could have lied with their responses about which things are feared especially if it was considered an “embarrassing” fear. Future research could include more in depth questions on how participants obtained fears, going into the specifics of the first time that fear was experienced.

ANDRES MORENO

Faculty Mentor: Christine Doyle

“College athletes and their stress levels due to injuries”

A research study was created with the purpose to measure the stress level of college athletes influenced by injuries, with the objective of identifying stressors attributable to such injuries. This experiment was also created to find out more information about the challenges college athletes face when being injured at home. Participants will be selected from Kean University, and data will be collected by approaching them during their physical therapy sessions for them to complete a 2 minute survey questionnaire. The overarching goal of this study is to shed light on the factors contributing to changes in mood and motivation among college athletes following injury. The researcher anticipates that the findings will not only help athletes understand the triggers for such changes but also pave the way for future research aimed at equipping college athletes with coping mechanisms during the off-season. These strategies are expected to facilitate quicker and more effective recovery periods for athletes.

STEFANY PUCA*Faculty Mentor: Christine Doyle***“Social Behavior and Spectator Aggression in Sports”**

The study investigated whether watching more sports games increases spectator aggression. The materials were a survey, social media platform, and an electronic device. There were 24 participants in the study, all were individuals that came in contact with the survey link on social media. A Chi-Square was performed to find a statistical difference between the frequency of game watching and if the person had been in a verbal altercation. There was no statistical difference, $\chi^2(1, N=24)=.533, p=ns$. A series of Independent t-Tests analyzed the likelihood of participants yelling while watching a sports game or arguing. There was no significant difference in frequency of viewing and yelling, $t(22)=1.346, p=ns$. There was no significant difference in frequency of viewing and arguing, $t(22)=.885, p=ns$. Therefore, people watching games at a low or high frequency yelled or had a verbal altercation at the same rate. A Chi-Square was performed to find a statistical difference between the frequency of game watching and if the person had been in a physical altercation. The rate for high frequency watchers was higher; there was no statistical difference, $\chi^2(1, N=24)=1.36, p=ns$. An Independent t-Test was performed to find a difference in frequency of viewing and throwing something, there was no statistical difference, $t(22)=.962, p=ns$. Participants agreed with statements that gave positive associations like: deep senses of fulfillment, over cheated; this is fixed by changing the wording of certain questions. Keywords: Spectator aggression, social behavior, sports, verbal altercation, physical altercation, game.

HOLLY MORGAN*Faculty Mentor: Christine Doyle***“Is Eyewitness Testimony Believable to Jurors”**

This study examines if jurors are able to tell if an eyewitness is lying on the stand. It was hypothesized that people are bad lie detectors, but they would have a better chance at being able to tell if their friends are lying compared to if an eyewitness was lying. A sample of 61 participants taken from a convenience sample were given 3 online surveys to complete. The first was asking if a friend had exhibited a certain behavior (i.e. hesitations, gaze aversions, etc.) how likely they would be to believe that person is lying. The second survey had a few demographic questions. The last survey asked if an eyewitness exhibited these behaviors on the stand (i.e. too much confidence, inconsistency, etc.) how likely they would be to believe that person is lying. The hypothesis that people would perform better at identifying lying characteristics in friends than as a juror was explored. A Paired Sample t-Test compared the difference between identifying lying as a friend and lying as a juror, a statistical significant difference was found, $t(56)=6.611$.

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MELANIE PERALTA

Faculty Mentor: Christine Doyle

“Confirmation Bias vs. Disconfirming Evidence: Battle of the Strongest”

This experiment was conducted to measure confirmation bias in the presence of disconfirming evidence. A total of 74 participants, who were selected through a convenience sample, took part in this study. Participants were sent a link to a Qualtrics survey that consisted of multiple-choice questions and articles. The questions on the survey, besides the demographic questions, focused on their individual views on gun control. Within the survey, the participants were divided into 2 groups: the pro-gun control group and the anti-gun control group. Based on their responses, depicted what group they were assigned to and what article they were to read. The pro-gun control group read an anti-gun control article. The anti-gun control group read a pro-gun control article. After reviewing their respective article, participants were then presented with follow up multiple-choice questions relating to what they just read. A series of Chi-Square tests were performed to analyze the data, statistically significant results were found but did not support the hypothesis. Of those who read the anti-gun article they were more open to re-evaluate their belief and look at the topic from a different lens than people who read the pro-gun article. The experiment was successful in obtaining significantly diverse political responses within the participants who took part in the study. Future research inspired by this experiment might involve hosting a space for the duration of the study and focus on a different controversial matter such as abortion or the death penalty.

ALLISON PONTIER

Faculty Mentor: Christine Doyle

“The Impact of Juvenile Disorders on Likelihood of Future Offenses”

Typically beginning around the ages of 15 to 19 years, with a climax at the age of 25, juvenile delinquency is an average part of daily life, yet, constantly overlooked from society. Mental illness amongst the young population, has a high comorbidity rate with juvenile delinquency. A qualtrics survey was conducted to gather information from social workers, along with demographic questioning of their clients. Key questions were, “How long have you been a social worker”, “What age range do you generally work with?”, “What age range do you currently work with?”, and finally “How many of your clients are female vs male?”. The data proved an even split between elementary and high school aged children. Mental illness, along with a history of juvenile delinquency amongst all clients sampled was roughly 49%. An alpha level of .05 was used on all statistical tests. There was a significant difference between clients with a history of mental illness ($M=2.61$, $SD=1.72$) and those without ($M=4.20$, $SD=1.31$), $t(21)= 1.906$, p

YEXENIA SANTIAGO*Faculty Mentor: Christine Doyle***“Scrolling Through College Life”**

This study examines the relationship between students' engagement with social media and its impact on their psychological well-being and academic performance. It is hypothesized that increased social media usage will be associated with heightened stress, anxiety, and decreased overall psychological well-being, negatively affecting academic success. Factors such as social comparison, fear of missing out (FOMO), cyberbullying, and the need for validation are explored as potential contributors to these outcomes. The research aims to provide insights for educators, mental health professionals, and policymakers to develop strategies supporting students in managing their online presence and achieving a healthier balance between digital engagement and academic responsibilities. The study employs a survey methodology utilizing the Qualtrics system, comprising demographic questions, social media usage inquiries, statements evaluation, and educational performance assessment. Participants will receive a consent form and a debriefing after completing the 10-minute survey, conducted online via laptops or mobile devices. A series of Independent Sample t-Tests examined whether individuals with lower social media usage reported better self-esteem. Significant differences were found only in perceptions of losing friends/followers and experiencing decreased self-esteem, with the high-usage group reporting more negative effects, $t(15)=1.985$, p

DELLIAN SEHRA*Faculty Mentor: Christine Doyle***“Comparing Life Quality of Commuters vs. Residents”**

This study was conducted to reveal life quality differences between college commuters and residents. The materials included a Qualtrics survey and a device to complete the survey. Questions 1-6 gathered demographic information on the participants, including gender, age, and ethnicity. Questions 6-8 asked about residential status, and questions 9-17 asked to rate their various aspects of life quality on a 1-5 Likert scale. A consent form was provided at the start of the survey and a debriefing form at the end. Participants were recruited through a social media platform (Instagram) on a voluntary basis with the provided survey link to complete the survey. Of the people who participated in the study, 90% completed the survey, where 44% were residents and 56% were commuters. A series of Independent Sample t-tests were performed to analyze the hypothesis, with no significant differences found. One positive aspect of this study was that due to the survey being short, it allowed for a majority completion rate to analyze the data accurately. One negative includes having a small sample size, which potentially decreased the representativeness of the data to the population. For future studies, research could focus on a larger scale of college students outside of the Northeast region to determine whether significance is truly present.

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VINCENT TOMASULO

Faculty Mentor: Christine Doyle

“Music Background and Academic Performance”

The art form of music and its influence can be found all around the world and can be traced back to our human origins. Music plays many different roles for individuals and holds a variety of significant uses for many people. Thanks to today's technology, music can be accessed with ease and can be learned much easier. It is also known that music can have many effects on the human mind and behavior; making music a popular research area. Numerous studies over time have explored the relationship between music and education. To add to this topic, an experiment was conducted to examine if there was a relationship between an individual's music background and academic performance. It was hypothesized that an individual who had a background in music would have higher academic performance. The study included 20 participants across different ages, races, and genders who completed a questionnaire regarding their experience with music and academic achievement. An Independent Sample t-Test was used to analyze the data and it was found there was no significant difference between people who have a background in music and people who do not have a background in music in relation to their GPA. The study hoped to find any connections between prior music education and academic performance but a low sample size posed as a serious limitation. It is recommended that future studies should include a higher participant count for more significant results that can help better understand the complex relationship between humans and music.

SHAQUILLE THOMAS

Faculty Mentor: Christine Doyle

“Validity and Reliability of Eyewitness Testimony Between Genders”

A group of Kean University students were randomly recruited to investigate the reliability of eyewitness testimony in terms of ethnicity. The age range of participants was between 18 and 25, with an approximately equal distribution across age groups. The study utilized a One-Way Analysis of Variance to investigate the reliability of eyewitness testimony. The study's experimental and survey elements were combined to collect detailed information on participants' recollections of and accuracy in reporting events. A questionnaire consisting of 15 questions was developed and released on Qualtrics to collect background and knowledge-based data. Specially designed questions were also created and aimed to examine the participants' backgrounds and expertise about eyewitness evidence. Each participant viewed a video of an alleged theft followed by a 6-person picture line-up, participants were asked to select the person that was in the video and give their confidence rating. For statistical purposes participants' ethnicity was coded into Black, Asian, and other to reflect the ethnicity of the people depicted in the line-up pictures. The results of the One-Way ANOVA were not significant, $F(2,13) = .889, p = ns$. This experiment was limited to a smaller sample size than needed. Also, future experiments would consider using an equal number of races depicted.

DESTINEE YEYE*Faculty Mentor: Christine Doyle***“ Self-Care vs. Police Officers”**

The research experiment was conducted to determine if police officers will report not as much self-care after their first year on the job. The study included approximately 60 participants who were law enforcement professionals, therefore meeting the criteria for participation. The participants were self-selected and no compensation was provided, as the tests were carried out through an email survey as a questionnaire. The participants answered questions based on the level of experience they have on the force and as well how much self-care they maintained during the time of working in the field. A Paired Sample t-Test was performed to analyze the hypothesis that police officers will report not as much self-care after their first year on the job. There was a significant difference between people in less than a year on the force ($M=2.00, SD=.000$) and people on the force for over a year ($M=3.00, SD=.734$) when asked if they went to a spa to release stress, $t(27)=1.895, p$

ALEJANDRA MONSALVE*Faculty Mentor: Christine Doyle***“The Bystander Effect”**

This study was carried out to review the results of the hypothesis that individuals are more likely to intervene while seeing a crime take place if they are alone versus if they are witnessing a crime while mixed within a crowd of bystanders using a Paired Sample t-Test. The materials included were a consent form and a debriefing form. There were 66 participants in the study. The way that they were divided was by using 2 sections, 1 that asked questions as if the participant was alone and the second section being if the participant was among a crowd. There was a statistically significant difference, but the results do not support the hypothesis. What went right in the experiment was by placing the video twice, participants had the chance to watch it in two different mindsets instead of having to recall what happened. Not knowing the specific environment the participant was in impacted the study, not knowing if they were distracted when watching the video and risking them not seeing the harm done in the video. Ideas for the future may include controlling where the participant watches the video. For future research, studying the area the participant lives in could give insight on their likelihood of helping.

TRINITY THOMPSON*Faculty Mentor: Christine Doyle***“Access to Maternal Healthcare”**

Maternal care and treatment for Black, Indigenous, women of color are sometimes based on various uncontrollable factors that inevitably lead to appalling medical experiences. Through a qualtrics survey based upon this topic,

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data was able to be found. The range within this data was diverse between 18-64 years old, 26.7% between the ages of 18-24, 6.7% between the ages of 25-34 and 55-6, 13.3% between the ages of 35-44 and 46.7% between the ages of 45-54. The ethnicity of participants were white, Hispanic or Latino, Black or African American or preferred not to say. Over 93.3% of the participants reside in suburban communities and have health insurance. The participants are either thinking of having children, 33.3% or already have multiple children, 60%. Overall data analysis of the qualtrics survey is pending. From the current data we can draw the consensus that women taking the survey felt supported by their doctor. Based on the data, an impact on the results is that the option of not wanting children was not presented and most of the individuals partaking in the survey are women who live in suburban areas with health insurance. If increased intentions for education on maternal health care within urban communities, developed efforts towards reproductive justice and birth equity for all women of color is achieved, women of color seeking maternal health care in modern day society will have a higher chance of better care, bedside manner and decrease in maternal mortality rates.

SALONI SINGH

Faculty Mentor: Christine Doyle

“The Impact of Music on Memory Recall”

This research investigates the link between background music and memory recall, with a specific emphasis on classical music's putative influence. Despite the popularity of the “Mozart Effect” in the 1990s, concerns about the accuracy of claims remain. Music acts as a foreign stimulus during a variety of tasks, which may influence memory formation and retrieval processes. Repetition and multisensory involvement have been found as important variables in memory preservation. Research at Kean University examined the effects of classical music, rock music, and silence on memory recall in 50 people. According to the findings, music with lyrics can be a distraction, whereas loudness levels may not have a major influence on memory. The purpose of this study is to examine the hypothesis that people have better memory recall when they listen to classical music or endure silence. By identifying the underlying processes, practical consequences for educational and mental wellness conditions can be revealed. Furthermore, considering the emotional element as well as the musical backgrounds of the participants deepens the inquiry. Finally, this study aims to give understanding on the neural mechanisms behind music's impact on memory recall, with possible implications in a variety of scenarios.

CLA | HISTORY**SAM MEYER**

Faculty Mentor: Adara Goldberg, Sarah Coykendall

“Series 1: Treasury Department, 1941-1946 - The Josiah E. DuBois Collection”

The Holocaust Resource Center is home to the Josiah E. DuBois Jr. Collection. DuBois played a key role in the United States War Refugee Evacuation Board during World War II. The first series is the Treasury Department, 1941-1946, and is one of the six series that makes up the Collection. This section of the collection contains copies of transcripts, indictments, and original and photostat copies of documents related to the War Refugee Board's work and the Treasury Department. Many of the files include handwritten and typed drafts, often with marginalia, and letters from DuBois himself, Secretary of State Morgenthau, and President Truman. This collection helps teach and address questions, including: What was the internal climate or response of the US Treasury Department regarding the atrocities happening in Europe? Why was the establishment of the War Refugee Board completed only in the latter part of the war? What insight do we gain to historical events through the lens of personal papers? And, how do these personal documents reshape our understanding of the US Treasury, and DuBois' civic contributions to the rescue of European Jewish refugees? The Treasury Department series provides further context and understanding regarding the treatment of Jews overseas, and the actions taken by the United States in response to the atrocities. The collection provides opportunities for rigorous research experience for Kean students and faculty, as well as visiting scholars and further investigation from students, faculty, departments, and community members. In addition, these projects will further the growth of the university's rare asset Collections, engaging not only University members and alum but also reaching an international community of scholars and prospective donors.

CLA | PSYCHOLOGY**ABISOLA ABEBEFE**

Faculty Mentor: Verneda Hamm-Baugh

“Factors That Influence Perceptions of Personal Characteristics”

The present studies were conducted to examine the impact of weight loss on perceptions of personal characteristics. In experiment one, 44 participants viewed an image of a Black woman either with a larger body type or a smaller body type. It was hypothesized that those who were presented with the photo of the woman with a “before” weight loss (larger) body type will rate her as having lower levels of confidence, extraversion, likability, and health compared to the people who have the other photo of the “after” weight loss (smaller) body type. The hypothesis was not confirmed. The woman was rated as less approachable

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and slightly less likable in her after-weight loss picture. There were no significant differences found in confidence, extraversion, or health. In experiment two, 286 participants viewed an image of a White man either with a larger body type or a smaller body type. It was hypothesized that those who were presented with a photo of the man with a “before” weight loss (larger) body type will rate him as having lower levels of confidence, extraversion, likability, and health compared to those presented with a photo of the man “after” weight loss (smaller) body type. The hypothesis was partially confirmed. The man was rated as more extraverted, confident, and healthy in his after-weight loss picture. There were no significant differences found in the characteristics of approachability or likability. These findings suggest that factors like body size can play a role in perceptions of certain personal characteristics. Factors influencing differences in findings between the Black woman and White man are discussed.

ALYSSA FERRETTE

Faculty Mentor: Fei Shen

“Investigating the impact of childhood adversity among racial and ethnic minorities”

Research has suggested profound impacts of childhood adversity on children and adolescents’ developmental outcomes, including self-harm, suicidality, internalizing problems, delinquency, poor school performance, and compromised functioning and overall mental health and wellbeing. It has been well established that maladaptive emotion regulation strategies are associated with mental health issues and psychopathology. However, childhood adversity among different races and ethnicities is under-investigated. Emerging research studies have shed light on the inequity among trauma survivors, but they have largely discounted interconnections between race, gender, poverty, and trauma experiences. The present study provides evidence of disparities of childhood adversity and social support among racial/ethnic minority groups. The findings also offer insights into the importance for trauma-informed care, especially for the racial/ethnic minority groups.

MARCO CHAVEZ

Faculty Mentor: Adara Goldberg

“Student Wellbeing and the Necessity for Strategies”

Colleges and universities face a high risk of students facing wellbeing issues due to large amounts of stress, lack of education surrounding coping strategies, and limited amount of institutional awareness on the issue. While college can inspire confidence for some, for many others it can do the opposite. These students may struggle to complete assignments, face difficulty getting out of bed, or even take part in destructive behaviors towards themselves and others. In the long-term, the stress of higher education can cause many students to not return for their next term, to take longer than planned to graduate, to drop out completely, or engage in further negative behaviors. In addition, the amount of pressure can cause many students to fall into cycles of sleep deprivation, poor nutrition, and

lack of self-care. Data from the American College Health Association highlights different methods for students to combat negative feelings such as stress. One of the biggest issues for students is a lack of self-care, which refers to actions taken by oneself to benefit oneself, resulting in a positive quality state of health. This research shows the most effective exercises and mechanisms that colleges can do to promote wellbeing. Specifically, it focuses on how yoga, mediation, and cardio are known for promoting self esteem and emotional stability, while acknowledging the simultaneous need for campus awareness on student health, through centers, programs, and services. This research suggests that an endorsement of physical activities may help students cope with stress, along with a commitment by student health services to be more outreaching to students to help them manage stress and identify coping mechanisms in the way that is most healthy for them.

venu gandhi

Faculty Mentor: Verneda Hamm-Baugh

“Factors that influence Criminal Sentencing”

The interaction between criminal sentencing and mental illness is a complex and critical aspect of the criminal justice system. Previous research highlights both the potential mitigating value and the counter-mitigating value of mental illness when it comes to criminal sentencing. Thus, the purpose of this study was to delve deeper into this topic, investigating the role of mental illness in sentencing outcomes. The study focused on two key components: the presence of a mental illness and the specific type of mental illness - Schizophrenia, Bipolar Disorder, and Antisocial Disorder. It was hypothesized that the presence of a mental illness would result in a longer prison sentence, with schizophrenia having the lengthiest sentence compared to the other disorders. Participants (N = 98) consisted of Kean University students enrolled in PSY 1000 and PSY 2000 courses who completed an online questionnaire assessing the appropriate sentencing based on the scenario they were presented with. The findings of this study will be discussed.

charleze fernandez

Faculty Mentor: Joshua Burnett

“Parental Influence on Career Choice”

There are many social factors that affect a student's choice of a career, and parents are a significant factor. This study divided deeper into how first-year college students, specifically at Kean University, have been affected by their parents to choose a career. It also aimed to provide more insight into reasons why parents have wanted to influence their child's career decision-making process. Although each student differs in experiences, they are affected by their parents one way or another when choosing a career. Surveys were used to gather qualitative and general information from the larger population of first-year college students, and interviews are meant to serve as complimentary quantitative and specific information from individual first-year students. The

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results revealed that the majority of students who felt pressured by their parents to choose a certain career path were female, most of the students' career choices were not in-line with their parents' expectations even though half of them felt pressured to choose a specific career, and the overarching main expectation and pressure from parents was for their child to choose a high-paying career. These findings present a weak correlation between parental expectations and their student's career choice, where parental influence and pressures were present, but it was not a direct predictor of the student's career choice.

venu gandhi, christina haligowski

Faculty Mentor: Shai Tabib

"Intergeneration consistency in attitudes towards immigrants"

Previous researchers have argued that older adults exhibit higher levels of prejudice than younger adults. Nevertheless, the existing body of research either supporting or refuting these assertions remains limited. This study aimed to explore the relationship between age and one form of prejudice: attitudes towards immigrants. The study included a total of 1156 participants who were randomly selected from various regions across the United States as part of the General Social Survey. These participants, aged between 18 and 89 years ($M = 48.93$, $SD = 17.16$), responded to questions about their attitudes towards immigrants using a five-point Likert scale. Their responses were aggregated to generate an overall composite score. A Spearman correlation found no significant relationship between age and attitudes towards immigrants. While the question of whether older adults harbor more prejudice than younger adults in general is still unknown, these results suggest that this assertion is not accurate regarding prejudice towards immigrants. Future research should delve deeper into the relationship between age and other forms of prejudice.

KERMINA GATTAS

Faculty Mentor: Verneda Hamm-Baugh

"Understanding Self-Efficacy: Factors That Shape Beliefs in Personal Ability"

Self-efficacy pertains to an individual's confidence in their ability to carry out the actions necessary to achieve specific performance goals (Bandura, 1977, 1986, 1997). It signifies a person's belief in their capacity to control their motivation, behavior, social interactions and plays an important role in one's ability to succeed in tasks. This may be especially significant in an educational setting as students with higher self-efficacy might be more motivated to succeed. In this study, participants were asked via Google form to complete a survey to assess the relationship between socioeconomic status, sense of belonging, location of residency, immigration status and self-efficacy. All participants were college students between the ages of 18 and 26. It was hypothesized that there will be a positive correlation between sense of belonging and self-efficacy, family income and self-efficacy as well as parental education level and self-efficacy. It is also hypothesized that immigration status will be related to self-efficacy.

MADISON GESUALDO

Faculty Mentor: Richard Conti

“Childhood Bereavement in the Immediate Family and its Potential Impact on the Development of Different Types of Psychopathic Tendencies in Later Life: A Research Proposal”

The construct of psychopathy has been widely researched over the last 100 years as an important variable in many criminological and psychological theories. Previous forensic research has suggested a relationship between the loss of a primary caregiver and later antisocial and violent behavior in adulthood. However, most of the previous research on this topic has almost exclusively been conducted with forensic populations. The present study will examine these factors in a subclinical population. Participants in this study will complete the Bereavement Risk Assessment Tool (BRAT) as well as the Psychopathic Personality Traits Scale (PPTS). It is hypothesized that higher scores on the BRAT will be related to higher scores on the PPTS. That is, participants who report higher bereavement risk factors (i.e., loss of a parent or other immediate family member) will also endorse higher rates of negative personality traits. Implications for further research on this topic will also be discussed.

HEATHER GONZALEZ, MARYLYN MADU, MEDINA JEAN PHILIPPE

Faculty Mentor: Adara Goldberg, Sarah Coykendall

“Women of Color and Eugenics Erasure in the Holocaust Era”

Eugenics, which stems from the Greek word “eugenes” meaning “good in birth”, can be traced to the 1800s United Kingdom with the idea spreading to nations including the United States in the 20th century. The nature of eugenics stems from white supremacist ideology and, in an effort to control the population, marginalized communities were often the subject of forced sterilization as a form of eugenics. This idea was revolutionary for racist ideology and powered through Nazi Germany in the 1930s to 1940s. Despite the origins of eugenics, it is most popularly studied in relation to the Holocaust, resulting in limited information available on the impact this practice had on women of color in the United States. This research project hopes to bring awareness to the erasure of eugenic practices on women of color due to the primary scholarly focus of the practice’s application during the Holocaust. This research seeks to understand the parallel approach sparked by the United States’ influence and the lasting impact on women of color in today’s society.

MEDINA JEAN-PHILIPPE, KATERIN CARDOZA, ANAIS MUNOZ AND PHILLIP CALDAS

Faculty Mentor: Ipek Kocoglu

“Workplace Productivity in the Digital Era”

Due to the Covid-19 pandemic, those who work in an office space had to shift to remote work. Due to this drastic change, people in such a work space aren't able

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to physically interact with anyone, instead, they're talking to a screen and for those who work on projects alone, they're not talking to anyone. While remote work can be beneficial when it comes to communication frequency, there is a decrease in productivity due to information overload. Working remotely has also taken away the worker's ability to read nonverbal cues which is a key way of relaying information within the workplace. Especially with new employees, they are expected to join a team without ever meeting anyone in person. There are also fewer personal relationships with coworkers. In addition, employees are often given extreme workloads when working remotely. Therefore, there is often a strain in the workplace when the workers are expected to work remotely. There is no deep communication within the workplace and with no communication the way that the projects that are being worked on can have different outcomes in the end, it creates a mess and people need to put in more hours of work to get everything linear with everyone.

GAVIN LAWRENCE

Faculty Mentor: Verneda Hamm-Baugh

"The Effect of Preferred Music Genre on Ratings of Personal Characteristics"

The present study was designed to examine the impact of music genre preference on the first impressions of peers over two experiments. In the first experiment, forty-four participants rated the personality traits of a White Female who was described as preferring either hip hop or country music using a Likert scale of 1 to 5. A T-test analysis found a significant difference between ratings based on whether the preferred genre was hip-hop or country music for the following traits: trustworthiness, agreeableness, and friendliness. The White Female whose preferred genre was country was rated lower on these traits. In the second experiment, four-hundred-and-three answered the same 5-item survey where they rated the same personality traits of experiment one of a Black Female who preferred either hip-hop or country. T-test analyses found a significant difference between ratings based on whether the preferred genre was hip-hop or country music for the following traits: trustworthiness, agreeableness, approachability, and friendliness. The Female whose preferred genre was country was rated lower on these traits. These findings suggest that an individual's preferred genre of music influences how others perceive us at first impression. Through both experiments, the country music group samples consistently received lower ratings, prompting questions about this observed dichotomy. Historically, country music's roots are embedded in jazz, blues, and folk, with strong ties to the South across White and Black communities. While recent years have seen a resurgence in country music, attracting a broad and diverse audience, it has traditionally appealed to an older, predominantly White, and rural demographic. Seeing a subject who favors country music may inadvertently lead to assumptions that they are less favorable in the chosen characteristics, reflecting the impact of stereotypes and marketing trends on perception.

MEGAN MARRON*Faculty Mentor: Christine Doyle***“Clothing Choices Impact on Self-Perception”**

This study investigates how clothing choices impact self-esteem by analyzing effects on self-perception, body image, and confidence. A diverse sample of 62 participants, aged 18 to 65 and older, provided insights through a 21-question Qualtrics survey, including questions about the impact of clothing choices on self-perception. The survey featured 6 curated outfits labeled 1-6, ranging from formal to business casual to loungewear. A chi-square was used to analyze the hypothesis that clothing you favor will positively impact your self-perception with an alpha level of .05. The Chi-Square found a statistical difference between the frequency of the curated outfit that represented the participants' style and one that had the most positive impact on their self-esteem, $\chi^2(25, N=59)=86.738, p.$

MACKENZIE MICHENER*Faculty Mentor: Peter Kardos***“Who is responsible when AI causes harm?”**

Who is responsible when an employee causes harm? How much do we blame the employee, and how much blame do their supervisors also take? Past studies show how people distribute responsibility between supervisors and subordinates within organizations. As Artificial Intelligence (AI) and robots occupy more and more positions in organizations, we don't know how we attribute responsibility to the human supervisors of these machines after they cause harm. In the medical field, for example, AI is often applied as part of diagnostic procedures and these predictive procedures utilizing AI sometimes make erroneous judgments and thus cause harm. It is therefore important to explore responsibility attribution in organizations and reveal who is at fault for the mistakes made by AI. Is it the AI, the supervisor, or the creator of the machine? Relying on the psychological literature of collective responsibility and blame attribution, we are investigating how people distribute responsibility within organizations when robots and AI versus human employees perform harmful actions.

VINCENT NAZZARO*Faculty Mentor: Jane O'brien***“The Role of Implicit Bias in Differential Sentencing Between Black and White Defendants”**

The current scientific research demonstrates that Black inmates are incarcerated at a disproportionate rate as compared to White defendants for the same crimes. One specific area of the criminal justice system which is particularly susceptible to implicit bias is criminal trials. Often, jurors are told information which may be distorted due to the presentation of information by the attorneys of the plaintiff and defendant. Additionally, jurors often do not realize their reliance on preconceived beliefs about social groups in their decision-making. In the current

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study, the exact role of implicit bias will be considered through the mechanisms of trial outcome through sentencing severity. Using a t-test, participants will be randomly assigned a vignette that describes an ambiguous criminal case. Each participant will also be randomly assigned a mugshot of either a Black or White defendant with these vignettes. Based off the mugshot and the available information, participants will be tasked with deciding whether the defendant is guilty. Additionally, each participant will evaluate their confidence in their decision using a rated scale of 1 to 5. They will then be tasked with prescribing a sentence they feel is most appropriate for the crime given the vignette out of four possible options. It is hypothesized that Black defendants will be found guilty more often than White defendants for the same crime. Furthermore, it is hypothesized that Black defendants will receive harsher sentences as compared to White defendants for the same crime. It is also predicted that implicit bias will mitigate these relationships.

KYLE NOSSEIR

Faculty Mentor: Verneda Hamm-Baugh

“The Impact of Green Spaces on Perceptions of Urban Environments”

Public, open green spaces are key features of the environment that many urban settings lack. As a result, many cities are starting to prioritize projects reincorporating natural landscapes back into highly developed cityscapes. To justify new construction projects with high costs, in-depth research has been completed to examine the benefits of these new neighborhood additions. The addition of green spaces increases the sense of community, strengthens physical health, and improves mental health. As urban environments continue to expand, access to nature is continually decreasing. By surrounding oneself with nature, a sense of community, physical health, and mental health is improved. The present study was designed to identify how the perception of urban environments is influenced in locations that are absent of green spaces, as compared to those that have them. 72 participants responded to a survey assessing perceptions of environments with or without green spaces, ranking their sense of safety, cleanliness, quality of life, sense of community, and economic status. The findings suggest that communities with green spaces have more positive perceptions across all indicators than those that do not. As expected, the presence of green spaces increases positive perceptions of a sense of safety, cleanliness, quality of life, sense of community, and economic status. This suggests that communities that lack any of these characteristics can add green spaces to their outdoor environments to improve positive attitudes.

RILEY O'DONNELL

Faculty Mentor: Lydia Keplan

“Gender Identity and Emotional Expression”

Understanding the correlation between gender and emotion can lead to a more progressive society. This research can form a greater understanding of which gender suppresses different emotions, and where that need to suppress

emotions stem from. The quantitative format of this survey asks participants to disclose their gender, their age, if they have ever felt pressured not to express an emotion, which emotion, and what caused that pressure. Most questions are multiple-choice, except for age and reason for suppression, which will be open-ended. The survey was sent out to a wide range of people, although the target demographic was males and females who were at least 18 years old. The expectation behind this survey is that women are most likely to have suppressed a variety of extreme emotions like heightened excitement or frustration. As for men, it is expected that they are most likely to have suppressed emotions relating to sadness. Overall, the research revealed a few common trends and correlations between gender identity and emotional expression.

NICOLAS PETRECCA

Faculty Mentor: Jane O'brien

“The Correlation Between Cannabis Use, Personality, and Psychological Well Being”

The research is centered around an association of variance between cannabis use, the Five-Factor Model of personality, and psychological well-being. Cannabis becoming legalized is a relatively new event and while we have a good understanding of what cannabis does in the brain, there has been minimal research conducted on the effects on personality in addition to psychological well being. The study aimed to question a multifaceted approach and not only examine cannabis users, but non cannabis users. Cannabis users were also subdivided in three categories; medicinal, self medicinal, and recreational. The study examined the relationship cannabis had with personality traits and if any of the five in OCEAN had commonality and exposed at risk individuals. Psychological well being was also a point of interest and the results were cross examined with the personality traits results of both cannabis and non cannabis users to extrapolate if cannabis may be an intervention method with regards to personality factors. Results were gathered using a self-report online survey method and the sample was gathered using convenience.

IRIS REPOLLET

Faculty Mentor: Jennifer Block-Lerner and Franklin Turner

“Understanding the Experiences of Student-Parents Pursuing Higher Education”

This research explores the challenges faced by student-parents enrolled at a 4-year national institution and examines processes relevant to their satisfaction with life. The presence of “non-traditional” student-parents in higher education is increasing, consisting of approximately 15% of the student body in 4-year institutions (Gault et al., 2018). More than 50% of non-traditional student parents face challenges that hinder their pursuit in higher education and degree attainment (Ho & Wei, 2011). In this proposed study, we will recruit a sample of student-parent undergraduates. There are two aims of the study. The first is to describe the experiences of college students who are also parents. Specifically,

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we are interested in the stressors and emotions that student-parents experience, how they relate to their emotional experiences, and their overall satisfaction with their lives. The second aim is to examine whether psychological flexibility moderates the association between the stressors student parents experience and their satisfaction with life. The first aim of the study is descriptive. We will report on the frequency of stressors, and means and standard deviations with regard to emotions and ways of relating to those emotions (i.e., with regard to psychological flexibility and self-compassion). With regard to the second aim, our hypothesis is that psychological flexibility will moderate the association between stressors and satisfaction with life in student parents. The research design is a cross-sectional survey. By amplifying student-parents' voices and sharing their experiences and relevant processes, researchers can inform policy decisions, shape institutional support structures, and develop targeted interventions that facilitate the academic advancement and foster the well-being of student-parents in higher education.

VALERIE RODRIGUES

Faculty Mentor: Jane O'brien

"Effects of video game experience and gender on spatial ability"

Video game experience and gender have been shown throughout research to have an influence on spatial ability. Forty-five participants ages 18 and older were given an online survey to complete with 4 demographic questions and 10 questions relating to mental rotation. As there were increases in gaming experience, overall spatial ability scores also increased. Though statistical significance was not reached, males scored slightly higher than females in mental rotation. Spatial ability can be broken down into multiple categories. Two examples are spatial visualization and spatial orientation, defined as one's own ability to manipulate two and three dimensional objects mentally, and one's ability to manipulate their body orientation to view objects (Ogunkola & Knight, 2019). Along with those there are also many aspects of human behavior that affect spatial ability, such as attention, concentration, and creativity. Spatial ability has consistently been measured higher in men and those in STEM majors, which leaves many to question what the gender difference is a result of (Esipenko et al., 2018), and if there is a possibility of strengthening the spatial ability of individuals through practice and repetition (Sosa & Lagana, 2019).

BERZAYDA SANDOVAL

Faculty Mentor: Verneda Hamm-Baugh

"Factors that Influence Donation Behavior"

Donation behavior is defined as the act of voluntarily giving one's time, money, or goods to someone or causes in times of need. Donation behavior has been widely studied in both marketing and psychology to find what factors ultimately are linked to the act of donating. Numerous factors can contribute to the willingness to donate. Donating is often seen on a monetary basis but there is also volunteering of one's time to causes as well. The present study was designed to examine factors

that influence donor behavior of college students aged 18-45. Forty participants answered a three-question survey to determine whether a happy or a sad donor appeal would garner more donation amounts. A t-test analysis was run on the survey data. The analysis found no difference between the happy and the sad appeal in the amount donated. These findings suggest that there is no difference between either happy or sad appeals and donation amounts.

JACLYN TOOMEY

Faculty Mentor: Joshua Burnett

“Community Engagement’s Impact on College Student’s Personal Development”

The purpose of this research study is to explore how community engagement impacts college student’s personal development. By exploring this topic, it allows the researcher to find how the GE-1000, Transition to Kean, required service and civic engagement events made first year students feel and if there are ways to make these events more rewarding and beneficial for the students. Being involved within the community during college years does impact students’ personal development. A mixed-method approach was used by utilizing surveys. A mixed-method approach was chosen to be able to obtain quantitative data about service experiences and qualitative data on how the service and civic engagement events made students feel. One of the key findings found that most first year students would still attend GE-1000 events even if they were not mandated, suggesting that these community events have impacted them personally. Another finding found that first year students enjoyed volunteering with older adults, suggesting that they may choose to work with older adults in their future careers. The survey allowed for results to be found on how community service specifically affects Kean University first year students personal development.

JOHN TRIVIGNO III

Faculty Mentor: Jane O'brien

“The Effects of Religious, Gender, and Sexual Identities on Acceptance”

The study examines the link between Religious, Sexual, and Gender identity and how they can be quantifiably measured for their acceptance toward others, with the hypothesis of Christian denominations being more judgemental towards other groups and alternative outgroups of religion, sexual identity, and gender identity to be more accepting of identities other than theirs. The study involved a questionnaire polling 189 participants to self-record their opinions on their acceptance of religious, gender, and sexual identities while also recording demographic information about their own identities. Once data was taken, the demographics were averaged out and compared. The experiment showed alternative religions like Satanism and Paganism had on average higher acceptance scores when compared to the acceptance scores of Christian Denominations. There were similar results for average scores of acceptance with sexualities, as Lesbians and Pansexual demographics had higher acceptance scores of others when compared to the average acceptance score of heterosexuals.

BRITNEY WILSON

Faculty Mentor: Sarah Coykendall, Adara Goldberg

“The Role of Interfaith Dialogue in Promoting Social Cohesion and Conflict Management”

Interfaith dialogue has contributed to increasing positive interactions between people of various religious faiths. This trend is attributed to the exposure of open conversations and a general agreement to respectful coexistence. In the past, religious faiths have been contributors to violence and dissonance in a multitude of contexts. By examining the role of interfaith dialogue within these populations of people, it is possible to move forward into a society in which peacemaking is considered a necessity. Promoting tolerance while highlighting the aspects of different religious faiths helps to maintain a level of respect and appreciation while also educating others on tradition. This education propels people to initiate dialogue relating to interfaith engagement to develop relations contributing to social cohesion. This group cohesiveness is essential to the growing peaceful relations between these people. Interfaith dialogue serves as an instrument to seek equity and transition into cohesive conflict management. These dialogues can be used to promote non-violent means of conflict management across the globe. Interfaith dialogue needs to be integrated within every level of society to advance social cohesion and conflict management with an overall goal to create religious tolerance.

WENMI SEVERINO

Faculty Mentor: Peter Kardos

“Predictors of Afro-Latinx people’s ethnic-racial identification”

Afro-Latinx individuals tend to have complex, multi-layered identities shaped by a combination of identification influenced by their African ancestry and Latin American cultural contexts (García-Louis & Cortes, 2023). At least in the United States, many Afro-Latinx people are more likely to identify with their indigenous (mestizo, criolla) or their European ancestry (Spain) (Flores, 2021), while they are less likely to identify with their African roots (mulatto). One reason for this is that the Afro-Latino population may have difficulty recognizing or accepting their African ancestry due to internalized racism, social pressure, or lack of knowledge about their heritage. We will investigate possible cultural, demographic, and individual difference predictors of African-American identification among the Afro-Latinx population. We will also explore the possible psychological consequences of embracing the African heritage among the Afro-Latinx people. This work aims to improve our understanding of the Afro-Latinx community’s complex identification and foster greater awareness of their cultural identity.

STUDENT POSTER ABSTRACT

LESLIE PESANTEZ

Faculty Advisor: Christine Doyle

“Social Media vs. Mental Health”

Over the past decade social media platforms and its usage has increased in comparison to years past. Many use it for entertainment purposes while others use it as a distraction. This study investigates if the amount of time spent on social media does or does not have an impact on one’s mental health. A total of 17 participants enrolled at Kean University above the age of 18 took part in this experiment. Participants were administered a Qualtrics survey through a link via their email or social media. The survey consisted of various demographic and more individualized questions. Participants were given a consent form prior to the survey and answered questions to the best of their ability which resulted in a series of independent sample T-tests with no significant difference found. Going forward evaluating one’s self esteem could provide a more significant result. Overall this study hopes to determine if there is a change in mental health depending on the amount of time spent using social media.

KARLA RIVERA

Faculty Advisor: Christine Doyle

“Does bodybuilding result in higher confidence or lower confidence”

Body building has both cognitive effects and physical effects on both genders. Looking deeper into its effects it can improve self-esteem and overall our well-being. How we perceive ourselves is important and vital to our mental health. Achieving a body build is connected to one’s goal and perseverance. As you strengthen your body the mind becomes one in achieving a happy state of mind. This paper aims to investigate whether bodybuilding effects on raising or lowering self-esteem. Ongoing research will play part in conducting whether higher self-esteem is associated with bodybuilding individuals. The intended goal is to show that most people who work out, in particular, those who body build, display positive body image. They admire themselves, take pictures of themselves, and most likely feel the need to return for another workout or lifting session. Overall, feel happier and have a sense of nostalgia after working out. A QR code was generated, which will survey the students of Kean University in the gym to assess the responses given by the community of gym goers.

STUDENT POSTER ABSTRACT

CLA | POLITICAL SCIENCE

ANIYAH DINGLE

Faculty Mentor: Erell Germia

“What is the importance of diversity in Education and how can we address the lack thereof”

This research analyzed how the lack of diversity among educators in New York and New Jersey may contribute to educational disparity. As of 2019, 18,000 of New York teachers are black. However, 180,000 of New York’s teachers were white (NYSED. GOV). This is a ratio of 1:10, not only do white teachers have a majority in schools, but outnumber black educators on a massive scale. In New Jersey, 56% of students are people of color, yet only 16% of teachers are. I collected my data by analyzing teacher requirements, racial demographics in teacher preparation programs and schools, and the potentially associated outcomes among students. Additionally, I studied the history of affirmative action programs as well as suggestions for more programs to further diversity. Lastly, I conducted interviews with four New York State educators to further examine their perceptions about the current state of diversity among teachers and the actions taken to narrow the gap. Findings show that the Grow Your Own (GYO) Teacher programs and rethinking recruiting strategies are the most effective and tangible solutions to address the lack of diversity among teachers. Both the literature and the interviews show that GYO and other related teacher project programs may help increase enrollment of people of color in teacher preparation programs and hiring of teachers of color. Though long-term benefits are yet to be recorded, most current research on this solution has pointed in positive directions.

CARIA CUAREZ

Faculty Mentor: Nazif Durmaz

“U.S. Cotton Exports since 1967”

As a part of this project, I focused on the cotton production and the exportation from the United States. Cotton production and exports play a significant role in the agricultural sector of the United States, contributing to the country’s economy and agricultural heritage. This research aims to analyze the factors influencing cotton production and exports from the U.S., focusing on the interplay between agricultural practices, economic factors, and environmental conditions. The United States is one of the world’s largest producers and exporters of cotton, playing a pivotal role in the international cotton market. The exportation of cotton from the U.S. is not only crucial for the country’s agricultural sector but also for its overall economy and trade balance. The exportation of cotton from the United States is influenced by a variety of economic and trade-related factors. Understanding these factors and their impact on cotton exports is essential for policymakers, industry stakeholders, and researchers. This study aims to analyze the factors affecting the exportation of cotton from the United States, with a focus on using multiple linear regression analysis to identify key determinants. By examining factors such as global cotton prices, exchange rates, U.S. GDP, import demand from major trading

partners, and government policies and subsidies, this study seeks to provide insights into the drivers of U.S. cotton exports.

CLA | SOCIOLOGY

JESSICA APAI

Faculty Mentor: Julia Nevarez

“Gendered Disinformation on Social Media”

This exploratory study about gendered disinformation on social media platforms will review relevant literature from a standpoint feminist perspective to ask the question of how social media platforms reproduce gendered disinformation through an engagement-based algorithm and create a polarized environment. Many platforms have algorithms that cater to an individual's interests and encourage spending more time interacting with the platform. Concerns of biases within algorithms have been raised regarding their role in reproducing gender stereotypes and creating a more polarized social media space. A feminist standpoint theory contains a critical perspective that can highlight social media platforms' superior position and responsibility in monitoring content. Feminist standpoint theory asserts that knowledge stems from multiple social positions such as gender, ethnicity, and class. The lack of concern by large social media companies for their role in creating and perpetuating hostile social media environments contributes to the reproduction of gendered disinformation. An unintegral use of engagement-based algorithms leads to an increased prevalence of extremes and reactive content resulting in the spread of gendered disinformation in regards to misogyny and misandry, which a combination of genuine users and users from fake accounts may influence. Misogyny describes the aversion to or prejudice against women. Misandry describes the aversion to or prejudice against men. Gendered disinformation describes misogynistic language, abuse, and violence against women through the use of false sex-based narratives that are pushed to deter women's participation in the public sphere. Gendered disinformation attacks a nation's political stability, prevents free and genuine political discussion, and influences gender expectations. Currently understood definitions of gendered disinformation solely highlight the experiences and attacks against women through misogyny but fail to address the misconceptions about men and the spread of misandry. The scope of gendered disinformation can be increased by including misandry when analyzing false sex-based narratives, and understanding their prevalence on social media. Comparing and contrasting misogyny and misandry can be useful to find patterns in how sexist language is perpetuated on social media, and to be able to identify motives and patterns by fabricated accounts in disrupting the social environment. The conversations and posts that take place on social media platforms can be sorted to discern or expand the scope of what is to fall under the categories of gendered disinformation, misogyny, and misandry and its functioning throughout social media platforms. Future research is proposed to include an analysis of the functions and role of the algorithm concerning conversations about gender, misogyny, misandry, algorithm bias, and their connection to gendered disinformation.

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CLA | HOLOCAUST AND GENOCIDE STUDIES

LYNNE DAVIS

Faculty Advisor: Adara Goldberg

“Jewish artists and descendants of Holocaust survivors”

Q: What persistent dissemination of antisemitic theories over time have consistently been debunked?

Revolutionary German Composer Richard Wagner was Adolf Hitler’s favorite composer and much loved by the Nazi Party because of his hatred of, and theories about, Jews. Wagner believed that Jews had nothing to offer the world, and most definitely nothing in the way of the arts - music and poetry. He believed that because of who Jews were innately, they had no capacity for creativity. American industrialist Henry Ford, founder of the Ford Motor Company and pioneer manufacturer, abhorred the Jews and took every opportunity to defame them while continuing to believe that they were devoid of creative abilities. To this measure, if the Nazis’ Final Solution plan was successful - what poets, artists, and pop culture icons would never have existed? If the world was rid of Jews once & for all or if society functioned according to the dissemination of anti semitic theories, what contributions to our world would have been lost? - what poets, artists, and pop culture icons would never have existed? If the world was rid of Jews once & for all or if society functioned according to the dissemination of anti semitic theories, what contributions to our world would have been lost? This study explores the contributions of Jewish artists and descendants of Holocaust survivors, and considers how their relatives’ experiences during the Holocaust may have influenced their work.

KATHRYN FITZSIMMONS

Faculty Advisor: Adara Goldberg

“The Kaifeng Community: China’s Native Jews Reborn”

Although Jewish communities have existed around the world for centuries, the Kaifeng Jewish community of China is not widely known about. A native Jewish community has lived in Kaifeng , located in China’s Henan province for over 1,000 years. The Kaifeng Jews are the oldest Jewish community in China. Originally isolated from other Jewish communities more by geographic distance rather than anti-semitic prohibitions on their lives, very few people outside of China knew of their existence until about 1605, when an Italian Jesuit priest met Kaifeng Jew when both were visiting Beijing. At the community’s peak in the 1600s, there were about 5,000 community members. As a result of assimilation, there are about 100 members today. Today some Kaifeng Jews have discreetly recovered their lost Jewish cultural identities. There is nothing close to a formal organized Jewish religious community in Kaifeng today. Questions: 1. Who were the Kaifeng Jews? 2. Despite living in China, a country with little to non-existent history of anti-semitism, how did the Jewish tradition of the Kaifeng Jews fade away? 3. As many

descendants of the Kaifeng Jews are recapturing their Jewish heritage, how does it differ from the origins of the community? 4. In present day Communist China, what is the state of relations with the Kaifeng Jews and the Chinese government?"

ELIZABETH GIAMBUSSO-LUNA

Faculty Advisor: Adara Goldberg

"Unveiling the Veil of Hate: A Historical Analysis of Antisemitic Propaganda"

Anti-Semitism, the prejudice against Jews, has plagued societies for centuries, manifesting in various forms including discriminatory laws, violent pogroms, and perhaps most insidiously, propaganda. Propaganda has been a powerful tool in shaping perceptions, beliefs, and actions throughout history. This thesis proposes to explore the history of antisemitic propaganda, examining its evolution, methodologies, and impact on society. By examining the techniques and narratives used in antisemitic propaganda across different contexts, this research seeks to shed light on the underlying mechanisms of prejudice and discrimination. Furthermore, by analyzing the impact of antisemitic propaganda on society, this research may inform efforts to combat contemporary forms of hate speech and extremism. This research will utilize a multidisciplinary approach drawing from history, sociology, media studies, and psychology. Conclusion: Antisemitic propaganda has been a pernicious force throughout history, perpetuating harmful stereotypes, inciting violence, and fueling discrimination against Jewish communities. By critically examining the history of antisemitic propaganda, this thesis aims to elucidate its complex manifestations and lasting impact on society. Ultimately, understanding the mechanisms and consequences of antisemitic propaganda is essential for confronting prejudice and fostering a more inclusive and tolerant world"

BRITTANY HAMILTON

Faculty Advisor: Adara Goldberg

"Survival of the Mountain Jews of the Caucasus Region"

The Caucasus Mountain region, spanning modern-day Turkey, Armenia, Iran, Azerbaijan, Georgia, and parts of Russia, has long been a melting pot of diverse ethnic and religious communities. Among them, the Mountain Jews, colloquially known as such, have thrived despite the region's tumultuous history of conflict. Despite neighboring nations being embroiled in wars and political unrest, the Mountain Jews have preserved their unique cultural identity, religious beliefs, and community cohesion. Interacting with various governments throughout the region's history, the Mountain Jews faced challenges that influenced their population size and societal standing. However, their resilience ensured their survival, as they navigated shifting political landscapes. Central to this resilience were strategies that maintained their religious and cultural practices, preserving their distinctiveness among pressures for conformity. This research highlights the resilience and survival strategies of the Mountain Jews through the lens of regional and international events that impacted myriad communities in the Caucasus region.

STUDENT POSTER ABSTRACT

NANCY JOSEPHSON

Faculty Advisor: Adara Goldberg

“The United States, Jewish Immigration, and Mutual Aid Societies: How Real People Survived”

Beginning roughly in 1820 and continuing for more than a century, hundreds of thousands of Central and Eastern European Jews made their way across the Atlantic Ocean and headed for American shores. Driven out of their communities by poverty, religious persecution, a volatile political climate, and violent civil unrest, the new arrivals hoped to find safety, security, and long-term survival in a land thousands of miles from home. The immigrants, mostly Ashkenazi Jews, settled in New York, Baltimore, and Philadelphia, but also sought refuge in other major cities and far less populated towns. Over a 70-year period beginning in 1820, the European Jewish population in the United States soared from fewer than 6,000 men, women, and children to an astonishing 300,000 people—all determined to call the United States home. Survival in the new world wasn't easy. Most new arrivals faced social, religious, ethnic, educational, and language barriers. The majority were overwhelmed by insurmountable housing, economic, and health care needs. And it was difficult to locate help if doing so meant venturing outside one's own tiny, insular network that typically included only a handful of relatives and friends. What evolved in the United States though was a support system that possessed the ability to respond to residents who had run out of options and literally had nowhere else to go. The value of these mutual aid societies, according to author Samuel Koenig who wrote about them in 1939, was that they existed chiefly for the purpose of helping these people survive. This presentation will explore the rise of mutual aid societies in the United States as it pertained to the survival strategies of Eastern European Jews in America during the peak years of immigration—the late 19th and early-to-mid 20th centuries. It will discuss the origin and history of these societies.

MEGAN MARSH

Faculty Advisor: Adara Goldberg

“Medieval Prejudice and Holocaust Propaganda Analysis”

The superstitions and prejudice towards the Jews during the Middle Ages directly aligns with the prejudice and propaganda seen throughout the Holocaust. From the various beliefs of Jewish selfishness and greed during the Middle Ages, there are multiple examples of propaganda against the Jewish people in newspapers during and prior to the Holocaust. There is a direct connection between the creation of the myths of Jewish greed in relation to their frequent position as money lenders or merchants, due to these careers being one of the few opportunities available to the Jewish community. In connection with this prejudice, prior to and during the Holocaust, there were multiple examples of propaganda against Jews, particularly those with careers in banking. There is a direct connection here, as the trades available during the Middle Ages and banking directly correlated with one another. This research study explores how prejudice from the Middle Ages was easily extended into the 20th century in order to prey upon a minority group, just as had been done during the Black Death.

JULIA MITCHELL

Faculty Advisor: Adara Goldberg

“The Spread of Nazi Propaganda from Flanders Publishing Hall”

From 1939 to 1941, Scotch Plains, New Jersey was home to the largest Nazi printing press in the United States. Situated on the corner of Front Street and Flanders Avenue, Flanders Publishing Hall was a collaborative effort between New Jersey citizens and Nazi German officials, disseminating Nazi-approved publications across the U.S. in the period leading up to America entering World War II. Locally, the press ran out of the home of Adolf Hauck, a Plainfield High School teacher, who, with his sons, established the press in the basement of their family home. Internationally, this press was monitored and funded by Nazis in Germany, notably Joseph Goebbels, the chief propagandist for the Nazi Party. American-born Nazi George Sylvester Viereck acted as the middleman for this operation, receiving a stipend from the Nazi Party to maintain Flanders Hall, and serving as its chief financier. Viereck’s publications were also published by Flanders. Flanders Hall stands out as a unique manifestation of American isolationism and pro-Nazi efforts following World War I, and highlights the Nazi state’s desire to keep America from entering the war. Laced with antisemitic rhetoric, the propaganda published by Flanders Hall largely focused on delegitimizing Great Britain and urging Americans not to support them in the war. This research study showcases the methods and variety of the Nazi propaganda targeted towards Americans from 1939 to 1941, ending immediately before the bombing of Pearl Harbor.

MELLISA TODDINGS

Faculty Advisor: Adara Goldberg

“The Translation of the Bible and its Impact on Germany and the Jews”

Martin Luther is credited with translating the bible from Latin to German. While not an accomplishment he alone was able to accomplish, Luther was the mastermind behind translating the bible into lay terms that were accessible to Germans. This was a significant event in the course of history for religious reasons and cultural reasons. It allowed ordinary Germans to engage in God’s word directly with their own interpretations of scripture and contributed to the development of the German language. While there were positive aspects of this act, there were also long lasting negative impacts. Luther’s later antisemitic writings now intertwined with a German bible paired discriminatory messaging with the teaching of the bible. The relationship between the translation of the bible within the cultural landscape of Germany and the spread of antisemitism throughout Germany will be examined in this study. This research also aims to examine the impacts on Germanic speaking Jews and their reaction to this development and will consider the possibility of positive elements of this event and its impact on the Jews.

ESTHER GONZALES

Faculty Advisor: Adara Goldberg

“Declarations of Christianity in Nazi Germany”

In the aftermath of World War I, the German Evangelical Church stood as the largest Protestant church in Germany. The consistent rise of Nazism, antisemitism and Adolf Hitler coming to power forced members within the church to declare where their allegiances lie. Through obstacles such as social unrest, strikes, mass unemployment and economic depression, Protestant pastors feared the growing Communist movement would pose a threat to their authority. As Hitler sought to take control of the church to create a national Reich church, many Protestants decided to stand against Hitler and his new form of Aryan Christianity. The division within the church led to two formations, the Reich Church and the Confessing Church. On one hand, the German Christians followed Hitler and his Nazi ideology, and on the other, confessing Christians declared their beliefs and faith were founded solely on the Word of God. How did the Confessing Christians resist Nazi ideology? What were the fundamental differences between the Confessing Church and the Reich Church? What were the statements of faith that each church presented to their members?

CSMT | BIOLOGY

FAIQA ALI

Faculty Mentor: Sashmita Mishra

“Recent Advances in the Use of Mosses in Traditional and Western Medicine”

Bryophytes including mosses, contain many amazing and unique properties with high biological activities. We collected different moss species from the Kean University main campus and identified them. In this study, three moss species were selected at random from the collection to evaluate their phytotherapeutic properties. The antibacterial properties of our collected moss species were tested against *Escherichia coli* using the disc diffusion method. The aerial parts of the mosses were processed using 80% methanol. Three different moss species identified were *Eucladium verticillatum*, *Atrichum undulatum*, and *Plagiomnium cuspidatum*. Although several phytotherapeutic properties of mosses have been reported in the literature, preliminary results revealed minimal inhibition of bacterial growth. Some of the properties included antimicrobial, antifungal, antipyretic, antidotal, antipyretic, and even anti-cancer. The study has shown that mosses may be an available source of active biological compounds such as terpenoids (the largest group of secondary metabolites in bryophytes) and aromatic compounds (such as flavonoids, phenylpropanoids, benzenoids, and bibenzyl derivatives) and may be used to cure various medical issues.

JONELLE BROWN

Faculty Advisor: Eunice Nkansah

“Investigating the Factors Associated with Vaccine Acceptability in Faculty at a Four-year Public University”

This study investigated the sociopolitical factors that influenced COVID-19 vaccine acceptance in male and female university faculty at a four-year public university. The study further examined the magnitude of hesitancy in vaccinated participants prior to their complete vaccination. The acquired data was intended to add to an existing pool of knowledge that analyzed the factors of vaccine acceptance in faculty and contributed to the success of future vaccine promotion efforts. This study utilized a quantitative approach, specifically a survey, and collected data primarily through an online questionnaire through Qualtrics. The study randomly sampled 26 participants who were faculty and staff members at the four-year university. The findings from the study revealed several factors that influenced the COVID-19 vaccine uptake among university faculty, including concern for side effects, one’s personal belief of needing the vaccine, direction from an institutional head, trust in governmental information resources, and willingness to pay for the vaccine. Further analysis revealed that male participants were more likely to express their hesitance in accepting the vaccine than female participants. The researcher recommended educational institutions establish a vaccine mandate for future mass vaccination efforts. More accessible information about the vaccine through federal information outlets in various communities can increase the public’s vaccine confidence and encourage vaccine uptake.

**RANJITH KUMAR CAVALA RAMESH KUMAR, ANGEL IHIE,
MAIMOUNA KAMARA, LOUIS SCALA**

Faculty Mentor: Subasinghe Dias, Sharmistha Das Iyer

“Salivary Cortisol, Alpha Amylase and Immunoglobulin A Levels in Academic Stress”

Stress activates two distinct biological systems which function together, the hypothalamic pituitary adrenal (HPA) axis and sympathetic adrenal medullary system (SAM). Activation of the HPA axis releases cortisol into the bloodstream and the activation of sympathetic branch of the autonomic nervous system (ANS) release catecholamines: epinephrine (Epi) and nor-epinephrine (NE). Epi and NE levels are difficult to measure in plasma and almost impossible to measure in saliva due to very low concentrations and rapid degradation. Salivary alpha amylase (sAA) levels are significantly correlated with plasma Epi and NE and salivary glands are controlled by the ANS. Salivary immunoglobulin A (sIgA) found in all mucosal surfaces of the body is an immunological stress marker, which is known to be increased in acute stress conditions and reduced in chronic stress. The objective of this study was to compare the responses of above salivary stress biomarkers using an academic exam as a model for acute stress. Twenty-two undergraduate biology students were recruited on a volunteer basis, and they gave 2 saliva samples on 2 different days, on the day of the exam and on a non-exam day which served as the control. The results showed a non-significant increase for cortisol and sIgA and a significant decrease for sAA on the exam day compared to the controls (P value for sAA = 0.04). The results indicate

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that sAA is more reliable to assess acute stress than the other 2 salivary stress biomarkers. Furthermore, there was a significant inverse correlation for cortisol and the grades received ($r = -0.47$), which indicates that the students performed poorly with higher cortisol levels.

SHAKILYA CARPENTER

Faculty Mentor: Norma Bowe

“Colon Cancer risk and assessment in college students”

According to the American Cancer Society (2024), colorectal cancer (CRC) ranks as the third most commonly diagnosed cancer in both men and women in the United States. Colon cancer cases are exponentially increasing at an alarming rate among young adults between the ages of 20-35. In addition, 90 percent of colorectal cancer diagnoses are sporadic, resulting in later diagnosis and higher mortality. By 2030, it is anticipated that Colon Cancer and Rectal Cancer in young adults will increase by 28-30% and 46-124%. These numbers highlight the unmet need for educational interventions and early risk assessment screening for young people. This study will utilize a pre-test-post-test model with an educational intervention (aimed at college age students 20-30) to increase awareness of colorectal cancer and encourage those with genetic predispositions or symptoms to be screened. This methodology will test educational and awareness campaigns as a tool for increased screenings and ultimately better health outcomes for young adults.

SARA APGAR, MARIELA NUNEZ, BREANNE HOYTE, MADHUMITHA SADHASIVAN GAYATHRI, LAURA VENGINE, JOEL LIM

Faculty Mentor: Maria Shumskaya

“Assessment of Diversity of Saproxylic Fungal Communities in Boreal Forest Using the MycoPins Method”

The MycoPins method was utilized to monitor fungal colonization in woody debris. This method allows for the accessible placement of wooden pins (MycoPins) in soil, and their collection for sample processing and data analysis. For our experiment, various MycoPins (hardwood and softwood) were buried at four different sampling sites in a boreal forest in Finland. The four different transects: a swamp, a broadleaf forest, and a protected forest with and without access to reindeer, were sampled throughout 2022-2023. Allowing for the pins to be exposed to the natural fungal community present in the forest environment, pins were removed every 2 weeks (winter permitting), and assessed for fungal species utilizing a metabarcoding method. We analyzed 35 MycoPins collected from a transect in a broadleaf forest, the site open to visitors' access and the diversity of plants being mostly hardwood. Metabarcoding was used to evaluate the fungal diversity in the MycoPins: DNA was extracted from each sample, amplified using PCR, purified, and sequenced using next-generation sequencing. The research emphasizes the critical ecological function of fungi in boreal forests, providing data on formation of saproxylic fungal guilds throughout the wood decomposition process, and their differences depending on the forest type and type of wood. This in turn, highlights

their importance in decomposing dead wood in an ecosystem, facilitating nutrient cycling, and supporting forest health and regeneration. Insights gained from this study pave the way for further investigations emphasizing the need for informed strategies to conserve biodiversity and make use of these vital natural resources. The deployment of the MycoPins method enables a deeper understanding of the complex interactions that shape forest ecosystems.

ANDREA GALLAGHER

Faculty Mentor: Rongsun Pu

“Sequencing Lambda Phage and Escherichia coli DNA with Third-Generation MinION Sequencer”

Portable sequencer tools can vastly improve the accessibility of DNA sequencing for researchers, labs, and classrooms. The MinION nanopore sequencer is a relatively new portable sequencing tool, with limited research into its reliability and accuracy. The MinION sequencer records the electrical changes, specific to each nucleotide, in the device's nanopores as a DNA molecule passes through. Third-generation sequencing tools such as MinION are an improvement on second-generation tools by producing long reads that can be assembled from larger genomes, including human-size genomes. While second-generation sequencing was limited to small genome analysis and targeted sequencing, third-generation sequencing is capable of large genome assembly as well as structural variation detection (Lu et al., 2016). However, there may be high error rates with this method of sequencing.

CHAMODHI RANATHUNGA, JONELLE BROWN, AVA LA LANDE, ANDREA ONCOY

Faculty Mentor: Denise Gemmellaro

“Consequences of Lead Exposure on Lucilia sericata Development”

In forensic investigations, time of colonization (TOC), or the minimum post-mortem interval (mPMI), utilizes entomological evidence to estimate how long the remains have been exposed. The rate of insect development strictly depends on abiotic variables such as temperature, nutritional content of the food, resource availability, and xenobiotics. Considering that insects (primarily flies) are known to arrive on a carcass shortly after death, estimating how old the insects are may result in estimating how long a body has been there. The estimate, however, may be skewed when the insects are exposed to foreign substances, not commonly found in human bodies. When fly larvae consume chemical substances, their predictable development may be hindered. These foreign substances also include prescription and over-the-counter medications. The LOFT (Laboratory of Forensic Things) has been focused on the effects of chemicals on blowfly larvae development and this study wanted to assess the effects of lead on the development of *Lucilia sericata*. Lead is one of the main components of gunshot residue, and it remains embedded in soft tissues surrounding entry and exit wounds. We placed 1st instar larvae in rearing containers and fed them with lead-treated beef liver. We used three different lead concentrations

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(0.025 mg/L, 0.05 mg/L, and 0.1 mg/L) and a control consisting of liver without lead. The incubator was set to a 12:12 hour photoperiod, temperature of 25 °C at 60% humidity. We performed two checks per day during which we sampled 10 random maggots from each container, assessed the development of the maggots, and weighed them. Once pupation was achieved, each pupa was weighed, measured, photographed, and placed in individual containers until eclosion. We noticed there were low mortality rates across all treatments and larger weights in the control. Pupation time was between 6-8 days for each treatment.

DEMONYA DAVIS

Faculty Mentor: Kim Spacarotella

“Craving for Saving: The Nutritional Aspects of Recipes for Food Pantry Produce”

Food pantry clients face barriers to produce consumption, including poor produce quality and lack of cooking resources. Research has shown that clients use Google for recipe ideas, but these recipes may not align with the U.S.D.A.’s Dietary Guidelines for healthy eating. A Google search for “green bean recipes” and “green bean meals” was completed, and the first 5 recipes were analyzed with Food Data Central. The mean and standard deviation for energy and selected nutrients was calculated and compared to the Dietary Guidelines for a 2000 kcal diet. Mean energy was 50.30 ± 3.19 kcal for meals. Total fat was 21.99 ± 22.34 g, and mean sodium was 145.67 ± 279.19 mg. Butter and cheese contributed to the sodium and fat, and substituting unsalted butter and reduced fat cheese reduced mean sodium to 28.13 ± 92.54 mg for meals and mean total fat to 15.80 ± 19.45 g for meals. Future research should test the effectiveness of providing pantry clients with healthy recipes and fresh produce to further reduce barriers to produce consumption.

SAM CHARLIE

Faculty Advisor: Jesus Ballesteros Chavez

“Utilizing Bioinformatics to Develop a Tighter Scope for Lyme Disease”

Lyme disease, also known as borreliosis, is a vector-borne illness caused by the bacterium *Borrelia burgdorferi* and its close relatives. Borreliosis alternate ticks (intermediate host), and their definitive host includes diverse mammal species, although it does not always result in the manifestation of illness. Ticks in the genus *Ixodes* (Arachnida: Parasitiformes) are the only known vector of Lyme. While the genus counts hundreds of known species, only a handful are known to carry and transmit the *Borrelia* parasite. The most prominent of these species is the black-legged or deer tick: *Ixodes scapularis*. There has been a growing concern about the increase and spread of Lyme disease in the US; due in part to the steady growth of the populations of mammal hosts that are in close contact with human habitation (white-tail deer), potentially triggering a cascade effect that could lead to an increase in the incidence of human infections. Lyme most usually manifests with multiple nonspecific symptoms, including bull’s-eye-

like rashes, flu-like symptoms, joint pain, limb weakness, and chronic fatigue. It is notoriously hard to detect and diagnose the presence of the parasite with current serological methods. The motivation of the current study is to explore, develop, and test a method to detect the presence of *Borrelia* genomes from genomic sequences of their known hosts. We leveraged publicly available genomic sequences from infected human and tick hosts. Our strategy uses reference *Borrelia*, human, and *Ixodes scapularis* genome sequences. These are used iteratively to identify each species' reads using short-read alignment methods (e.g., Bowtie). Finally, reads potentially belonging to *Borrelia* are assembled into contigs and validated via whole genome sequence alignment and BLAST. Read aligners to explore qualitatively and quantitatively the genomic signatures of the presence of *Borrelia* from short-read datasets.

KEYLA CUENCA

Faculty Mentor: Kim Spaccarotella

"The Effect of Interactive Food Labeling On Produce Consumption Among Campus Food Pantry Clients"

The campus food pantry provides the community with produce and a variety of healthy items but doesn't explain how to handle, clean and cook produce so clients are hesitant to reach for produce. Interactive food labels are a solution to encourage food pantry clients to use produce and be able to incorporate nutrients into their diet. This research produced an interactive label for salad greens in the campus food pantry. The label includes a QR code that leads clients to an educational recipe video that teaches the audience how to use greens in a tasty, nutritious recipe. The video explains the nutrients and provides the steps needed to make a recipe. The Blueberry Peach Salad recipe video includes a description of the steps in the recipe as well as incorporating some proven implementations or key educational elements that have been tested to grab the audience's attention. An additional video was also created using a recipe for chicken and green beans. Pilot testing is ongoing and will provide additional information about how the educational video impacts the audience's understanding of produce consumption and preparation.

SHERYL CRUZ, XIYAN DING, RAYNA SMITH

Faculty Mentor: Pragya Sharma Ghimire

"Role of Dietary Calcium Intake and Muscle Performance in Young Athletes."

Mineral and trace elements (MTEs) participate in physiological processes correlated with sports performance including energy storage/utilization, protein metabolism, inflammation, oxygen transport, cardiac rhythms, bone metabolism, and immune function. Evidence supports that minerals are important in muscle metabolism, muscle function, and physical performance. Calcium is a key mineral involved in energy metabolism, bone health, muscle contraction, and other physiological processes in the human body. Calcium-rich foods are dairy products, cereals, nuts, and vegetables. There is a wide research gap in understanding the relationship between calcium intake and muscle performance,

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especially in young athletes. In this non-randomized cross-sectional design, three athlete groups were included: baseball (n=32), lacrosse (n=13), and soccer (n=36), with age ranges from 18-30 years. Participation in this study completed 2 visits of approximately 40 minutes (visit 1) and 60 minutes (visit 2) to the Human Performance Laboratory at D'Angola Gym. On their first visit, the participants signed the informed consent and completed the Health Status Questionnaire (HSQ), Bone-specific Physical Activity Questionnaire (BPAQ), International Physical Activity Questionnaire (IPAQ), Calcium intake questionnaire, and Physical Activity Readiness Questionnaire (PAR-Q). Information from these questionnaires were used to assess variables important for bone and muscle health. The participants' aerobic fitness, muscle strength, body composition, and endurance were tested during the second visit. One-way ANOVA showed no significant differences in dietary calcium intake between the three groups ($p > 0.05$). We also found that dietary calcium intake was significantly correlated to lower body muscle performance ($r = 0.24$; $p = 0.01$) and current bone loading physical activity scores ($r = 0.27$; $p = 0.00$). Future studies should investigate these relationships among larger sample sizes.

JOWANIDES SOURYAL, KRISTY KAKISH

Faculty Mentor: Rongsun Pu

“Analyzing Drosophila DNA Using a Third-Generation MinION DNA Sequencer”

In this research project, we generated a DNA library using a third generation DNA sequencer. We used Drosophila DNA for this research. The third generation sequencer is called the MinION. It can be used to get fast DNA results by just plugging it into a computer. We used the Ligation sequencing kit to prepare the fruit fly DNA library. Other materials were used such as NEBNext FFPE repair mix and NEBNext quick ligation module. We wanted to see if we could get accurate DNA results from the MINION device used. After obtaining the DNA sample, we used that to analyze the data for the fruit fly. Results were not successful, could be due to the fact that the MINION was used many times before. The test was run a second time and still the results were not accurate. However, we still did get some data out of the DNA library.

ANDREA GALLAGHER

Faculty Mentor: Supratik Kar

“In Silico Modeling of Aquatic Toxicity of Organic Chemicals to Three Trout Species Employing QSAR and q-RASAR”

Oncorhynchus clarkii, Salvelinus fontinalis, and Salvelinus namaycush are fish species in the Salmon family, native to North America and susceptible to population threat due to pollution and overfishing, with initiatives such as catch-and-release implemented to preserve their populations. To investigate the toxicity of common pollutants to the three fish, we employed US EPA's ToxValDB database to curate acute median lethal concentration (LC50) toxicity data for all three species. With this dataset, we developed regression-based QSAR and

q-RASAR models to predict the toxicity of chemicals to each species based on chemical descriptors. Then, we used the best models to predict the toxicity of 1172 external compounds to each species. The top 3 most toxic external compounds to *Oncorhynchus clarkii* were Benzenamine, Dinitramine, and Benfluralin. The top 3 most toxic external compounds to *Salvelinus fontinalis* were Propanil, 4-Methylbenzoic acid, and 3-Chlorobenzilydeneacetone. The top 3 most toxic external compounds to *Salvelinus namaycush* were Hexachlorophene, EDTA, and Ethanomethrin. The QSAR and q-RASAR models can be used to understand the toxicological mode of action as well as fill in aquatic toxicity data gaps for the three species, which is important as all three species are under threat due to widespread pollution across the waterways of North America.

KAROLYNE GARCIA

Faculty Mentor: Sharmistha Das Iyer

“Undocumented Immigrant Students Face More Academic and Financial Obstacles in College”

The obstacles and limitations faced by many undocumented immigrant students on their path to college and success were the primary focus of this quantitative study. The study delved into academic and financial challenges, which emerged as the major themes. Additionally, it highlighted the significant impact of social, political, and cultural factors on these students' experiences. The purpose of this research was to comprehensively examine the adverse implications of the obstacles undocumented students encounter, thereby providing insights into their struggles and experiences before and during college. Through the participation of qualified students, the study identified and evaluated the challenges they encountered throughout their college journey, shedding light on the intensity of these challenges. The implications of the findings are significant, providing valuable insights for educators, policymakers, and advocates seeking to support undocumented students in navigating the complexities of higher education. This study contributes to the broader understanding of the experiences and limitations faced by undocumented students in their pursuit of higher education. Keywords: undocumented, obstacles, college, immigrant students, academic challenges, financial limitations, social, political, cultural influences, higher education.

YARLIN HENRIQUEZ

Faculty Mentor: Eunice Nkansah

“Exploring the Impact of Imposter Syndrome among First-Generation College Students”

Imposter Syndrome is a condition in which people often feel inadequate or not deserving of their successes. This study explored Imposter Syndrome's implications on First-Generation College Students (FGCS) attitudes. The researcher adopted a qualitative study approach, specifically a case study design, and collected data primarily through semi-structured interviews. The study recruited two female first- or second-year students from a four-year public

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university in New Jersey. The results of the study revealed three significant findings. The first and most significant finding was the connection between the Imposter Syndrome and the mental health of FGCS. The second result revealed that FGCS found their education to be their responsibility and, therefore, had signals of self-dependence at an early age. The third finding revealed a shared experience with fear of failure among FGCS throughout the college admission process. Based on these findings, the researcher recommended that higher education establish open-door policies to create a conducive and welcoming atmosphere for FGCS. Such policies can further create a support system that enhances the learning experiences of FGCS on college campuses. Future research studies will target a larger population size and adopt a research approach that provides quantitative data to support the qualitative findings.

KRISTY KAKISH

Faculty Mentor: Rongsun Pu

“Utilizing MinION DNA Sequencer for Drosophila DNA”

The MinION device represents a breakthrough in third-generation DNA sequencing technology, characterized by its compact size and portability, with the instrument weighing just 90 grams. At the heart of its innovative design is a flow cell that houses up to 2028 unique nanopores, which are crucial for its sequencing capabilities. The sequencing process involves enzyme-driven movement of DNA molecules through these nanopores, enabling the device to read DNA sequences by analyzing changes in electrical conductivity as the molecules pass through. This process occurs twice for each molecule - first through the ‘template read’ and then through the ‘complementary read’ after traversing a hairpin structure, ensuring a thorough analysis. However, the MinION device has limitations, notably an error rate ranging between 5% to 20%, which poses challenges to its accuracy and reliability in sequencing applications. This study aims to critically assess the MinION sequencer’s performance by experimenting on the genomic DNA of wild type *Drosophila melanogaster*. By sequencing this well-studied organism’s DNA and comparing the outcomes with established sequences in genomic databases, the research seeks to provide an evaluation of the MinION’s effectiveness and reliability in producing accurate DNA sequencing data. The findings from this experiment are expected to offer significant insights into the potential applications and limitations of the MinION device in genetic research and diagnostics, contributing to the ongoing development and optimization of DNA sequencing technologies.

ADRIANA INOA, MARIA SEIDLE, CARLA SALIB

Faculty Mentor: Maria Shumskaya

“Assessment of mycobiome of dead wood of a protected zone of boreal Europe using Mycopins method”

The presence of saproxylic (dead wood) fungi is crucial to maintaining balance in ecosystems as they feast on wood and animal carcasses, leaving their nutrient rich product behind to be recycled by secondary fungal organisms. For this

exchange of nutrients to occur, the secondary fungi species must colonize the deadwood, resulting in the diversification of the fungal communities within an ecosystem. The aim of this research is to observe factors affecting fungal wood decay, such as animal access, humidity, and wood type. To achieve the goal of this research a new, efficient, and inexpensive technique was drafted to observe the specific interactions between the vast communities of wood colonizing fungi and the wood they inhabit by analyzing early colonization habits. It involves a series of sequential steps that allow for the complete analysis of developmental fungal communities in response to their environment, resources available, and timing of infiltration into the wood. Using the saproxylic organism's natural ability to penetrate deadwood, an accurate depiction of this occurrence can be recreated using Mycopins method.). Sterile Mycopins (wooden furniture pins) were placed in a row using wire and then dug underground in a reserve in Finland. Different terrains, wood type and texture, were all variables that were considered when determining the migration pattern of fungal species into the wood within a specific time. These pins were placed in different transects, A, B, C, and D to cover a wide amount of area allowing for better analysis of the saproxylic organisms present within that region. The Mycopins were dug out every two weeks throughout a period of 2022-2023, in order to be later analyzed via DNA metabarcoding, which includes DNA isolation, fungal DNA ITS region amplification, NGS sequencing, and biostatistical analysis. The usage of different study sites including a swamp, a common forest, and protected forests (those with and without reindeer access) was beneficial for observing the effect of the diverse ecological influences on wood decay. To accomplish the purpose of this research, our research group first drilled 75 mycopins from transect A, which is a transect to study a protected part of the forest in Finland, to collect internal wood dust. Once this was complete the DNA was isolated using a soil purification kit from Qiagen. The purified DNA was amplified using PCR. The DNA samples were then sequenced using Next Generation sequencing. The bio statistical analysis was done viaonline pipeline SCATA, which allowed for the correct identification of the fungal species that colonized the wood dowels. Expected results of this research project such as a list of fungal communities colonizing hardwood and softwood described in this research will be published via GBIF.org. The successful completion and publication of a manuscript is anticipated by the end of 2024. This project not only broadens the understanding of fungi and the intricacies of the decomposition process of different woods in different environments but it also showcases a new technique that efficiently enhances our understanding of ecosystem dynamic

ROSEMARY KIMBALL, KAYLEY BROOKS

Faculty Mentor: Rana Zeine

"Microgravity and Weightlessness Pathophysiological Effects; A Systematic Review of the Literature"

This study reviews the growing scientific data on the effects of microgravity by the organ system. Outcome measures included any changes in tissues and cells in the risk groups. 65 studies were included on both human cosmonauts, astronauts, animal models and cell lines. Weightlessness effects on the cardiovascular system included decreased heart size, increased incidence of

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negative EKG events, arrhythmias, and intimal thickening in blood vessels. In the skeletal system, exposure to weightlessness in combination with radiation decreased bone minerals, decreased bone density, impaired osteoclast differentiation and decreased osteoblasts, thus accelerating bone degeneration and diminishing bone size. Microgravity induced muscle atrophy and decreased volume of transverse abdominus and multifidus muscle at L5, while resulting in hypertrophy of internal oblique muscles. Immune function was also adversely impacted by weightlessness, which impaired T-cell-mediated responses, increases levels of harmful reactive oxygen species (ROS), impaired macrophage cytoskeletal structure, CD68 and MHC-II surface expression, reduced lymphocyte activation in response to mitogenic stimuli, reduced cytotoxicity of natural killer cells, reactivation of latent viruses and reduced delayed-type hypersensitivity reactions in response to common recall antigens. In the reproductive system, microgravity damaged sperm DNA, induced spermatogenic cell apoptosis, diminished testicular weight and tubular diameter. Endocrinological effects of weightlessness included increased levels of epinephrine, decreased levels of cortisol, morphological and functional changes within the thyroid gland. Digestive effects of weightlessness included disturbances in gut microbiome. Neurologic impairment included increased glioma cell death by apoptosis, decreased glioma cell migration, increased disorganization of microtubules, decreased brain activity in the left cerebellum, paracentral, anterior cingulate, superior frontal gyrus, and limbic lobe, right lingual, post-central, and middle temporal gyri. Exposure to microgravity was associated with physiological changes that may represent accelerated aging. Although some of the microgravity-induced physiologic changes were reversible and preventable by exercise regimens in space, other changes raised concerns of tissue damage and clinicopathological manifestations. Long-term exposure to zero-gravity conditions could have adverse consequences if not addressed.

NICOLAS LARGOTTA

Faculty Mentor: Brenna Levine

“Optimizing a Protocol for Generating Genomic Data for the Invasive Spotted Lanternfly in New Jersey”

The invasive spotted lanternfly (*Lycorma delicatula*), introduced to the USA in 2018, has rapidly spread throughout the Mid-Atlantic and Northeastern States, and its presence represents a significant threat to agriculture. Management of this problem species will be greatly enhanced via genomic resources facilitating identification of dispersal routes and monitoring of emergent insecticide-resistant genotypes. However, existing genetic resources for the spotted lanternfly are insufficient for parsing genomic variation. Here, we optimized a protocol for generating genomic data for the spotted lanternfly via a double-digest restrictions site associated DNA sequencing (ddRADseq) library preparation. To do so, we tested three components of the ddRADseq protocol including DNA incubation time, restriction digest incubation time, and PCR primer concentration. We identified optimal conditions by quantifying DNA concentrations, performing gel electrophoresis, and comparing pre- and post-PCR library concentrations. We found that a 48-hour DNA extraction incubation period produced adequate concentrations for sequencing while also minimizing

DNA degradation. Further, we identified 6 hours as the optimal length for restriction digest incubation when using enzymes NlaIII and MluCI to prevent over-digestion of samples. Finally, we found the optimal primer concentration for PCR to be 10 uM. This optimized protocol is currently being used for generation of large-scale genomic data for spotted lanternflies.

LAMONT LEE, TANIAH JOHNSON

Faculty Mentor: Sean Keegan-Landis

“Exploring Existence: Philosophers’ Lived Experiences, Minds, and Their Theories of Meaning”

Some philosophers consider the meaning of life to be a fully subjective project: how a person views meaning and purpose to their life depends on that person’s particular lived experiences. Even these subjectivist accounts, however, often ignore the significance of mental health to individuals: the challenges each of us face, identities we have, and the influence of societies’ expectations on our well-being. Given that different philosophers live their lives based on the circumstances they are put in, we propose that every philosopher finds their theory of meaning through experiencing their unique blend of challenges and advantages. Furthermore, these philosophers’ understanding of reality is influenced by psychological and genetic factors. Through comparing philosophers’ experiences and psychologies, we plan to identify how the challenges they face directly relate to what they propose provides fundamental meaning to their lives. We aim to highlight the patterns between philosophers’ different minds and experiences and what they have to say about how to exist in a world that has multiple meanings. We are crafting a poster containing a list of philosophers, such as Aristotle, Seneca, Epicurus, Miguel De Unamuno, Franz Kafka, Albert Camus, and Gloria Anzaldúa. Next to each philosopher will be biographical and psychological details about them, their theories of meaning, and the underlying patterns we notice between their lives, minds, and theories.

SHANICE LENEUS

Faculty Mentor: Adara Goldberg

“The historical roots of racism and its effects on African American history: An insightful peer review into anti racist literature for college students”

This research poster examines the role of anti-racist literature as a mode of personal accounts, historical events, and historical figures. The award-winning book titled “Stamped: Racism, Antiracism, and You.”, Written by Authors Jason Reynolds & Ibram X. Kendi explores antiblack racism within a timeline, from its earliest introduction into literature to present times. The idea of antiracism calls for advocating, self-reflection, and educating in order to confront and destroy racist systems. The book stresses the significance of comprehending the ways in which homophobia, sexism, and classism coexist with racism as a form of oppression. It issues a warning against colorblindness, which fosters ignorance and neglects to address structural injustices. The objective of this research is to give young readers the confidence to confront racism head on in order to

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build a society that is more just and equal. As far as anti-racist literature goes there are many heavily opinionated books and articles available to the public and college students that may misinform or construe readers. Therefore, having fellow college students peer review books involving heavy topics such as racism to determine if the piece of literature is appropriate, unbiased, and reliable for college students to use and reference in academic papers.

JOANA LOPEZ-GUTIERREZ, ANA DUMANI

Faculty Mentor: Thomas Comollo

“In Silico Small Molecular Docking to Task-1 Channel Structure”

TASK-1 stands for TWIK-related acid sensitive potassium channel 1 and is encoded by the KCNK3 gene. It is a member of the two-pore potassium (K⁺) channel family. TASK-1 channels are expressed in humans and modulate cell excitability in excitable cells such as neurons, cardiomyocytes, and vascular smooth muscle cells. TASK-1 channels have also been shown to play a crucial role in circumventing cell apoptosis in a population of non-small cell lung cancer cells. During this research, it was proposed that the inner vestibule of the TASK 1 channel, a known binding site of known TASK inhibitors, BAY10000493 and BAY2341237, can be exploited to find other TASK-1 inhibitors as well. Through virtual screening / small molecule docking methodologies, targeting this inner vestibule binding site following an initial screening of ~900,000 small molecules from the ZINC12 database. The results had good scoring of small molecules for testing in a Thallium Flux assay utilizing an inducible TASK-1-GFP expressing CHO cell line. Our results show that the inner vestibule site can be exploited to find additional TASK-1 inhibitors and validate our virtual screening methodology. In this research study, we are currently seeking to identify additional drug like small molecules predicted to inhibit TASK-1 channel conductance using in silico small molecule docking simulations / virtual screen as well as verify the ability of selected small molecules to inhibit TASK-1 channel conductance in vitro assays.

JOHN LOAISIGA MORA, SAM CHARLIE, HENRY HIDALGO

Faculty Mentor: Jesus Ballesteros Chavez

“A Survey of Arthropod Genomes in Search of a Reproductive Parasite”

Wolbachia is a genus of Gram-negative bacteria that is a common endosymbiont of various arthropods and it is known to affect the reproductive biology of their host. The diversity and prevalence of Wolbachia remain poorly understood; within the umbrella of a single species (*W. pipientis*) ten major lineages have been recognized defining discrete “super-groups”. Wolbachia has been found infecting diverse groups of animals, in particular Arthropods (insects, crustaceans, arachnids, and myriapods) and Nematodes (roundworms). Wolbachia is known to alter the reproductive biology of its host, causing cytoplasmic incompatibility, feminization, parthenogenesis, and male-killing. For this reason, there has been an interest in the potential of this parasite as a natural control agent against insects of medical or agricultural relevance, but this narrow focus has neglected other major lineages in their range of potential

hosts such as the arachnids. Beyond the potential applications, the study of this endosymbiont has also sparked interest in its role in the co-evolutionary history of the bacterium and their diverse host; in particular because *Wolbachia* transmits exclusively through the maternal line; comparable to the inheritance pattern of mitochondria. Traditional characterization techniques of *Wolbachia* infections are laboratory intensive and show low sensitivity. This is partly due to the technical difficulties of isolation and cultivating the endosymbiont; which also impact traditional molecular PCR-based techniques for bacterial DNA sequencing. To date, three supergroups have been identified in the subphylum Chelicerata (the group that includes spiders, scorpions, and kin). But the spread and prevalence of *Wolbachia* among the broader lineages of terrestrial and aquatic chelicerates, besides a few spiders and scorpions, is largely unknown. Here we develop and test a bioinformatic pipeline that leverages recent whole genome sequences (in the form of genomic reads) to identify and assemble reads matching the genetic signature of the presence of *Wolbachia* across diverse arthropod lineages. We developed and tested custom Python scripts to (1) identify reads matching known *Wolbachia* sequences, (2) Assemble read into contigs, ideally representing a new whole genome assembly of *Wolbachia*, (3) quantify reads and coverage and (4) elucidate the identity and relatedness of the newly identified sequences among known strain of *Wolbachia*. Finally, we expect the combined analyses will reveal patterns of diversity host coevolution among a broader diversity of arthropods.

KIMBERLY MARTINEZ

Faculty Mentor: Eunice Nkansah

“The Crime Scene Investigation Effect: A Quantitative Study of Undergraduate Perception”

Abstract This study aimed to determine if and why college students are prone to the bias resulting from the Crime Scene Investigation phenomena. It is believed that individuals who experience the CSI effect often have higher expectations for forensic testing to yield dramatic and impactful results rather than accepting definitive evidence that may not necessarily involve forensic analysis. A possible explanation for the phenomena is the influence of crime shows and movies found on streaming platforms, which may affect the general public’s perception of legitimate forensic techniques. The researcher employed a quantitative approach, specifically an online survey, to conduct the study. To collect data, the researcher constructed an online questionnaire using Qualtrics—an online survey tool disseminated electronically via social media and posted throughout the Kean University campus in Union, New Jersey. The questionnaire comprised multiple-choice, matrix-style, and slider questions, covering subjects like participant demographics, crime-show-watching habits, and comprehension of forensic evidence collection and analysis with 41 complete responses. Data analysis of the results revealed four significant responses from participants. First, more than half of the participants watched crime shows and noted which ones they preferred watching the most. Second, only a few of the surveyed college students were familiar with the CSI effect. Out of those who knew about it, they were directed to answer questions about whether crime shows impacted their perception. Third, the results revealed that students’ responses to the accuracy

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of specific scientific tests linked to crime shows did not directly reflect whether they watched crime shows or knew of the CSI effect. Lastly, the study found that education has an impact on the level of knowledge displayed by the participants in the questionnaire. Based on these findings, the researcher recommended that college students develop an interest in lab courses to gain more insight into laboratory analysis and procedures as to understand their role in collecting forensic evidence. The study further recommended that universities and institutions implement more criminology and forensic science courses into the regular curriculum to educate students about what they watch in crime shows. Lastly, future research studies on the CSI effect should be conducted at a larger scale using a different research approach to help reinforce both quantitative and qualitative findings. Keywords: forensics, perceptions, college students, undergraduates, crime scene investigation, effect.

DEREK MELENDEZ, CHELSEA OTI, BENJAMIN AHARONI, ERIN KRAUS

Faculty Mentor: Shuting Liu

“Assessing seasonal changes of algae-bacteria interactions in the New Jersey coastal waters”

Over seasonal cycles marine microorganisms, such as algae and bacteria, in the coastal waters interact differently based on a multitude of factors. For instance, temperature and inorganic nutrients contribute to algal bloom formations. Algae interact with bacteria through release of dissolved organic matter (DOM) that can be used by bacteria. All of these factors and processes will change the water quality and ecosystem health over the time. Thus it is crucial to find out more about how algae-bacteria interactions shape marine ecosystems and impact our water quality by doing a thorough study at NJ coastal waters. In order to assess the seasonal variability of algae biomass in the water and the correlation between which nutrients were being consumed for algal blooms together with subsequent processes affecting bacteria via algae-released DOM, We carried out this task by collecting samples of water at multiple sites at New Jersey coastal waters. Then we prepared those samples of water by filtering particles or adding reagents like HCl. Finally we analyzed chlorophyll and inorganic nutrients using a spectrophotometer, dissolved organic carbon (DOC) using total organic carbon analyzer, and bacterial abundance using fluorescence microscope. It is found that during the spring and summer algal blooms, which are due to high temperature during that time, inorganic nitrogen are deficient in the water, indicating algae is taking up nitrogen. DOC produced by algae in the spring-summer bloom time triggered the increase of bacterial biomass compared to non-bloom seasons in the winter, suggesting bacteria is actively responding to algal-DOM during the bloom period. These findings display the seasonal patterns of algae-bacteria interaction in the New Jersey coastal waters and provide mechanistic understanding of driving factors shaping their interactions.

JAZAAN WALSH

Faculty Mentor: Wendy Alvarado

“The impacts of Systematic Racism on the Health outcomes of African Americans”

A constant issue that continues to affect the African community is systematic racism. Merriem-Webster dictionary defines systemic racism as the oppression of a racial group to the advantage of another as perpetuated by inequity within interconnected systems (such as political, economic, and social systems). We aimed to evaluate the incidence of systemic racism within healthcare by reviewing the issues of maternal mortality, obesity and diabetes. A literature review was performed to help determine how systemic racism contributes to the above mentioned issues. Systemic racism can alter socioeconomic factors, such as income, which then contributes to a lack of healthcare and lack of health knowledge. These factors are a few of the reasons why these healthcare issues continue to be prevalent in the community. By understanding the affecting factors and how they are causing a hindrance in the growth of the African community, it can allow us to adopt changes that will lead to better healthcare, and a decrease in maternal mortality, obesity and hypertension.

WENDY TENECOTA

Faculty Mentor: Brian Teasdale

“An investigation into seed germination rates for the economically valuable horticulture plant, Papaver spp.”

Papaver somniferum, commonly known as the opium poppy, is a plant with historical significance and pharmacological importance. However, its cultivation indoors, particularly in greenhouse environments, presents challenges due to varying conditions. This research aims to investigate the factors influencing the germination of Papaver somniferum seeds in a greenhouse setting. This pilot study explores the germination rates of Papaver somniferum (opium poppy) seeds in a controlled greenhouse environment. As indoor cultivation of poppies poses challenges, understanding optimal conditions for germination is crucial. Factors such as temperature, humidity, light intensity, and soil composition are manipulated to assess their impact. Seeds are sown in trays under controlled conditions, and germination is monitored weekly. Expected outcomes include identifying conditions conducive to germination and their implications for indoor cultivation practices. This study contributes to improving poppy cultivation techniques, potentially enhancing yields for pharmaceutical and horticultural purposes. Overall, investigating seed germination rates of Papaver somniferum in greenhouses advances our understanding of plant biology in controlled environments and addresses challenges associated with indoor cultivation.

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RENATO MENDEZ, AYUSH PATEL, ALYSSA MOFFITT

Faculty Mentor: Brenna Levine

“Effect of Urbanization on Invasive Spotted Lanternfly Body Size”

Body size is an important trait related to reproductive success and overall fitness, and in ectotherms, it is affected by the temperature of the environment. According to an ecological principle known as the temperature-size rule, cooler environmental temperatures result in slower development but overall larger adult size. While the temperature-size rule is most often considered with regards to latitude (i.e., Bergmann’s Rule), the warmer temperatures in urban environments may similarly affect body size. We used the invasive spotted lanternfly as a model to understand how urbanization affects ectotherm body size. The spotted lanternfly (*Lycorma delicatula*), an invasive insect native to China, began to invade the mid-Atlantic and northeastern regions of the United States circa 2014. In Fall 2021, we collected 872 spotted lanternflies from 51 sites spanning an urban-rural gradient. We took two body size measurements for each individual: the distance from the nose tip to the wing tip and the distance from the nose tip to the abdomen tip. We also calculated this measure, the ratio between the two body size metrics. We used arcGIS to quantify percent impervious surface for each site from the National Land Cover Database as a proxy for degree of urbanization. Mean percent impervious surface at each site ranged from 5% in rural areas to 64% in urbanized settings. We report on the relationships between percent impervious surface and body size metrics for males and females. The results of our study clarify the relationship between urbanization and body size with important implications for the management of invasive ectotherms.

AYUSH PATEL, IRENE OWUSU-ANSAH

Faculty Mentor: Brenna Levine

“Male spotted lanternflies are not attracted to larger females”

Invasive species pose a significant threat to economies, biodiversity, and human health, and their management can be improved by an understanding of their reproductive ecology. The spotted lanternfly, *Lycorma delicatula*, is an invasive insect that has colonized more than ten US states in less than 10 years, and it poses a major threat to US agriculture. If we can determine why males choose to mate with certain females over others, then this information can be used by managers to disrupt the mating system of the spotted lanternfly. We hypothesized that larger female spotted lanternflies are more attractive to males, as body size may be an indicator of fecundity. To test whether larger females attracted more males, we examined the relationship between three female morphological traits—length from the tip of the head to the tip of the wing, length from the tip of the the head to the tip of the abdomen, and length of the the abdomen—and the number of males that were found courting the females. In mid-October 2024, we surveyed the Kean University (Union, NJ) campus for spotted lanternflies and collected females attended by courting males. We measured the three morphological traits of each female using digital calipers and statistically tested whether female length measurements

were correlated with the number of males that were courting the female. We found no correlation between the number of male attendants and the female body size metrics [head to tip of wing length: Kruskal-Wallis Test, $p = 0.226$; abdomen length: ANOVA, $p = 0.574$; head to tip of abdomen length: $p = 0.623$]. These results are consistent with previously published post-copulatory data that showed no relationship between female body size and the number of spermatophores found in the female reproductive tract. When considered in the context of this previous study, our data indicate that males are assessing female attractiveness via traits unrelated to female body size.

CHAMODHI RANATHUNGA

Faculty Mentor: Sasmita Mishra

“Effects of Drought Stress on Corn and Barley Cultured with Mycorrhizal Fungi”

Drought is a key limiting factor in crop production. Recent studies have highlighted the potential of mycorrhizal fungi (MF) colonization for enhancing plant growth and alleviating abiotic stresses, including drought. However, it remains unclear whether the responses of different crop species in the presence of MF to drought stress differ among plants with different photosynthetic pathways, such as C3 vs C4. We hypothesized that the degree of response to drought tolerance will vary in different photosynthetic crop types, even with successful mycorrhizal colonization. In this study we compared the responses of C3 and C4 plant types to short-term drought stress. Eight-week-old barley and corn that were cultured with mycorrhizal fungi species (*Rhizophagus intraradices*) were exposed to drought stress by withholding water for six days in a controlled growth condition in the greenhouse. Parameters such as relative water content (RWC), biomass, shoot length, and chlorophyll content were measured. Interestingly, our study found that over all, MF-colonized plants benefited more. Relative water content in MF-colonized barley plants was higher than corn; in contrast, drought-stressed MF-colonized corn plants had root mass almost equivalent to that of unexposed plants with MF. Results from our study suggest the possibility of varying degrees of MF-related amelioration in drought tolerance in photosynthetically different plant types such as C3 and C4 plant types. This implies that MF may have further influence in the responses of crops to drought in future scenarios of climate change.

AARON WILLIAMS

Faculty Mentor: Sasmita Mishra

“A Summary Literature Review of the Effects of Lavender vs. Chamomile on Anxiety, Depression, and Sleep Quality”

There has been a resurgent interest in natural/herbal medicines to treat disorders such as depression, anxiety, and to help improve sleep quality. Lavender and chamomile have been shown to have a similar effect on mild cases of anxiety, depression, and sleep quality, as synthetic drugs like lorazepam and corticosterone. This study aims to compare the effects of two ancient herbal remedies, lavender, and chamomile, and see which is more effective at treating the

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previously mentioned conditions. A systematic review was conducted. We scoured databases looking for papers that pertained to lavender and chamomile essential oils, teas, and other forms. Out of this literature survey, 25 studies were chosen with a total sample size of 2356. The most common experimental type for lavender and chamomile was a randomized control trial, occurring 11 times. Lavender was more effective at controlling anxiety, while chamomile is possibly more effective at alleviating depression and improving sleep quality. At the beginning of this study, we wanted to see whether chamomile or lavender was more effective at alleviating one or more of depression, anxiety, and improving sleep quality. Lavender seems to be more effective at relieving anxiety, while chamomile seems better suited for people who struggle with insomnia and depression.

**JACQUELINE VALVERDE-BURI, PRARTHNA RANA,
ANDREA GALLAGHER, KEYLA CUENCA**

Faculty Mentor: Renalison Farias-Pereira

“The health effects of green coffee oil in *Caenorhabditis elegans*”

Green coffee oil (GCO) is a triglyceride mixture derived from green coffee beans used in the cosmetics industry as an antioxidant. GCO contains fatty acids (e.g. linoleic and palmitic acid) and other minor components, such as diterpenes (e.g. cafestol and kahweol), polyphenols and phenolic acids. Due to its composition, there are potential new usages of GCO for human health and wellness, as the antioxidant nature of GCO may support cell functions by reducing oxidative stress. The reduction of oxidative stress may provide valuable insights into the potential health effects in humans, including anti-aging, improved cellular function, and reduced risk of age-related disease. *Caenorhabditis elegans* is a nematode used as a biological model due to its short life cycle, short lifespan, and molecular similarities with humans. The transparent *C. elegans* body and its small size make it easier to observe their morphology and identify different life cycle stages. The goal is to evaluate the health effects of GCO on growth, oxidative stress resistance, and lifespan of *C. elegans*. Worms were treated with 0.1% and 0.5% GCO, and 0.5% dimethyl sulfoxide as the vehicle control. After 48 hours of incubation, the growth rate assay was performed by observing the stages and size of *C. elegans* under the microscope. The effects of GCO in growth is helpful to determine its beneficial doses in *C. elegans*. This research will give us insights on the benefits of GCO as a potential dietary supplement or food for humans.

YIJING YANG

Faculty Mentor: Sasmita Mishra

“Optimization of Mycorrhizal Colonization in Different Greenhouse Crops”

In terrestrial ecosystems, microorganisms living symbiotically with plants contribute to many beneficial effects on growth and development. The application of soil mycorrhizae in greenhouse crop production has gained attention as a practice for sustainable crop production. However, the optimization of mycorrhizal fungi (MF) applications is still lacking. I hypothesized that both monocots would benefit from mycorrhizal application. In this study,

I will use corn and barley to evaluate the mycorrhizal colonization by culturing the seedlings of the mycorrhizal fungus species *Rhizophagus intraradices* for seven weeks. Ten-day-old seedlings were grown in sterile soil cultured with mycorrhizal fungi in a controlled growth condition in a greenhouse. Parameters such as biomass, chlorophyll content, shoot length, and root-to-shoot ratio were measured to compare the treatment effects. I found several differences in the responses of these two plants. MF-colonized plants in barley have thicker stems than those without MF. Similarly, MF-colonized corn plants had three times higher shoot lengths. Interestingly, MF colonization promoted shoot and root mass in both species. However, there was no significant difference in total chlorophyll content in corn; in contrast, MF-colonized barley seedlings had a higher amount of total chlorophyll. This study found that plants' physiological responses to mycorrhizal colonization vary.

SIYUN YANG

Faculty Mentor:

“Recent Advanced Methods for Extracting and Analyzing Cannabinoids from Cannabis-Infused Edibles and Detecting Hemp-Derived Contaminants in Food (2013-2023): A Comprehensive Review”

Cannabis-infused edibles aim to offer an alternative way to consume cannabis instead of smoking or vaporizing. As a consequence, ensuring the accurate detection of cannabis-infused edibles and the identification of any contaminants is essential for public health and safety. Since these substances may have strong psychoactive effects, proper regulation is particularly important for compliance, especially for the protection of unsuspecting consumers such as children or individuals with certain medical conditions. The proper extraction methods can ensure the measurement of the concentration of cannabinoids in edibles is accurate. This project covers methods such as Solid-Phase Extraction, Enhanced Matrix Removal-Lipid, QuEChERS, dissolution and dispersion techniques, Liquid-Phase Extraction, and other emerging methodologies, along with the analytical techniques for cannabinoid analysis. The application of these extraction and analytical techniques is further demonstrated through their use in analyzing specific edible samples, including oils, candies, beverages, solid coffee and tea, snacks, and pet food.

SIYUN YANG

Faculty Mentor: Supratik Kar

“Exploring Phytochemicals as Promising Lead Drug Candidates for Zika Virus: An Integrated Computational Investigation”

The Zika virus (ZIKV) poses a global health threat, primarily transmitted by mosquitoes. A Zika infection can result in severe neurological disorders such as Guillain-Barré Syndrome, as well as birth defects including microcephaly, brain and eye defects, miscarriage, stillbirth, and preterm birth. It is a single-stranded positive-sense ribonucleic acid (RNA) virus with a genome of around 10.8 kilobases encoding 3419 amino acids. With no US FDA-approved drugs or vaccines

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available, urgent attention is needed for drug discovery to protect against the potential upcoming pandemic. The ZIKV NS2B/NS3 protein plays a critical role in the virus's replication, making it a key target for intervention. Initially, the insecticidal activity of a series of 62 plant-derived molecules against the *Aedes aegypti* mosquito, the vector for chikungunya, dengue, and Zika viruses, was assessed through docking studies and QSAR modeling. This was followed by a similarity search of the top 5 molecules in the Supernatural III database and the Coconut database. Identified ligands underwent XP docking using Schrödinger software. Subsequently, the top ten molecules were selected based on their docking scores for absorption, distribution, excretion, metabolism, and toxicity (ADMET) profiling. Four phytochemicals with the least toxicity were chosen for further investigation, subjected to a 500 ns molecular dynamics (MD) simulation study using the Desmond module, followed by an MM-GBSA study with the Prime module of Schrödinger. The phytochemicals identified, exhibiting minimal toxicity and promising ADMET profiles, present as potential lead drug candidates for Zika virus intervention.

SIYUN YANG

Faculty Mentor: Supratik Kar

“Quantitative Read-Across Structure-Activity Relationship (q-RASAR) Modeling of Aquatic Toxicity of Atlantic and Pacific Salmons to Organic Chemicals”

The evaluation of aquatic toxicity is essential for maintaining the balance and health of both marine and freshwater environments. With numerous chemicals entering aquatic ecosystems daily, understanding their potential negative impacts is essential. These substances can harm many aquatic organisms, from microscopic plankton to large fish predators. The significance of aquatic toxicity extends beyond direct environmental effects, including the potential for impacted aquatic species to become part of the human food chain, posing health risks to people who consume contaminated seafood. Salmon, a key component of human diets and economic well-being, has been the focus of acute LC50 toxicity data compilation in the ToxValDB database for six species across two genera, making them prime subjects for aquatic toxicity testing. Utilizing this data, we have developed various predictive QSAR (Quantitative Structure-Activity Relationship) and q-RASAR (quantitative Read-Across Structure-Activity Relationship) models for one Atlantic salmon (*Salmo salar*) and five Pacific salmon (*Oncorhynchus tshawytscha*, *Oncorhynchus keta*, *Oncorhynchus kisutch*, *Oncorhynchus gorbuscha*, and *Oncorhynchus nerka*). These models have assisted in comprehending the toxicological mode of action (MoA) of the chemicals being studied and have enabled the prediction of the aquatic toxicity of new, untested compounds. Furthermore, these models have helped to fill in gaps in toxicity data. Using sophisticated mathematical models has enabled the prediction of probable aquatic toxicity for 1085 untested substances. This forecast covers six species of Salmon and seeks to assess the environmental hazards linked to these compounds which can support the regulatory agencies for future chemical uses and approvals.

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**ZOBIA AFZAL, AMBER AFZAL, SARA MAKALEH, ELARIA ABDY,
AMANDA DAVIS, SOPHIA BIZINK, YARA MOHAMED***Faculty Mentor: Salvatore Coniglio***“Microglia stimulates glioblastoma invasion via a CCR-1/Osteopontin pathway”**

Glioblastoma Multiforme (GBM) is the most aggressive form of adult brain tumor with a median survival time of twelve months. GBM is highly resistant to conventional therapy. GBM cells are highly motile and invasive resulting in infiltrative tumors with poorly defined borders. GBM tumors are heavily infiltrated with microglia cells which are known to stimulate GBM cell invasion. Our laboratory has previously demonstrated that microglia strongly stimulate GBM invasion both in vitro and in orthotopic animal models. This interaction was found to be dependent on CSF-1R which is expressed in all tumor-infiltrating macrophages/microglia. Blockade of the CSF-1R using compounds such as pexidartinib (PLX3397) can inhibit microglia/macrophage-stimulated GBM invasion in vitro and in vivo. A variety of chemokines are upregulated in the GBM tumor microenvironment and facilitate “cross-talk” between microglia and GBM cells eliciting a chemotactic response. Using novel CCR-1 specific antagonists, we show that microglia-stimulated glioblastoma invasion in vitro is dependent on CCR-1. Furthermore, using quantitative-PCR, immunofluorescence, and ELISA assays we observed that treatment of microglia with glioblastoma-conditioned media strongly induces the expression of CCR-1 and several ligands for CCR-1 including CCL-3 and CCL-5. Finally, we investigated potential effectors of CCR-1 signaling which mediates glioblastoma invasion. The matricellular protein osteopontin emerges as a promising candidate.

HINA ALI, GABRIELLE TUMANENG, LESLIE ESTEVEZ*Faculty Mentor: Dilrukshie Ramanathan***“Qualitative and Quantitative Analysis of Medicinal Plants”**

Traditional medicine is the use of medicinal plants to help prevent and treat diseases. These plants are incorporated in various foods and beverages in many different cultures. This is the first choice of treatment for many developing countries as it is highly abundant, easily accessible and cost efficient. Additionally, medicinal plants contain several bioactive compounds such as antibacterial, anticancer, antidiabetic, antifungal, anti-inflammatory, antioxidant, and other therapeutic properties. Understanding the significance of plants in medicine allows for treatments outside of modern pharmaceutical medicine to thrive as there is limited knowledge on the chemical profiles. Analytical chemistry has directed a field in which instrumentation can be used as a source in the studying of different samples and the identification of foreign compounds. In this investigation we utilize analytical instruments and techniques to perform a precise and accurate analysis on several medicinal plants to better understand the chemical composition. A direct extraction of each herbal plant using organic solvent was prepared and used for identifying medicinal compounds through the use of Gas

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Chromatography-Mass Spectrometry (GC-MS). Further analysis was conducted using Liquid Chromatography-Mass Spectrometry (LC-MS) for the quantification of select medicinal compounds. The findings in this research will open up novel ideas for developing alternative medicinal options through a natural approach.

BENJAMIN AHARONI

Faculty Mentor: Shuting Liu

“Factors driving production of chlorophyll in phototrophic organisms in Keyport coastal waters, New Jersey”

Algal blooms in the New Jersey coastal waters have been happening in recent years and have led to changes in water quality such as increasing turbidity, changing water chemistry, which potentially can indirectly impact wildlife. Therefore it's important to figure out what is causing algal blooms to understand and predict the changes to coast water's biogeochemical cycling. This study investigates the relationship between nutrients and phototrophic organisms in the marine environment, with a specific interest in the relationship between chlorophyll concentration and the environmental factors measured. Field sampling occurred from April 2023 to January 2024 at four coastal sites in Keyport, New Jersey. Comparing the algal bloom period (late spring-summer) and non-bloom period (winter). Chlorophyll-a concentrations determined through spectrophotometry were significantly higher in the bloom period. SRP (Soluble Reactive Phosphate) concentrations were determined through the ascorbic acid method and spectrophotometry, its concentration was not significantly different between the two periods. Nitrate and nitrite concentrations were determined using cadmium reduction and spectrophotometric measurement and ammonium concentrations were analyzed using fluorometer after o-phthalaldehyde derivatization. Both nitrate+nitrite and ammonium showed significantly lower concentrations in the bloom period compared to the non-bloom period. Dissolved organic nitrogen (DON) was calculated as the difference between total dissolved nitrogen that was measured by a total organic carbon analyzer equipped with a nitrogen module and inorganic nitrogen. DON concentrations were also significantly lower in the bloom time. Bacteria concentrations were determined via DAPI staining and imaging under epifluorescence microscopy, it was found that there was a significantly higher abundance of bacteria during the bloom period compared to the bacteria population during the non-bloom period. A Pearson Correlation analysis between the variables was used to determine their relationship's significance to each other. It was found there was a significant positive relationship between temperature and chlorophyll-a concentrations, while there was a significant negative relationship between the nitrogen concentration (nitrate+nitrite, ammonium, DON) and chlorophyll-a, suggesting algal blooms occurred in warm seasons took up nitrogen nutrients from the New Jersey coastal water. The positive correlation between chlorophyll-a and bacterial abundance suggests phototrophic organisms support the population of bacteria in the water during the bloom period. Studying the changing biogeochemical patterns of New Jersey coastal waters during the bloom and non-bloom periods allows us to gain a deeper understanding of how these variables affect one another and how the presence of nutrients affects phototrophic organisms. To conclude, this study

gives insight into the intricate interactions between phototrophic organisms and biogeochemical cycling dynamics in the New Jersey coastal water. Future studies could further explore what phototrophic organisms contribute to the water column through their exudates and how those will shape the bacterial response.

LEILA ASGARKHANI

Faculty Mentor: Subhasish Chatterjee

“A Bottom-Up Approach to Synthesizing Carbon-based Quantum Dots”

As a unique class of zero-dimensional nanomaterials with a size range of less than 10 nm, carbon-based quantum dots (CQDs) exhibit a plethora of beneficial physicochemical properties, including tunable photoluminescence, electrical conductivity, photostability, low toxicity, and biocompatibility. Thus, CQDs are promising candidates for many applications in biotechnology and nanoscience, such as bio-chemical sensing and imaging, drug delivery, photocatalysis, and solar cells. Notably, the exact network of molecular motifs leading to the nanoscale architecture of CQDs with enhanced photoluminescence still needs to be discovered. As we focus on investigating the structural organization and photophysical properties of biocompatible CQDs, our ongoing work involves CQD synthesis via bottom-up approaches that rely on assembling bio-compatible and organic precursors and green chemistry-inspired strategies. Furthermore, we have applied cost-effective and environmentally friendly techniques, including hydrothermal and solvothermal methods, to produce nanomaterials from a combination of amino acid-based precursors and protein sources. Qualitative colorimetric detection confirms the long-term stability of the resulting nanomaterials as we proceed toward comprehensive and high-resolution spectroscopic analyses of the carbon-based quantum dots, along with synergistic computational modeling.

PIERRE CAMAYOC

Faculty Mentor: Renalison Pereira

“Antioxidant effects of a moringa extract in *Caenorhabditis elegans*”

Moringa oleifera has been used for a variety of health benefits as it is a good source of antioxidants, anti-inflammatory, and anti-aging compounds. *M. oleifera* seed extract (MSE) contains notable antioxidants, such as isothiocyanates which are known for mitigating oxidative stress. Isothiocyanates are antioxidants that activate the Nrf2 pathway, involved in the oxidative stress resistance in organisms. Using *Caenorhabditis elegans* (roundworm) as our model organism, we aimed to investigate the antioxidant-related molecular pathways induced by MSE. The *C. elegans* gene *skn-1* encodes for a transcription factor that is homologous to the human Nrf2. The *skn-1*/Nrf2 pathway induces gene expression of antioxidant proteins that have an important role in aging and oxidative stress defense. We treated *C. elegans* with MSE in liquid media for 2 days before collecting and extracting total RNA. Using RT-qPCR, we tested for six *skn-1* downstream genes (*gst-4*, *atf-4*, *gcs-1*, *gsr-1*, *pbs-5*, and *pcp-2*) for amplification. MSE at 0.5 mg/mL upregulated the expression of *gst-4*, *atf-4*, *gcs-1*, *gsr-1*, and *pbs-5* in comparison

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to the control, while pcp-2 expression was not changed due to MSE. Our findings show that MSE activates the skn-1/Nrf2 pathway, suggesting the potential benefits *M. oleifera* seeds for aging and oxidative stress defense due to their isothiocyanates.

PRANAV ILLENDULA, ERIKA CALLE

Faculty Mentor: Dilrukshie Ramanathan

“Qual/Quant Analysis of Icelandic Moss Using Liquid Chromatography-High Resolution Mass Spectrometry”

Cetraria islandica, commonly known as Icelandic Moss in Iceland and Russia, is a popular lichen consumed as a tea by locals. The plant is known to treat many diseases, but it is used mainly for respiratory relief such as cough, congestion, and throat irritation. It is also known to treat gastrointestinal issues, tuberculosis, and skin infections. Additionally, it is found in various pharmaceutical studies that the plant exhibits antiviral, antitumor, antibiotic, and anti-inflammatory properties. Therefore, it is important to determine the plant's phytochemical components and their various applications in pharmaceutical development. The drugs based on plant-derived natural products will offer an alternative solution from synthetic means because of the diversity and accessibility of herbal plants. In this study, *C. islandica* was analyzed using chromatography and high-resolution mass spectrometry techniques. Qualitative and quantitative (qual/quant) analysis methods were developed to identify, characterize, and quantify the medicinally important chemical compounds in the plant extract.

LUKE FRANKENFIELD, NICK LARGOTTA

Faculty Mentor: Brenna Levine

“Comparison of number of fragments generated by in silico and in vitro ddRADseq for the invasive spotted lanternfly (*Lycorma delicatula*)”

Lycorma delicatula is an invasive species in the United States that originated in China, and it poses a significant threat to US agriculture. If we can quantify gene flow and genetic structure among populations in the US, then we can identify dispersal routes and source populations to inform control. But, genetic resources for the spotted lanternfly are currently restricted to small panels of microsatellite loci and analyses of mitochondrial DNA. Therefore, we performed in silico and in vitro tests of a reduced representation genome sequencing approach (ddRAD) with the goal of sequencing thousands of genomic variants for each individual. . We first performed in silico digestion of the genome with two sets of restriction enzymes (NLalIII/MLuCI and NLalIII/EcoRI) using simRAD. The results of this simulation allowed us to optimize a ddRAD protocol that would generate high coverage of SNPs and thus high confidence. We then prepared ddRAD libraries with these two sets of enzymes and sequenced them on an Illumina HiSeq X. The in silico double digestions with MLuCI/NLalIII and NLalIII/EcoRI predicted a total of XXX and 193,1991 fragments, respectively. In contrast, the in vitro library preparations with these same enzyme combinations resulted in 727,069 and 400,425 fragments, respectively. In this sense, in silico digestion dramatically

underpredicted the number of fragments that would be generated by this protocol, resulting in lower than desired coverage and correspondingly low confidence in any analytical conclusion that has been made. These results are likely due to a low quality reference genome used for in silico analyses.

PATRICK MARTINS

Faculty Mentor: Brian Ree

“Transmission X-ray Scattering Morphological Characterization of Poly(caprolactone)”

Nanoscale cages are a unique material due to their potential to be used in various applications such as capsules, carriers, templates, reactors, and so on. In general, they can be prepared through self-assembly of molecules and chemical synthesis of molecular cages. Numerous methods exist for self-assembly but they are faced with practical challenges that limit their viability. As alternatives, nanoscale cages in the form of organic molecule-based cages have been developed. Among many examples, macromolecular cages of poly(ϵ -caprolactone) (PCL) have exhibited rather unique behavior regarding their phase transitions and morphology as a result of the unique cage topology. The project aims to investigate the impact of macromolecular cage topology on the thermal and morphological properties of PCL in solid state. Quantitative thermal (phase transition) and morphological characterizations are to be carried out through differential scanning calorimetry (DSC) and X-ray scattering techniques, respectively. Various data analysis techniques, statistical models, and theoretical exploration chemistry will be applied.

MARTHA JULEMIS, RAMISH ZAHED, HINABEN PATEL, YOUSSEF ELHOWARY, GIANNA KISZKA, SOFIIA KOROTKA, ERIKA SALGADO, DIANA FIGUEROA CHEA

Faculty Mentor: Thomas Comollo

“TASK-1 Inhibitors”

The TWIK-Related Acid-Sensitive Potassium Channel 1 (TASK-1) plays a crucial role in regulating and responding to changes in membrane potentials within a cell. Encoded by the KCNK3 gene, TASK-1 exists as a potassium channel with a two-pore domain structure, belonging to the K2P family. Situated on the external surface of the cell membrane in humans, TASK-1 channels control potassium ion flow across cell membranes. TASK-1 exhibits versatility across different tissues, ranging from the central nervous system to cardiovascular tissues. These channels contribute to the regulation of neuronal activity and neurotransmitter release while also influencing cardiac action potentials. In addition to modulating cell excitability, TASK-1 channels have also been shown to exhibit proapoptotic effects among certain populations of cancer cell lines. During this study, it was suggested that the inner vestibule of the TASK 1 channel serves as a binding site for established TASK inhibitors. This distinctive characteristic renders TASK-1 a promising target for inhibitor studies aimed at chemical regulation or drug intervention for future potential therapeutic implications. We propose to target

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the inner vestibule of the TASK-1 channels, a known binding site for TASK-1 inhibitors, to identify new TASK-1 inhibitors. We conducted virtual screening and small molecule docking studies using approximately 900,000 compounds from the ZINC12 database. Initial results yielded a promising hit molecule, for which we named KU124, and was validated through a thallium flux assay using an inducible TASK-1-GFP expressing CHO cells line. Our findings suggest that the inner vestibule of the TASK-1 channels can be exploited to discover additional inhibitors and validate our virtual screening approach.

REBECA RODRIGUEZ, JONATHAN MEBRAHTU, FOLASHAYE ARAROMI, AMEENA MOHASSIB, LAURA ORTEGA-DAMIAN, TANIA C ROMERO

Faculty Mentor: Cecil Saunders

“The Addition of Some but not all Amino Acids to Soil Increases the Feeding Rate of the Earthworm, *Dendrobaena veneta*.”

Earthworms derive their nutrients from the organic component of soil and are attracted to soil containing decaying organic material. However, no studies have established individual molecules that modulate the feeding of these animals. Our previous studies have suggested that glutamic acid may trigger increased feeding in the earthworm, *Dendrobaena veneta*. In the present experiments, we test other amino acids to determine if they also modulate feeding rates. To test the rate earthworms consumed soil, we starved earthworms to empty their gastrointestinal (GI) tract, then allowed them to feed on soil for 60 minutes and measured the fraction of their GI tract that was filled with soil. In this assay, we have found that earthworms consume significantly more soil when it contains 50 mM alanine or glutamic acid.

GISSELLE A. HIDALGO, AHAD L. SHABAZZ-HENRY, KATHARINE MORRISON, BIANCA M. ORTEGA, SUNETH TISSERA, EMMA BELLARS, KRISTINA SPENCER, LAUREN MALDONADO, MELISSA MENZEL, GERARD C. NIFRAS, ANNABELLE KLINDER, LILAC BANCAIREN, DINA DOKIC, LISAMARIE GOMEZ, SUNNA JOSEPH, ANTHONY RICCIARDI, YORGOS VASSILIOU

Faculty Mentor: Matthew Niepielko, David Joiner

“Exploring the Impact of Germ Granule Diversity on Germline Development in *Drosophila*”

The development and maintenance of the germline, the set of highly specialized cells responsible for passing on genetic material to the following generation, is essential for animal reproduction. Germline function and maintenance require the formation of highly conserved ribonucleoprotein (RNP) granules called germ granules. Germ granules are biomolecular condensates that contain many types of mRNAs and proteins that have important roles in germline differentiation, proliferation, and maintaining trans-criptional quiescence through post-transcriptional gene regulation. In animals including *Drosophila*, *Xenopus*, and zebrafish, germ cell specification relies on the inheritance of germ

granules that reside at a specific location within the egg. Despite the conserved function of germ granules and their components, how quantitative changes in germ granule mRNA content influence germline development is unclear. We hypothesize that changes in germ granule mRNA content lead to differences in germline development and reproductive health. To test our hypothesis, we analyzed the natural diversity of germ granule mRNA content and germline development that occurs in *Drosophila* species as a model system. Using a combination of single molecule in situ hybridization, computational modeling, and immunofluorescence, our preliminary results suggest a connection between changes in germ granule mRNA content, reduced number of primordial germ cells in the developing gonads, and increased presence of defective primordial germ cells in the *Drosophila* embryo. Our findings demonstrate how germline development relies on genetic mechanisms that have the capacity to fine-tune germ granule mRNA content.

EMILY LEVITIS

Faculty Mentor: Rana Zeine

“Medical Cannabis Mechanisms in Orthopedic Pain Alleviation and Healing”

Cannabinoid treatment for orthopedic injury and aftercare has demonstrated anti-inflammatory and analgesic effects. The purpose of this project is to systematically review the benefits of medical cannabis in the management of orthopedic and musculoskeletal disorders. Specifically, to analyze the efficacy of cannabinoids for relieving pain, decreasing opioid use, and accelerating healing and post-operative rehabilitation. A systematic review was conducted by a literature search to identify studies conducted in the past 5 years that discussed the efficacy of medical cannabis in orthopedic patients. Data extraction was performed by 2 reviewers. 5 studies conducted in the past 5 years were identified. The use of cannabis increased between 2012 and 2017 ($P=0.049$). The use of opioids decreased between 2012 and 2017 ($P=0.040$). There is statistically significant evidence that shows that CBD and THC are effective in treating musculoskeletal injuries. It is also found that medical cannabis is a better treatment option against other forms of medication and non-surgical intervention such as braces. Evidence supports beneficial roles for CBD, alone or in combination with THC, in pain management of post-operative orthopedic rehabilitation and musculoskeletal disorders. Furthermore, several studies demonstrated statistically significant reduction in dosage and time period of opioid need for those patients.

DHAIRAVI SHAH, DHAARA SHAH

Faculty Mentor: Subhasish Chatterjee

“Deducing Melanin Biosynthesis and Supramolecular Organization”

Melanin is a class of natural pigments responsible for structural coloration in animals, plants, and microorganisms, and the pigments are generated through the enzyme-catalyzed oxidation of catecholamines and amino acid-based precursors. Three forms of melanin are found in the human body: eumelanin, pheomelanin, and neuromelanin. Different precursors produce different

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kinds of polymeric melanins. The most common precursor, tyrosine, produces eumelanin, which gives a brown-to-black color pigment. Pheomelanin is derived from a combination of tyrosine and cysteine and gives a yellow-to-red color pigment. Biosynthetic melanins exhibit biomedical applications such as serving as a drug-delivery system, antioxidants in the skin, and cancer therapeutics. They are also valuable in the industry, where they can be used as optically active 2D hybrid materials for biosensing, reinforcers for adhesive hydrogel materials, and as free radical scavengers for soil remediation. The exact polymeric structure of melanin has yet to be discovered because its chemically heterogeneous assembly is disordered and elusive. Our project aims to study enzyme-catalyzed melanin synthesis under cell-free conditions and determine its supramolecular organization using high-resolution spectroscopic and computational methods. The current results illustrate the structural heterogeneity of pheomelanin-like polymeric materials, paving the way for comprehensive structural characterization to shed light on the macromolecular architecture of hybrid pigments.

SAMPSON UGOARU, ADEEB HAYAJNEH, DARIEL ONDIEKI, JOCELYN HERELLE, MIRANDA SOTO

Faculty Mentor: Derrick Swinton, Salvatore Coniglio

“Core-Shell Nanoparticle-Hydrogel Systems”

Hybrid core-shell nanoparticles (NPs) modified with stimuli-responsive hydrogel shells are finding widespread usage in a range of technologies, from pollutant detection and catalysts to photo optic devices and are being investigated for applications in many others. Challenges to using NPs as drug delivery systems include biocompatibility, cytotoxicity, controlled release of bioactive agents, and target specificity, which are influenced by deleterious adsorption of biomolecules at the interface of these NPs. Once inside a complex biological environment, a protein corona is formed, which influences the behavior of the NPs. The protein corona is influenced by the surface chemistry and morphology of the NP. This structure-function relationship and influence on the corona is of critical importance in designing hybrid core-shell NPs for biomedical applications. Therefore, further research and a deeper understanding of biomolecule-interfacial interactions with NPs should be critically evaluated. Particularly challenging is the ability to quantitatively measure or predict binding constants of biomolecules at interfaces and the ability to determine the conformational states of adsorbed molecules at interfaces. Another area understudied is the influence of the biomolecule on the conformational dynamics of the polymer surface.

JULIA ZAGORSKI, ZOE CHACON

Faculty Mentor: Dilrukshie Ramanathan

“Analytical Insights into *Annona muricata* Extracts: A Comparative Approach Using Chromatography-Mass Spectrometry and Microbial Analysis”

Medicinal plants undergo extraction and processing for direct consumption as herbal or traditional medicine. Soursop, scientifically known as *Annona*

muricata, is an evergreen tree indigenous to tropical regions in the Americas and the Caribbean. Known for its anticancer and antimicrobial properties, people consume its fruit and brew its leaves into teas to harness a range of benefits for health issues like cancer, diabetes, and inflammation. Analytical techniques like gas chromatography-mass spectrometry (GC-MS) and liquid chromatography-mass spectrometry (LC-MS) are used in the separation and analysis of compounds. The use of these instruments allow for the identification and qualification of soursop leaf extracts. Results are anticipated to reveal compounds with medicinal effects, including antimicrobial, anticancer, and anti-inflammatory properties. Additionally, employing microbiological techniques, specifically agar well disc diffusion, provides valuable insights into the antimicrobial properties of Soursop leaves. In this study, LC coupled with a high resolution mass spectrometer (HRMS) is used to qualitatively and quantitatively study the plant extract. Through microbiological research, the lowest concentration necessary for the inhibition of bacteria, minimum inhibitory concentration (MIC), can further be determined using a 96-well plate assay. Analytical and microbial techniques aim to promote *Annona muricata* as a potential treatment for various health conditions.

KATILYN SOOKOO

Faculty Mentor: Rana Zeine

“Medical Cannabis Mechanisms in Skin Healing; A Systematic Review of the Literature”

Cannabinoid treatment for various skin disorders has been shown to have anti-inflammatory, antipruritic, and analgesic effects in numerous studies. Stimulating receptors in the endocannabinoid system including CB1 and CB2 have multiple cellular and molecular effects. The purpose of this project is to systematically review the efficacy of medical cannabis for relief of dermatological conditions including pruritus, psoriasis, eczema, and acne. Furthermore, the cellular and molecular mechanisms of cannabinoids in skin healing are explored in experimental models and cell lines. A systematic review was conducted to identify studies in the last five years that discussed the effects and mechanisms of cannabinoids in skin conditions. Data was extracted by two reviewers. 295 articles were retrieved and 17 of those studies were included in this review. 12 of these studies were literature reviews. Effects on fibroblasts included downregulation TGF- β induced fibroblast activation by treatment with CB1 antagonist AM251 which inhibited fibroblast receptors, SMA- α , collagen deposition, dermal fibrosis, and scarring (Correia-Sá et al. 2021). Effects on keratinocytes included reduction of UV induced membrane damage by treatment with a combination of CBD and CBG which prevented increased levels of phosphatidylinositol and sialic acid while reducing the activity of sphingomyelinase in UV irradiated keratinocytes, demonstrating protective effects against skin damage (Wronski et al. 2023). In another study, CBD treatment also down regulated apoptosis in UVB-treated psoriasis keratinocyte cell lines as measured by P53 and P38 expression (Wojcik et al. 2021). Another study using treatment of CBG, CBG, THCV and CBGA in human keratinocytes demonstrated upregulated CB1 and CB2 activation, TRPV1

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channel simulation, FAAH and MAGL activity, all of which are responsible for skin homeostasis and reduced inflammation (Tortolani et al. 2022). Effects on acne vulgaris pathogenesis included inhibition of Cutibacterium acnes (formerly Propionibacterium acnes) bacterial growth and anti-inflammatory effects on U937 monocytic cells by treatment with CBD which reduced IL-1 β , TNF α , IL-6, and IL-8 proinflammatory cytokines. Therapeutic effects demonstrated by testing on 30 patients included reductions in the number of acne lesions by 32% at 28 days, 38% at 42 days, and 71% at 56 days (Cohen et al. 2023).

PRANAV ILLENDULA, ANDREA GALLAGHER

Faculty Mentor: Rongsun Pu

“Analyzing the Efficacy of MinION DNA Sequencer with E.coli DNA”

The MinION instrument exhibits the next generation of DNA sequencing. It uses nanopores to scan the electrical charge of the individual DNA bases passing through. Furthermore, the technology allows for handheld portability and on-the-site usage. The MinION sequencer's accuracy in producing reliable results within expected use was investigated. The instrument utilizes a flow cell containing the nanopores, a computer with appropriate software for the sequencing, and various buffers and reagents to prep the DNA. The experiment went through lambda and E.Coli DNA sequencing for control and experiment, respectively. The data collected is then compared using the known DNA sequence of the two samples to compare its accuracy. Therefore, the control sample with lambda DNA had an average accuracy of 91.5 % and an average identity of 96.9%. Additionally, the experimental sample with E. coli DNA was 90.0% and 95.3%, respectively. The error rate confirms that the reduced accuracy is only viable for on-field usage, and not for research purposes.

CSMT | CHEMISTRY

ANDREW BANAAG

Faculty Mentor: Subhasish Chatterjee, Matthew Mongelli

“Luciferins and their applications in Cancer Research”

A very common form of luminescence that is seen by many people is from fireflies. Firefly luminescence is the resulting oxidation reaction of a luciferin substrate (D-Luciferin) and a luciferase enzyme. Although a lot less commonly known, many marine organisms such as copepods and deep water shrimp are also bioluminescent like fireflies, but use a different luciferin called Coelenterazine, which has a different structure than firefly luciferin and also goes through a similar oxidation process as D-Luciferin. Another form of luminescence can be found from bacterial organisms as well. Although each of the three previously mentioned luciferins all go through similar oxidation processes, their mechanisms all differ in their own ways, but researchers have been able to use

the luciferin-luciferase reactions of each to all perform the same task: identifying cancer cells, which can allow researchers to figure out if cancer cells have shrunk from treatment. Researchers are able to inject the luciferase enzyme into cancer cells which are then injected into mice. Luciferin is also then injected into the mice, and with full body imaging, researchers are able to see the photon emission in the cancer cells.

GABRIELLA CATARINO

Faculty Mentor: Matthew Mongelli, Subhashish Chatterjee

“Carbon Dots versus Quantum Dots: Which Perform Better for Latent Fingerprint Imaging”

Latent fingerprints can be detected when placed on certain material which will then be followed by either a fingerprint powder or an ultraviolet light. Both carbon-based quantum dots and traditional quantum dots emit fluorescence in latent fingerprint detection. The fluorescence allows for the detection to create those clearer images and create a higher contrast between the fingerprints from the background. Carbon dots are highly sensitive which allow for them to show through luminescence. With the carbon dots being put into a powder form it allows for it to show up under luminescence. When that happens, it allows for the fingerprint to further show ridge characteristics along with high quality images. Quantum dots are the type of nanoparticles that seem to be the most used for this type of fingerprint detection. Being the most used nanoparticle since it is smaller than 10 nanometers, it allows for that same higher quality image, good ridge characteristics, increased background contrast, and better visibility. Fingerprints shown through red emissive carbon dots show more fingerprint characteristics than other nanoparticle powders. Those characteristics ranging from ridge patterns to ridge characteristics. To determine these ridge patterns and characteristics, the use of visible light or an ultraviolet (UV) lamp is what is primarily used.

ELISA LAURENZANO

Faculty Mentor: Subhasish Chatterjee, Matthew Mongelli

“Using Raman Spectroscopy in Illicit Drug Investigations Involving Cocaine”

Research for this project is about how Raman spectroscopy and electron microscopy are used in illicit drug investigations involving cocaine. Raman spectroscopy is well researched and a respected method to use in drug investigations. It can even be portable and brought to crime scenes while providing accurate results that do not damage the evidence. More accurate results can be found in the laboratory, but the fact that it can be brought to a crime scene makes it quite efficient. There are even carbon dot sensing probes being used to identify drugs inside of beverages, and in turn can also be used to detect specific drugs that are mixed with other liquid drugs, such as cocaine mixed with fentanyl. All that is required for this method are hC-dots, a UV light, and a camera or smartphone. These methods are efficient and low cost, and which makes them notable in forensics compared to older methods.

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KEVIN MATA

Faculty Mentor: Matthew Mongelli, Subhasish Chatterjee

“Sodium Batteries as Alternatives to Lithium-Ion Batteries”

In a quest to further increase the sustainability and use of batteries, chemists have ventured from the common lithium-ion battery. Storing energy for later use is a crucial part of day-to-day life; increasing in use as the world opts for more technological advances, the need for these batteries also increases. While lithium batteries are recycled and the components are reused, the need for raw materials, such as lithium, is still increasing and becoming harder to obtain. In search of alternatives, chemists have derived a potential candidate consisting of sodium instead of lithium, which is a much more abundant resource, such as ocean salt. As such, extensive tests had to be performed to compare the two batteries to consider it a viable alternative. Energy capacity, energy loss, temperature, lifespan, recyclability, safety, and waste are some of the few things that must be considered. Sodium batteries are the leading potential alternative to lithium-ion batteries.

KELLY MOLINARE

Faculty Mentor: Matthew Mongelli, Subhashish Chatterjee

“Silent Disruptors: PFOA & PFOS vs. Female Reproductive Health”

This research investigates how perfluorooctanoic acid (PFOA) and perfluorooctane sulfonic acid (PFOS) disrupt the endocrine system in females, particularly the reproductive system. Per- and polyfluorinated substances (PFAS) are chemicals used globally in both consumer and industrial products with current research exploring and validating the negative impacts when bioaccumulation occurs within the human body. Using a biochemical approach to survey the mechanism of action of how these synthetic organic compounds interact within the biological system, this research studies and compares the existing data showcasing the potential cross-linkage between PFOA & PFOS in complications within female reproductive health, including but not limited to menstrual health, pregnancy complications, neonatal complications, breast cancer, and infertility. PFOA and PFOS are two of the most well-studied and documented PFAS, out of the 15,000 known to exist. Further research into how these two chemicals disrupt hormone signaling pathways in both short-term and long-term exposure is crucial to the future of women's reproductive health.

CLEATUS OAKES

Faculty Mentor: John Wnek

“Comparative Analysis of Sodium Polyacrylate and Polyacrylamide for Water Management Applications”

Sodium polyacrylate and polyacrylamide are two types of Super-Absorbent Polymers (SAPs) with various applications like hygiene products, irrigation, and flocculants. Sodium polyacrylate differs from polyacrylamide by containing a sodium ion instead of a nitrogen atom, leading to differences in molecular shape,

charge, and weight, affecting their interactions with water molecules. This study compared their efficiency across four parameters: swell size, swell speed, water retention, and wastewater clean-up. Swell size was measured by adding equal water increments to both samples and recording volume change. Swell speed was assessed by fully swelling samples in separate containers with water. Water retention was recorded based on the time taken for all water within the matrix to evaporate. Wastewater clean-up was evaluated by adding equal sample weights to separate containers of wastewater and recording changes in nitrates, phosphates, and turbidity. Results indicate that polyacrylamide absorbs more water, while sodium polyacrylate swells faster. Polyacrylamide retains water longer and cleans up wastewater more effectively. These findings can aid in determining the most suitable SAP for specific applications.

HELENE SENDJI

Faculty Mentor: Subhasish Chatterjee, Matthew Mongelli

“Photodynamic Therapy”

Photodynamic Therapy is a form of therapy that involves light and photosensitizing chemical substances, used in conjunction with molecular oxygen to elicit cell death. It could also be defined as a non-invasive treatment successfully used for neoplastic, inflammatory and infectious skin diseases. It is a treatment involving light-sensitive medicine and a light source to destroy abnormal cells. It can be used to treat many diseases such as cancer (breast cancer, esophageal cancer, lung cancer, skin cancer, head and neck, many more); it can also be used to treat some skin and eye conditions. Over thousands of years now, photodynamic therapy has been used to treat many different types of cancer and other problems. Researches prove that photodynamic therapy does not compromise other treatment options. Therefore; it appears as a promising alternative treatment for controlling malignant diseases. I will present how Photodynamic Therapy is used for the treatment of some cancer such as breast, ovarian and prostate cancer. I will sort out the chemistry behind the different types of medications and how it interacts with our immune system. Further in my research, I find out that the use of Photodynamic Therapy as a method of treatment can also be the cause of some dangerous reactions to our body. Photodynamic therapy induces early side effects (edema, erythema, urticaria) and late side effects (hyperpigmentation, carcinogenicity) which will be discussed in explicit details furthermore.

HELENE SENDJI

Faculty Mentor: Subhasish Chatterjee, Matthew Mongelli

“Photodynamic therapy as a cancer treatment”

Photodynamic therapy as a cancer treatment Photodynamic Therapy (PDT) is a form of therapy that involves light and photosensitizing chemical substances, used in conjunction with molecular oxygen to elicit cell death. It could also be defined as a non-invasive treatment successfully used for neoplastic, inflammatory and infectious skin diseases. It is a treatment involving light-sensitive medicine and a light source to destroy abnormal cells. It can be used to

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treat many cancers (breast cancer, skin cancer, prostate cancer); it can also be used for some skin and eyes problems. Over many decades now, PDT has been used to treat many different types of cancer and other problems. Researches prove that PDT does not compromise other treatment options. Therefore; it appears as a promising alternative treatment for controlling malignant diseases. Further in my research, it was found out that the use of PDT as a method of treatment can also be the cause of some dangerous reactions to our body.

NERMALA SEWDAT

Faculty Mentor: Matthew Mongelli, Subhasish Chatterjee

“Terpenes’ Role in Essential Oils”

Terpenes are hydrocarbons that are considered one of the largest groups of natural products found mainly in plants while some of the more complex ones are found in animals. They are classified as one of the most common volatile groups of compounds and are said to have evolved from isoprene. For this presentation, the extraction of terpene compounds such as monoterpenes (C₁₀), sesquiterpenes (C₁₅), diterpenes (C₂₀), and triterpenes (C₃₀) is discussed, and how these compounds are characterized using chromatographic and spectroscopic methods. This research focuses on the terpene compounds found mainly in citrus oils such as orange, lemon, and lime. The composition of the different terpene compounds found in the three different citruses are compared, and similarities and differences will be identified. Part of the study will focus on how these different terpene compounds are extracted from their source and how scientists characterize and differentiate between the different terpene compounds using spectroscopy and chromatography. We have described the importance, uses, and applications of terpenes in industries such as pharmaceuticals, agriculture, and cosmetics. Spectroscopic techniques are used to investigate the molecular structure of molecules and unknown molecules in compounds. It is used to determine the chemical and molecular properties of unknown compounds. The chemical group of terpenes is interesting due to their broad application and the benefits they offer to many industries in the scientific field. The stability and solubility of terpenes are discussed in this research because these two properties play crucial roles in using and applying terpenes in products.

FRANK SOUZA SILVA

Faculty Advisor: Subhasish Chatterjee, Matthew Mongelli

“Mass Spectrometric Studies of Post-Translational Modifications in Alzheimer’s Disease”

Post translational modifications (PTMs) are an important part of the progression in neurodegenerative disorders and have been researched and studied for years. Mass spectrometry is considered to be a useful tool in analyzing the post translational modifications of proteins in neurodegenerative disorders such as Alzheimer’s disease. Mass spectrometry can be used to analyze samples from cerebrospinal fluid, blood, and brain tissue to identify PTMs in tau proteins or it may lead to a better understanding of the mechanism in amyloid beta aggregation. In tau proteins increased phosphorylation is what is said to lead

to Alzheimer's disease therefore, it is important to what causes this increase in phosphorylation. Examples of different mass spectrometry techniques used in research include matrix-assisted laser desorption/ionization and liquid chromatography-tandem mass spectrometry. Using these techniques will allow for better characterization of PTMs. This may also help in identifying biomarkers to be able to diagnose patients in the early stages of the neurodegenerative disorder.

SUSEL SUAREZ

Faculty Mentor: Matthew Mongelli, Subhasish Chatterjee

"Applying Chromatography to Investigate Volatile Ignitable Liquids in Fire Debris Residue"

The use of chromatography is highly prevalent in various areas of forensic chemistry. One specific area of forensic chemistry where chromatography is imperative is in the analysis of fire debris residue. Analyzing fire debris residues proves to be a challenging task when oftentimes multiple analytes are present in one single matrix. Chromatography is used to separate the components of a sample and spectroscopy is used to detect and identify the individual components. Gas chromatography (GC) allows for the separation of volatile ignitable liquids such as gasoline and ethanol. Recent studies have compared various chromatographic methods and have shown that of the plethora of instruments that are used in forensic labs, gas chromatography is the most common and effective technique used in the laboratory. Recent studies have also shown that the most effective detector paired with GC has been found to be mass spectrometry (MS). The reason as to why GC and MS work so well together, as per recent studies, is due to the fact that fire debris samples tested with the instrument are usually volatile.

SUSEL SUAREZ

Faculty Mentor: Mingjing Sun

"Investigating Pesticide Residues in Cannabinoid Products"

The legalization of cannabinoid products in numerous states throughout the U.S. brings rise to concerns of contaminants present in products. Over the past five years, studies have looked into the presence of pesticide residues in varying cannabis products ranging from inflorescence to edible forms. Regulations have been set up to ensure proper quality control in products sold legally and commercially. Although there are regulations that monitor the amount of pesticides in cannabinoid products, recent studies have identified various pesticide residues that fall out of regulation standards. The researchers note that not much research has been conducted using cannabis edibles. This research looks to compare 48 pesticide standards which have been regulated by the New Jersey government with certain limits of detection, to cannabis edibles to test the presence and quantity of pesticides. Quechers method will be used to isolate the analyte from the matrix and HPLC-QTOF will be used to identify the analytes previously extracted.

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RYAN ZATORSKY

Faculty Mentor: Matthew Mongelli, Subhashish Chatterjee

“Transitioning from Nuclear Fission to Nuclear Fusion as a Source of Power”

The purpose of this research is to compare nuclear fusion to nuclear fission in terms of reactor design, chemical reactions, and concerns regarding waste and safety. Based on the information presented, the present study helps to understand as to why there should be a transition from nuclear fission to nuclear fusion as a source of power. The research study follows both qualitative and quantitative information gathered from various sources provided by the Kean University Library database. The key results are as follows: it has been discovered that fusion reactors can produce 14.1 mega electron-volts of energy from a single reaction involving deuterium and tritium, and can overall produce four times more energy than fission reactions. It has also been discovered that nuclear fusion as a source of power will be free of radioactive waste, as the products formed are helium of the noble gasses, and neutrons. Furthermore, the tritium used for this reaction emits beta radiation of 18.6 kilo electron-volts, which is not enough to penetrate, neither human skin or clothes, thus ensuring the safety of fusion reactor use. With this new source of power, more clean and renewable energy can be produced free of radioactive waste, and without chances of undergoing a nuclear meltdown and creating disastrous, long term consequences such as contaminating the surrounding land with its released radioactive materials, or putting nearby citizens at risk of developing neoplastic diseases.

CSMT | COMPUTER SCIENCE AND TECHNOLOGY

OLUWATUNMISE ALABI

Faculty Mentor: Ching-yu Huang

“Analyzing the social impact of Covid-19”

The purpose of this research project is to explore the multifaceted societal impact of the COVID-19 pandemic on the United States, using advanced data visualization and analysis techniques. Through the integration of COVID-19 data with US Census and crime statistics data, we seek to uncover meaningful insights into various socioeconomic factors affected by the pandemic. The analysis will focus on examining the relationship between COVID-19 metrics and key socioeconomic indicators such as crime rates, and population markers across the 4 different regions of the United States. By employing rigorous statistical methods and visualizations, we aim to identify potential correlations and patterns that shed light on the pandemic's impact on vulnerable populations and communities. Furthermore, this research will contribute to a deeper understanding of the interplay between public health crises, socioeconomic factors, and crime rates. By leveraging crime statistics data, we will investigate how shifts in socioeconomic conditions during the pandemic may have influenced crime trends across the states. Overall, this study seeks to provide valuable insights

that can inform policy decisions and community interventions aimed at mitigating the social impacts of pandemics and times of public uncertainty in the future.

OLUWATUNMISE ALABI

Faculty Mentor: Ching-yu Huang

“A case study of software development methods for data analysis”

This research project delves into an exploration of various software development methodologies and their practical application in data science and data analysis. Through a thorough examination of methodologies such as waterfall and Agile, this study aims to meticulously evaluate their effectiveness in managing and executing data-driven initiatives. The comparative analysis will encompass critical factors including project flexibility, adaptability to evolving requirements, the ability to pivot research goals for in-depth analysis, and the overall efficiency in delivering actionable insights. Insights drawn from these case studies will offer invaluable guidance for developers and researchers striving to optimize software development methodologies for data-centric endeavors. Emphasis will be placed on ensuring the accessibility of these insights to relevant stakeholders, thereby aiming to broaden the accessibility of results from big data projects to a wider audience. To assess the efficacy of different software development methodologies, case studies spanning across data science and human-computer interaction projects will be employed. The research will establish a robust framework for evaluating the suitability of various methodologies for big data projects, while concurrently ensuring the accessibility of their outcomes. Furthermore, the processes encompassing experiment design, data collection, extraction, transformation, and loading, through to data analytics and knowledge conclusion, will be seamlessly integrated within the software development paradigm, facilitating a comprehensive understanding of their interplay within the context of data-centric projects.

SHAZAB ALI

Faculty Mentor: Daehan Kwak

“Using Google Streetview to Map detected Potholes”

This project aims to revolutionize chest X-ray interpretation using medical visual question answering. The goal is to streamline radiological evaluations, providing quicker and more consistent results for patients. Traditional methods relying on individual radiologists may lead to inconsistencies and delays. Our solution integrates object detection, Natural Language Processing (NLP), and stacked attention networks, enabling users to upload a chest X-ray, pose related questions, and receive accurate predicted answers. Our image preprocessing pipeline resizes input images and questions before passing them through an attention layer. This attention mechanism allows the network to dynamically focus on specific regions of the image, simulating a radiologist's attention to particular areas in an X-ray. Leveraging a dataset of 329 chest X-rays, we meticulously organized resulting question-answer pairs, question IDs, answer

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types, X-ray image locations, and annotations into a structured JSON file. Our system, integrating object detection, stacked attention networks, and a diverse dataset, has shown promising results. We observed adaptability in question answering and enhanced accuracy with the inclusion of a stacked attention network. In the future, we plan to address potential biases and improve performance, we plan to add a new dataset for brain tumors. Additionally, we'll apply bias mitigation techniques to account for abnormal images in both chest and brain X-ray datasets. Integrating AI into radiology addresses the variability in human interpretations, evidenced by studies showing disagreement among experienced radiologists. Built on a diverse dataset, our system aims to reduce discrepancies and enhance diagnostic accuracy. This research underscores the potential of combining computer vision and NLP to transform medical diagnostics, with ongoing efforts to provide healthcare providers and patients more reliable and expedited diagnoses in the medical field.

XAVIER AMPARO

Faculty Mentor: Ching-yu Huang

"Datamining Pandemic Investor Behavior"

The Covid-19 pandemic has had a marked effect on life. This study seeks to make an attempt to examine the impact of the pandemic on the behavior of investors during the period as opposed to before and after the pandemic. Utilizing data obtained from Yahoo Finance on three financial sectors each and at least four different industries per sector with four companies per industry, the study seeks to relate the stock data to case data on Covid-19. The current task would be to datamine information and apply statistical analyses to the stock data before attempting to correlate the two datasets to find a relation. By relating stock data for the numerous companies in the data to the Covid-19 daily case data, a direct relation to the pandemic and stock behavior is sought, to later relate it to investor behavior as a whole. Daily case data can be used to later determine what events or what kind of events would have been the cause of changes in the stock trends if there is a correlation between the two datasets.

CALEB CAMPBELL

Faculty Mentor: Sharmistha Das Iyer

"The Correlation Between Video Game Performance and Academic Performance"

The purpose of this study was to determine if a Kean University student's ranking in a video game can predict educational prowess in Union, New Jersey. This study that lasted 2 weeks used a quantitative approach using a survey and was distributed to students via a link uploaded to social media, sent through email, and distributed through a QR code. The 13-question survey included questions on demographics, and video games, more specifically the participants' competitive experience with video games. 43 Kean University students responded to the survey. Most of the students had video game experience but only 7 of them play games competitively and of those 7 people, no meaningful

data was found to support any difference between people that were in the top ranks of their respective games, people that were in lower ranks and people that did not play video games. There was not a significant difference between video gamers of varying skill levels. Further research with a larger sample size needs to be done to determine if there is truly no difference between video gamers of varying skill levels and a better understanding of how different game strategies may affect attitudes and performance in an academic setting.

ALEJANDRO CHAVEZ-MAYORAL

Faculty Mentor: Daehan Kwak

“Deep Learning-Based Classification of Pain Responses in Mice”

The Mouse Grimace Scale was developed to classify the pain in mice based on different body parts including their eyes, ears, whiskers, and nose. Similar grimace scales were developed for other animals such as rabbits, cats, rats, and other common animals used in lab settings. Despite the usefulness of this type of pain grading scale, grading images can be time consuming and requires trained humans to recognize signs of pain. To address this issue, a couple of different approaches are taken. Since the input data may be too complex for machine learning models, a more appropriate approach for classifying raw images is deep learning-based models. These models are a popular option due to the accuracy of convolutional neural networks (CNNs) such as InceptionV3 or Resnet50. Despite the mass amounts of data needed to train deep learning models, they are good for handling data with high dimensions. They are also capable of seeing non-linear relationships, which can be useful when dealing with datasets that hold complex features. In this study, we take a deeper dive into looking at the use of autoencoders for dimensionality reduction and feeding the prepared data into fully connected layers for binary classification of pain in siamese neural network architecture. We also take a look at a model using InceptionV3 and compare it to the previously mentioned model. Our aim is to visualize which model can classify mouse pain better and to determine if deep learning grimace scale models can classify mouse pain as good as human raters. We plan to clean up the dataset to only have front-facing mice images trained and use a crop, rotate, and brighten method to images in the dataset to make the model more robust.

LAIS CASTRO, BRAYAN MARTINEZ

Faculty Mentor: Yulia Kumar, J. Jenny Li

“Optimizing Distributed Training for Large and Noisy Data”

The study explores the transformative impact of deep learning across various application domains, underscoring the challenges presented by the scale of datasets and the complexity of neural networks (NNs). With datasets like ImageNet-1K expanding to 180 GB and NNs encompassing billions of parameters, the computational demands for training large models are rapidly exceeding the growth predicted by Moore’s law. This has led to a paradigm shift toward distributed training across multiple machines. A crucial aspect of this research is addressing the inherent noise in datasets, arising from such factors as

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Gaussian noise injection and random cutout. The study focuses on the challenge of designing robust aggregation methods to manage Byzantine faults and nonlinear data augmentation. Researchers are investigating the use of advanced quantization techniques, such as vector, post-training, low-rank, quantization-aware, and mixed-precision training, to improve the computational efficiency and potentially the accuracy of training large-scale NNs in distributed environments.

CHARLES CETTA

Faculty Mentor: Yulia Kumar, J. Jenny Li

“Exploring Optimization Methods for Distributed Machine Learning Models”

With the proliferation of machine learning (ML) applications, the scalability of training processes has become paramount. However, the escalating size of datasets coupled with limitations in node computing and storage, exacerbated by the slowdown in Dennard scaling, has rendered traditional training approaches inadequate. Both computational and communication bottlenecks impede the efficiency of distributed training frameworks, necessitating novel strategies to enhance scalability and convergence. The study addresses these challenges and aims to explore, implement, and compare various approaches for the optimization of distributed training of neural networks, aiming to improve training efficiency and scalability. This study addresses these challenges and aims to make the following contributions: 1) Optimization of Computational and Communication resources. To explore techniques that optimize computational and communication resource utilization in distributed training systems and study the trade-off between performance and accuracy. 2) Evaluation of Performance and Scalability: To conduct evaluations to assess the performance and scalability of the proposed methodologies. By addressing these objectives, this research contributes to the ongoing efforts to optimize distributed training for large-scale NNs.

A'NYA CARR

Faculty Mentor: Kuan Huang

“Weakly Supervised Segmentation of Breast Cancer Ultrasound Images”

The purpose of this project was to generate labels for breast cancer tumors in ultrasounds by exploring deep-learning methods of Weakly Supervised Segmentation. Syed, S., Anderssen, K.E., Stormo, S.K. et al. in their study “Weakly supervised semantic segmentation for MRI: exploring the advantages and disadvantages of class activation maps for biological image segmentation with soft boundaries” describe Weakly Supervised Segmentation as a method “...where image-level labels and class activation maps (CAM) can detect discriminative regions for specific class objects.” This project’s experiment was conducted by using a dataset of ultrasound images containing benign and malignant tumors and their Class Activation Maps using a traditional ResNet-50 model, and a custom CAM method introduced by Jie Qin, Jie Wu, Xuefeng Xiao, Lujun Li, and Xingang Wang. An innovative CAM method called AMR was introduced in “Activation Modulation and Recalibration Scheme for Weakly Supervised Semantic Segmentation” (AMR) by Jie Qin, Jie Wu, Xuefeng

Xiao, Lujun Li, and Xingang Wang, to isolate the surrounding regions of an object in an image and generate a mask of its location. This saves researchers and doctors time meticulously annotating each image in a dataset. In training, traditional ResNet-50 and AMR were trained for 20 epochs, a batch size of 12, and a learning rate of .001. Then, traditional ResNet-50 CAMs were generated and compared to the AMR CAMs generated. The product was evaluated by the accuracy of pinpointing the tumor's location using Intersection over Union (IOU). IOU serves as a metric to gauge the accuracy of the CAM in object detection. With an ultrasound image sample containing a benign tumor, the traditional CAM scored a .03, signifying that the model failed at locating the tumor. Using the same image, the AMR CAM scored .3, signifying that the model vaguely knows the location of the tumor. A good score would be around .7 and .9, meaning more research and analysis must be done to improve the model's detection of benign tumors. Different results were noticed in a sample containing a malignant tumor, with a traditional ResNet-50 CAM scoring of .08 and AMR CAM scoring of .63. The traditional CAM model failed at detecting the malignant tumor. With AMR CAM, the model nearly has a good accuracy of detecting the malignant tumor. Further research is needed to improve these object detection scores and to explore the effectiveness of Weakly Supervised Segmentation on other datasets of ultrasounds. Nonetheless, the results show promise in improving the process of detecting breast tumors in ultrasounds for the medical industry.

TRISTRAM DACAYAN

Faculty Mentor: Daehan Kwak

"LLM-Augmented Knowledge Graphs for EHR Summarization"

With the introduction of electronic health records (EHR) in the medical field, doctors and nurses are able to examine patients faster and more efficiently as opposed to using paper records. Despite the advancement in patient documentation technology, one of the main drawbacks for EHRs is the inconsistent format of documents among the different medical specialties, specifically psychiatry and behavioral health EHRs, as well as those used by a range of behavioral healthcare professionals, being more anecdotal and text-based. With the recent advancement of large language models (LLM), there is large potential for this technology to become a viable solution as medical professionals could use them to summarize and inquire about patients at record speeds. While LLMs have the potential to revolutionize the medical industry, their issues include their inconsistently formatted responses and their limited knowledge domain. As a consequence, they are currently not applicable in high-stakes medical situations as a single incorrect diagnosis could result in the patient's injury. We propose the use of knowledge graphs with LLMs to both obtain more consistent outputs of important relationships and expand the knowledge domain of pretrain LLMs via cross-validation with existing medical domain graphs. Through prompt-engineering, the LLM is able to generate formatted knowledge graphs based on a set of rules that focus on extracting as many relationships involving the patient, including afflictions and previous addictions. Using these graphs, we are provided with better visualizations on the patient's current and previous issues and reduce the complexity of future inquiries regarding their health.

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ANTHONY DIAZ

Faculty Mentor: Daehan Kwak, Patricia Morreale

“Mitigating Vulnerabilities in Large Language Models”

ChatGPT has changed the world forever. Every aspect of day-to-day life, including work and school, has been made more efficient thanks to the tools developed in the field of AI. Even with how extraordinary ChatGPT is, it contains one glaring issue: It is not open source. This means that if a company wants to tailor a model to its specific use cases, or protect proprietary data, it is not able to. This has restricted government contractors and other companies that work with sensitive data from using ChatGPT. In this way, government contractors are at an AI disadvantage to private sector companies, who do not deal with sensitive data and do not need to worry about the lack of open source with ChatGPT. In order for defense contractors or private sectors to compete in the future, they will need to be able to both understand AI and be able to utilize it in a safe manner. This research’s objective is to understand the transformer architecture behind ChatGPT and utilize an open-source model of the same architecture. The goal is to identify vulnerabilities and develop solutions, enabling defense contractors and other companies with sensitive data to create their own models and tailor them to their specific needs.

MYSARA ELSAYED

Faculty Mentor: Daehan Kwak

“Utilizing Optical Character Recognition for Handwritten Arabic Alphabet Learning”

The emergence of interactive language learning tools like Duolingo or Rosetta Stone has revolutionized the process of learning new languages, making it easier than ever before. While these tools excel in teaching spoken and basic written language skills, they face limitations when it comes to recognizing and deciphering handwritten texts. This challenge creates a divide between people’s willingness to engage in handwritten language learning, particularly in alphabets like Arabic. The different styles of handwriting, strokes, and character shapes pose difficulties for language learners, often discouraging them from continued learning. To address this gap, this project is underway to develop a program utilizing optical character recognition (OCR) techniques to assist language learners in deciphering and distinguishing letters from photos of handwritten texts, specifically focusing on the Arabic language. Utilizing OCR unconventionally and breaking away from traditional translation applications, this project breaks down individual characters from handwritten Arabic texts, enhancing readability for users. To train the application on handwritten Arabic characters, the Arabic Handwritten Characters Dataset (AHCD) and the Hijja dataset were employed. The chosen approach involves exploring various convolutional neural network (CNN) training models, assessing dataset compatibility, and optimizing accuracy. TensorFlow was selected as the preferred model for its accuracy and effectiveness in recognizing individual characters as separate entities. Future steps involve implementing TensorFlow training into an accessible OCR learning tool, offering a dynamic style of learning for recognizing individual letters from

word compositions. Beyond language learning, the tool's capabilities can extend to diverse applications. For instance, it could be employed in product design to automatically break down 3D objects into exploded 2D views, potentially streamlining the design process, offering benefits to design professionals and contributing to broader educational initiatives. The project signifies a step towards unlocking the versatile potential of OCR beyond its traditional applications.

CHRISTOPHER ENG

Faculty Mentor: Daehan Kwak

“Enhancing Fire Detection via Computer Vision”

Fire is a dangerous cataclysm that can stem from multiple causes from natural events, accidents, and intentional acts. That being said, there needs to be a way to address this issue. According to the US Fire Administration, there were about 372,000 residential fires and roughly 226,000 non-residential fires according to the 2020 statistics. Although being lower than the years before, the issues are still very large. Additionally, the motivation for this research on fire suppression systems stems from the personal experiences of the researcher, who witnessed a friend who has lost their home to a fire. Working on this project the aim is to continually help and find ways to reduce the amount so that it can continue its downward trend. The increasing frequency of fires, especially during the fall and winter seasons, highlights the urgent need for a solution to address fires on both small and large scales. Drawing inspiration from FLIR TECH, an automatic suppression system that utilizes AI technologies such as computer vision and machine learning, we are inspired by the idea to streamline and modularize the system. The objective of this research is to develop a program utilizing machine learning and computer vision to detect fires and use the gathered information to alert emergency services. Additionally, improvements are being made to incorporate object recognition capabilities, enabling the system to differentiate between different objects on fire and use that information to respond accordingly. To achieve these objectives, we developed a color recognition program, scaling program, object recognition program, and functionality program. Creating a fire-detecting program is a way to reduce the number of deaths and increase the proactiveness of firefighters. This research aims to create a program that can recognize fires and smoke, recognize standard household items, and alert authorities to the fire's origin to give them the best way to suppress and extinguish the fire. The potential use cases for a program like this would be to have them integrated into security cameras in office buildings and public locations to enhance public safety. By monitoring the fires it detects, the program can pinpoint the fire's origin and suggest appropriate actions based on the items affected. For instance, if a TV on the 4th floor of a banking firm begins to combust, firefighters and other emergency services will be made aware of the origin and proceed with a gas or foam-based retardant to prevent the fire from worsening.

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MATTHEW FERNANDEZ

Faculty Mentor: Jing-chiou Liou

“Practical Efficacy of Zero-Knowledge Verification in Machine Learning”

Though the need for experienced machine learning professionals training and testing AI models will only grow in the coming years, not everyone can afford access to the proper hardware needed for such computationally expensive processes. Outsourcing via cloud computing is an obvious remedy, but it can be vulnerable to tampering from third parties with both the training inputs for these models and the parameters with which they are designed to function. Zero knowledge proofs have been proposed as a means of ensuring this integrity. The novelty of zero knowledge is its ability to prove that the model has been trained with the intended inputs and parameters without revealing the sensitive and often proprietary inputs and parameters themselves. Multiple zero knowledge frameworks in this context have proven to be technically viable, but the growing need for this outsourced machine learning necessitates that cloud service providers evaluate which of the many available zero knowledge frameworks will perform best at scale, while adding minimal cost to the initial investment. We will be comparing technically sound zero knowledge frameworks that have been used to validate the training integrity of the same image dataset, and from this suggest which of these existing systems will have the best performance (speed and memory) for enterprise-level cloud-based zero-knowledge machine learning.

KEITH FERNANDEZ

Faculty Mentor: Eunice Nkansah

“An Investigation of Power-Efficient Fuel Alternatives in the U.S. Nuclear Power Sector”

This study aimed to assess the power efficiency, cost-effectiveness, and environmental impact of different fuel alternatives for nuclear power plants. The research focused on thorium as a promising alternative to traditional uranium fuel, given its higher energy output, lower waste generation, and lower nuclear proliferation risks. The study hypothesized that thorium would be more cost-effective and environmentally sustainable than traditional uranium fuel. The researcher reviewed scholarly research through trend analysis as the study design. The research questions addressed the potential of alternative fuels to generate more electricity at a lower cost and with a lower environmental impact, the comparison of different fuel alternatives to uranium in terms of power generation efficiency, cost-effectiveness, and environmental impact, and the viability of thorium-based fuel as a sustainable and safer alternative to uranium in the United States. The study found that thorium had the same cost of electricity per kilowatt-hour as uranium but required 200 times less fuel to operate. Additionally, thorium power plants had significantly reduced operating costs and waste generation, making it a more cost-effective and environmentally sustainable option. Therefore, the data supported the hypothesis that thorium fuel was a viable alternative to traditional uranium fuel for nuclear power plants. The study's findings have significant implications for the energy industry and policymakers in promoting sustainable and cost-effective energy sources to meet the growing demand for electricity.

KEITH FERNANDEZ

Faculty Mentor: Daehan Kwak

“Automated Pneumonia Detection in Chest X-ray Images Using Neural Networks”

This research aimed to develop an automated pneumonia detection system using machine learning on chest X-ray images to improve diagnostic efficiency and patient outcomes. A dataset was collected and curated, deep learning architectures were explored, and model performance was optimized, resulting in an 80.13% accuracy rate. This work has implications for medical imaging and healthcare by showcasing the potential of machine learning in clinical decision-making. Pneumonia is a major global health concern, necessitating early and accurate diagnosis for effective patient management. Manual interpretation of chest X-rays is labor-intensive and prone to variability. Machine learning offers a solution by automating pneumonia detection, reducing errors, and expediting care decisions. This research focuses on developing an automated detection system using convolutional neural networks (CNNs) trained on a comprehensive dataset of chest X-ray images. Data preparation involved priming and normalization, ensuring consistency across training, testing, and validation phases. Various transformations were applied to enhance model performance. The study explored deep learning architectures, leveraging CNNs to learn features from input images. Model optimization involved meticulous steps such as data preprocessing, augmentation, and hyperparameter tuning. Google Colab’s resources were utilized for efficient model training and evaluation. The designed CNN architecture comprised convolutional, pooling, and fully connected layers for classification. The model achieved an 80.13% accuracy rate, demonstrating its efficacy and potential for further improvement. Adjustments to critical hyperparameters were made to refine performance over 20 epochs. This research addresses the need for improved diagnostic accuracy in respiratory infections. It draws from a comprehensive literature review on machine learning in healthcare and employs a methodological approach involving data collection, preprocessing, and CNN development. The study’s findings highlight the model’s proficiency in pneumonia detection, with implications for computer-aided diagnostic systems and patient care. This research developed an automated pneumonia detection system using CNNs, showcasing its potential to enhance medical imaging diagnostics. The outcomes hold promise for improving patient care and healthcare efficiency. This work underscores the transformative role of machine learning in healthcare, paving the way for future advancements in clinical decision-making.

DEJAUN GAYLE, BRENDAN HANNON

Faculty Mentor: Yulia Kumar, J. Jenny Li

“Navigating Adversarial Prompts to Secure Large Language Models”

The present investigation rigorously explores the resilience of state-of-the-art artificial intelligence (AI) Large Language Models (LLMs), such as ChatGPT, Microsoft Copilot, and Gemini, as well as AI-driven image generators like DALL-E 3, against adversarial prompts. These advanced models are susceptible to

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inadvertent or intentional manipulation, leading to the generation of responses or images that contravene the ethical and security guidelines established by their developers. The study employs advanced prompt-engineering and ‘jailbreaking’ techniques to uncover subtle yet significant vulnerabilities, thereby presenting an innovative methodology for robust testing of AI systems. This approach not only highlights the critical necessity for enhanced AI defenses but also sheds light on the complex interplay between AI innovation and ethical integrity. At the heart of these findings is a call for proactive and ongoing enhancement of AI technologies to ensure their security. By identifying current shortcomings and vulnerabilities, this research contributes significantly to the wider discourse on responsible AI utilization. It emphasizes the need for developing robust ethical frameworks and advanced security protocols. The researchers propose practical strategies to fortify AI models against adversarial threats, with the goal of establishing a digital ecosystem where ethical compliance and digital security are paramount. Future directions for this research include refining these models further and incorporating new data modalities such as voice and video.

ZACHARY GORDON

Faculty Mentor: Yulia Kumar, Dr. J. Jenny Li

“ChatGPT Translation of Program Code for Image Sketch Abstraction”

Migration from MATLAB to Python (M-to-PY) has gained significant traction in recent computational research. While MATLAB has long served as a linchpin in myriad scientific endeavors, there’s an emerging trend to rejuvenate these projects using Python’s extensive AI tools and libraries. This study presents a semi-automated process for M-to-PY conversion using a detailed case study of an image skeletonization project comprising fifteen MATLAB files and a 1404-image dataset. Skeletonization is foundational for ongoing 3D motion detection research using AI transformers, predominantly developed in Python. The utilization of ChatGPT-4, acting as an AI co-programmer, is pivotal in this conversion. By leveraging the public OpenAI API, we developed an M-to-PY converter prototype, evaluated its efficacy using test cases from the Bard bot, and utilized the converted code in an AI application. The dual contributions encompass a well-tested M-to-PY converter and a Skeleton App capable of sketching and skeletonizing any given image, enriching the AI toolset. This study accentuates how AI resources, like ChatGPT-4, can simplify code transitions, opening doors for innovative AI implementations using primarily MATLAB-coded scientific research.

MALIHA HAIDER

Faculty Mentor: Daehan Kwak

“Predicting 5-Star Ratings of Reviews Using Machine Learning”

Since sentiment analysis tools often differ from the nuanced evaluations conveyed by user-provided five-star ratings, this study aims to analyze the two by comparing the sentiment between text reviews and numeric star ratings. The second objective focuses on predicting star ratings using machine learning

to offer a valuable tool for products or businesses on different platforms that lack native rating systems. To conduct this study, the Yelp dataset is retrieved from the Yelp Open Dataset, which contains 7 million reviews and 150K businesses, and consists of five large files, including a file with the Yelp reviews. This file is input into a Python program that contains four state-of-the-art sentiment analysis tools: TextBlob, Vader, NRC Lexicon, and Stanza. The sentiment analysis values that are generated are then analyzed using a Python program to calculate the Pearson correlation coefficient, indicating that overall, sentiment analysis tools do not show strong correlations with star ratings. Therefore, this study employs machine learning techniques to develop a more accurate model that will predict 5-star ratings. The large language models that are used in this study are BiLSTM (Bidirectional Long Short-Term Memory) and BERT (Bidirectional Encoder Representations from Transformers). To train these models, the Yelp reviews and their corresponding star ratings are utilized. After the machine learning models are created and their performance on the test sets is assessed, the overall accuracy is 66.54% for BiLSTM and 71.42% for BERT, indicating that the BERT model yields more accurate results than the BiLSTM model. To further this project, other machine learning techniques are used to create a better model for predicting 5-star ratings for products or businesses on different platforms that do not provide star ratings.

LIAM HEALY

Faculty Mentor: Kim Spaccarotella

“Engagement with QR Codes: A Case Study with Smart Food Labels”

A pilot test of a smart food label was conducted at Kean University's Cougar Pantry; this label includes a QR code to a recipe video and feedback survey. It was posited that this label would assist users of the food pantry by increasing their nutritional knowledge and intake. The Cougar Pantry was selected as the initial population due to the needs of such a community aligning with the pilot test's goals. However, use of the QR code and responses to the survey from pantry users were low. Thus the pilot test was expanded to increase the sample size to 11. The low response rate prompted research on how one would best encourage a consumer to follow-through with scanning a QR code. User apathy was identified as a key issue. In order to mitigate that, a multifaceted approach is required by both making the QR design superficially eye catching while also clearly stating the real benefits of scanning without being overwhelming with information. This study aims to contribute to a deeper understanding of QR code engagement by building on the results of previous study in this area. This deeper understanding may help to increase user follow-through for the smart food label and other QR-dependent projects.

BRENDAN HANNON, ANDREA BALCACER

Faculty Mentor: Yulia Kumar, J. Jenny Li

“Algae Alert: AI and Drones Take on HABs in New Jersey's Waters”

The increasing prevalence of harmful algal blooms (HABs) in New Jersey's coastal waters, driven by global warming, nutrient pollution, and increased sunlight exposure, poses significant threats to environmental health and overburdened

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communities (OBCs). This research adopts an innovative approach to HAB management by integrating drones, Artificial Intelligence (AI), and a Socio-Ecological System (SES)-based framework to address the challenges posed by two distinct types of HABs: red tides and brown tides. The objectives are to assess the socio-economic and cultural impacts of these HABs over the past two decades, develop an SES-based framework for understanding their impacts across different societal levels, and propose targeted AI-driven strategies for their prevention, control, and mitigation. The research will utilize drones such as the DJI P4 Multispectral and DJI Phantom 4 Pro V2.0 equipped with advanced sensors and AI technologies, including machine learning algorithms and large language models (LLMs) like ChatGPT-4-Vision enable rapid, accurate, and large-scale monitoring of HABs. This integration offers a revolutionary approach to HAB monitoring, providing real-time visualizations and facilitating an immersive, context-specific experience. The expected outcomes include the development of a comprehensive website for public education and interaction and a roadmap for policymakers. We hope this contributes to studying AI applications in environmental fields and reducing algal pollution.

BRENDAN HANNON

Faculty Mentor: Yulia Kumar, J. Jenny Li

“AI-Powered Multimodal Culinary Canvas”

In the contemporary culinary landscape, the quest for personalized recipe recommendations that resonate with individual preferences, dietary requirements, and ecological consciousness is more pronounced than ever. Addressing this need, the “AI-Powered Multimodal Culinary Canvas” emerges as a sophisticated and streamlined recipe recommendation system. It employs a blend of cosine similarity and Term Frequency-Inverse Document Frequency (TF-IDF), further enhanced by integrating an advanced AI cooking Assistant to provide customized recipe suggestions based on available ingredients. The core of the system is in its multimodality. The incorporation of OpenAI’s DALL-E 3 enriches the system with sophisticated image generation; cutting-edge ChatGPT-4-Vision provides the ability to recognize the images of available food, OpenAI’s Whisper technology introduces an intuitive voice command feature, elevating the ease of interaction, especially during the culinary process. This system’s ability to accept voice and image inputs significantly augments its accessibility and user engagement. The AI-driven image generation enhances the visual appeal of recipe suggestions and aids in ingredient identification. The integration of auditory, textual, and visual modalities, complemented by a responsive feedback mechanism, signifies a substantial leap forward in recipe recommendation systems. It also exemplifies the usage of AI in various application domains, validating the capabilities of the latest AI models.

LIAM HEALY, TZU-HAN LIN, JOAO BORGES, MAX CAVERLY

Faculty Mentor: Jing-chiou Liou

“TideTrack”

The goal of this project is to utilize machine learning algorithms to develop an AI model for providing predictions of Harmful Algae Blooms (HABs) severity in the West Florida Shelf area of the Gulf of Mexico. This information will be displayed via a software system with an interactive map showing both the predictions and historical data on blooms in the area. HABs due to the algae *Karenia Brevis*, happen seasonally in the Gulf under similar circumstances every year from roughly August to December. Official information from the National Oceanic and Atmospheric Administration (NOAA), including wind speed/direction, historical cell counts, water salinity, and water temperature, will be fed into our system. Predictions of the severity will be made based on this data, a similar system exists from the NOAA but only looking ahead by one day. The TideTrack system will predict into a longer time frame, ten days at the minimum. *Karenia Brevis* releases a neurotoxin into the water it inhabits, poisoning the ocean life in the area making them unfit for human consumption. This causes these blooms to be particularly damaging, both to people’s health and the economic viability of the area. Fisheries operating in the Gulf have an incentive to avoid these blooms in order to not lose revenue due to wasted catches, labor, and wear on fishing equipment. In addition to that, scientists studying such blooms in the area can save on labor costs by seeing if HABs are likely in an area before committing to field work. The severity predictions displayed on this system will help these groups avoid these potential economic losses.

CHRISTOPHER JACINTO, RAFAEL TOLEDO, EDWIN CIRIACO

Faculty Mentor: Ching-yu Huang

“Prediction of Temperature changes over the Newark Area”

Global warming is a growing issue that seems to be talked about more and more every year. This research project attempts to study previously archived data to make a prediction on the expected weather for the future. The datasets come from NOAA’s weather forecast archive and overall include several pieces of information spanning from air temperature, and humidity reports to wind speeds and are updated every few hours. However, the attributes from the datasets that are going to be used involve minimum, maximum, and average daily temperatures along with an attribute that focuses on the precipitation (i.e. whether it rained, snowed, etc) in the Newark, New Jersey area. All of this data will range from 2000-2010 and will be used as a reference to predict the weather from 2010-2020. In total all the datasets will have over 5,000 records, displaying data spanning over the course of 20 total years. A Chi-square test will also be used to compare the predicted data to the actual observed data from 2010-2020, and then be used to determine the accuracy of the observed results to the hypothesis made from the 2000-2010 data. The results of the cleaned datasets, and the predicted data will also be compared through visual graphs for clearer understanding alongside the Chi-square test.

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MAX KAISER, RICHARD ANGUIERA

Faculty Mentor: Ching-yu Huang

“Exploring the Causes Correlations of Economics, Education and Employment”

The economy has long been a substantial part of people’s lives and has widely been regarded as among the utmost of importance. There exists issues that span across all cultures and can continue across generations that occur from this. Class issues have become much more apparent over years with the gradual emergence of egalitarianism. Gone are the days where people are born and die within the same economic class like how their lives were for most of history. That being said, it continues to be difficult to make determinations about the methods of which changes to individual parties can be made when it comes to this. There have surfaced many ways of which people will express are advantageous for moving up in social class and there have, alternatively, been ways that have been expressed that can do the opposite, ways of which are hoped to be avoided. Data about such subjects exist across the United States, among other nations and can be observed to make potential determinations about how they affect each other. Measures of wealth, and related themes, are reflected in household income, poverty rates, unemployment rates and, less directly, education rates. A worthwhile resolution to come about from information like this would be to determine how exactly these things affect each other tangibly and mathematically. Questions about how education can affect poverty rates and how unemployment rates can affect median household income can lead to potentially helpful conclusions. Correlations between these is the start to coming to some idea of a resolution on this, but other methods will also be of significant use. Consider outlier detection in attempting to figure out ideas on why some places are wildly better or worse off economically when compared to contemporaries or the entirety of the nation. Despite how obvious some of these things may seem, real data and data mining is paramount in coming to real conclusions, because some things that may seem obvious are not quite what they seem when data is involved. The datasets being used contain county level data with attributes on household income, education, poverty, population and unemployment. With data for each county, there are over 3000 records for information to perform data mining on. All of the attributes (aside from population) are relevant to this question. The datasets are sourced from United States government sources including the Bureau of Economic Analysis and the Department of Agriculture.

ORKA KALDS

Faculty Mentor: Yulia Kumar, J. Jenny Li

“Preliminary Results from Integrating Chatbots and Low-Code AI in Computer Science Coursework”

This study presents initial outcomes from incorporating chatbots and low-code artificial intelligence (AI) tools into computer science (CS) education. Its aim is to enhance student engagement, facilitate specific learning opportunities, and

streamline administrative tasks. The primary focus has been on instructors' experiences with chatbots and students' interactions with low-code AI. Data collection involved observational analysis, followed by statistical evaluation. Initial findings indicate that instructors experienced increased efficiency in handling tasks, chatbots significantly enhanced student engagement in coding classes and research activities. Tools like ChatGPT, Gemini, Claude AI and Microsoft Copilot facilitated comprehension of complex concepts, fostering creativity and innovation in problem solving. Low-code AI platforms effectively bridged the gap between theoretical knowledge and practical skills in CS and AI, offering an accessible entry point for students with varied backgrounds. In conclusion, the study examines implications for teaching methodologies, curriculum development, and the future trajectory of AI-enhanced learning environments in STEM education.

FAIZAN KHAN

Faculty Mentor: Yulia Kumar, Dr. J. Jenny Li

"Quantum Computing Exploration"

This research delves into the realm of quantum computing, aiming to understand foundational principles of Quantum Computing and its applicability in practical scenarios. The exploration is based on the four weeks IBM training course with a meticulously structured curriculum. The journey commenced with an exploration of the mathematical underpinnings essential for quantum computing, laying a robust foundation for the subsequent modules. The focus then shifted towards the usage of IBM Q, a leading platform in the quantum computing industry. Hands-on activities include but not limited to constructing quantum gates and circuits, and implementing cutting-edge Quantum Approximate Optimization Algorithm (QAOA), a cutting-edge quantum algorithm. This research initiative plays a pivotal role in making quantum computing education more accessible, by sharing researchers experience in navigating the evolving landscape of quantum computation confidently. Researchers gained expertise using quantum computing approaches to solve challenging problems through a mix of theoretical lectures, hands-on practice, and real-world problem-solving.

FAIZAN KHAN

Faculty Mentor: Eunice Nkansah

"A Mixed-Method Study Investigating the Impact of Quantum Batteries on Future Cell-Phone Technology"

Cell phones have now become an inseparable part of people's lives. These days, cell phones are considered useful learning tools that are used to explore many possibilities. The goal of the study was to investigate the impact of quantum batteries on future cell phone technology. The study further explored how quantum batteries work and why they are considered a suitable replacement for lithium-ion batteries. The researcher adopted a mixed-method study approach, which provided a unique lens to collect data and insight from a professional and non-professional perspective. The findings revealed that young college adults will

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be exhilarated to have a cell phone that never runs out of charge. They also have a stronger preference for these cell phones and believe it can help improve their learning. Therefore, the study concluded that although quantum batteries are the next step in evolution, these batteries still require some work to be done in order for them to be implemented. Although this conclusion is applicable, it may pose challenges due to the vulnerability of quantum batteries when exposed to the environment. The study recommends further research to fully understand the mechanics of quantum batteries and their operation.

TZU-HAN LIN

Faculty Mentor: Kuan Huang

“Weakly Supervised Breast Ultrasound Image Segmentation Based on Image Selection”

Automatic segmentation in Breast Ultrasound (BUS) imaging is vital to BUS computer-aided diagnostic systems. Fully supervised learning approaches can attain high accuracy, yet they depend on pixel-level annotations that are challenging to obtain. As an alternative, weakly supervised learning methods offer a way to lessen the dependency on extensive annotation requirements. Existing weakly supervised learning methods are typically trained on the entire dataset, but not all samples are effective in training a robust image segmentation model. To overcome this challenge, a new weakly supervised learning approach for BUS image segmentation has been developed. Our framework includes three key contributions: 1) A novel image selection method using Class Activation Maps is employed to identify high-quality candidates for generating pseudo labels; 2) The ‘Segment Anything’ is utilized for pseudo-label generation; 3) A segmentation model is trained using a Mean Teacher method, incorporating both pseudo-labeled and non-labeled images. The proposed framework is evaluated on a public BUS image dataset and achieves an Intersection over Union score that is 82.9% of what is attained by fully supervised methods.

JOANNA LOJA, ARMANDO MENDEZ

Faculty Mentor: Kuan Huang

“Multi-Task Breast Ultrasound Image Segmentation and Classification Using Convolutional Neural Network and Transformer”

Breast Cancer in the realm of healthcare, remains a global concern and the early detection of breast tumors is crucial to improving survival rates and the quality of life for those affected. Breast ultrasound (BUS) imaging offers a non-invasive and radiation-free method to examine breast tissues. Automated BUS image segmentation and classification can help doctors identify lesions and possible abnormalities early, enabling healthcare professionals to detect breast cancer or other conditions in time for early intervention. In this research, we first conduct a comprehensive performance comparison between transformer networks and convolutional networks; secondly, we propose a novel approach by merging segmentation and classification networks, creating a multi-task network tailored explicitly for BUS image segmentation and classification; thirdly, we thoroughly

investigate network performance and refine training parameters to prevent overfitting. Finally, we create a user-friendly GUI demo showing our classification and segmentation results. The results demonstrate that the ResNet-50 Multi-Task model exhibits the best overall performance for both segmentation and classification tasks.

ALLAN LOZANO BARDALES

Faculty Mentor: Yulia Kumar, Dr. J. Jenny Li

“AssureAIDoctor - A Bias-Free AI Bot”

The integration of Artificial Intelligence (AI) in healthcare is crucial for advancing medical practices and improving patient outcomes. AssureAIDoctor (AAID) represents a pioneering application in this domain, poised to significantly transform healthcare delivery. AAID, a mobile-native platform, written in C#, leverages the latest AI technologies to simulate virtual doctor-patient interactions, thereby enhancing accessibility and efficiency in healthcare services. At the core of AAID's functionality is the integration of advanced AI technologies, including the multimodal ChatGPT-4-vision, Microsoft Azure AI services, and OpenAI's suite of tools. Notably, AAID incorporates DALL-E, an innovative image generation model, Whisper to voice commands and OpenAI's code interpreter, to provide comprehensive and interactive healthcare assistance. Preliminary tests of AAID have demonstrated its proficiency in processing multiple symptom inputs, ensuring accessibility, and maintaining scalability. These tests indicate the potential of AAID and similar apps in delivering reliable and user-friendly healthcare assistance. The financial model for AAID is designed to be sustainable, with projected management costs ranging from \$5 to \$20 monthly. This cost-effective approach ensures that AAID remains accessible to a wide range of users, further democratizing healthcare through technology.

ABIJITH MANIKANDAN

Faculty Mentor: Lakshmi Devi Subramanian

“eHMI Effectiveness Tested With Unity Virtual Environment”

As society transitions towards the widespread adoption of fully autonomous vehicles, the urgency to establish effective communication pathways with pedestrians becomes increasingly pronounced. The assessment of external human-machine interfaces (eHMIs) has evolved into a multifaceted endeavor, employing sophisticated simulations that meticulously replicate real-world scenarios. These simulations serve as invaluable testing grounds, providing nuanced insights into the intuitiveness and functionality of eHMIs, pivotal for facilitating seamless interactions between pedestrians and autonomous vehicles. This ongoing research represents a watershed moment in the realm of self-driving technology, spotlighting the pivotal role of virtual environments in the exhaustive testing and refinement of eHMIs. With an unwavering commitment to enhancing safety and efficiency in urban mobility, the quest for optimized pedestrian-vehicle interactions remains at the forefront of technological innovation. Through relentless iteration and scrutiny within simulated domains, the trajectory towards

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a future characterized by safer, more efficient transportation is accelerated, heralding a transformative shift in societal mobility paradigms.

CHRISTIAN MICCO, DANIEL GARCIA, MATTHEW LANE

Faculty Mentor: Ching-yu Huang

“Sentiment Analysis of Tweets”

This project will utilize machine learning to capture emotion values from 3 large datasets of tweets. The first dataset is based on hate speech/cyberbullying tweets, the second dataset is based on a more general collection of tweets, and the third dataset is related to the Covid-19 hashtag. The hate speech dataset includes an ID and the Tweet as attributes, the general dataset includes the ID, the Tweet, and a label, and the covid-19 dataset includes 10 attributes including the Tweet and a unique Username, but not all will likely be used as they are unrelated to the sentiment of the tweet. The goal of this project will be to be able to correctly predict the sentiments of tweets with a high degree of accuracy, likely around 80% barring extreme processing times. The data mining process to be used is called sentiment analysis and quantifies emotions like rage or joy as negative (1) or positive (0) values. Machine learning techniques in the deep learning and natural language processing areas will be used, with a pretrained model like the BERT model. A tokenizer import will be used that provides “tokens” which are subsets of a phrase or sentence that conveys the sentiment of the total phrase/sentence. Python programming will be used for our machine learning purposes and the Kean University Obi2 database will be used for data storage and retrieval using MySQL.

DAHANA MOZ RUIZ, ANNALIESE WATSON

Faculty Mentor: Yulia Kumar, Dr. J.Jenny Li, Haley Massa

“Digital Foundation Recommender”

This project addresses the widespread challenge of finding makeup shades that match various skin tones, especially those with darker complexions. It aims to provide personalized recommendations, reducing guesswork and saving time for users of all skin types. By offering accessible and inclusive solutions, this project contributes to broader efforts in the beauty industry to promote representation, accessibility, and empowerment for all individuals. The research utilized a dataset consisting of foundation products from 38 different brands which in turn included 625 different shades of foundation –spanning the USA, Japan, India, and Nigeria. The project utilized the k-means clustering algorithm to analyze makeup shade data stored in a CSV file. By clustering RGB values, it categorizes shades into distinct groups. Upon user input of skin section and color detection via webcam using openCV, the algorithm recommends the closest makeup shade from the dataset. This recommendation is based on the cluster center most akin to the detected color. The process concludes with the display of the recommended shade’s brand, product name, and hex value. The k-means algorithm’s unsupervised learning nature enables partitioning of makeup shades into clusters, optimizing recommendation accuracy. Inputs comprise makeup

shade data and live video feed, while outputs encompass personalized makeup shade recommendations and associated details. This system enhances makeup selection convenience and accuracy, streamlining the user experience with its efficient and automated process. The research's short-term goal was to develop an algorithm for accurate shade matching of users skin color to the foundation shade. Future work includes allowing the user to import an image with better camera quality or allowing the user to change the hue or saturation before their frame is captured.

OSCAR MEJIA RODRIGUEZ

Faculty Mentor: Daehan Kwak

“Leveraging NLP Techniques to Summarize Reviews”

This research project addresses the issue of information overload associated with e-commerce platforms, specifically customer reviews. The goal is to simplify the review analysis process, which is done through the use of various NaFaculty Mentorural Language Processing (NLP) techniques. This project uses the Yelp dataset due to its substantial size of 5.3GB. This dataset contains 6.9 million total reviews, 150 thousand restaurants, and 2 million users. Through the use of Python and NLTK libraries for text manipulation and sentiment analysis, the study preprocesses the text from reviews to extract insights. TextBlob and Vader were used to perform sentiment analysis on the text, and the text manipulation was done using the stem, lemma, tokenize, regex, collections, and pandas libraries. In the future, this project aspires to be made fully autonomous through the use of more advanced techniques such as semantic analysis and topic modeling.

MOSTAFA MOAMEN, NATALIE OLENKOVSKY, CYMANTHA BLACKMON, HABIBA MORSY, ESSENCE TOONE

Faculty Mentor: Ensela Mema, George Avirappattu

“Question Answering Using Large Language Models Based on Custom Database”

This project utilizes Large Language Models (LLMs) to answer questions on specialized topics, focusing on the Carnegie Classification of Institutions of Higher Education (CCHIHE). Employing the most prominent LLMs used in the industry, such as GPT by OpenAI and Llama II by Facebook, we develop an application capable of comprehending user queries, retrieving relevant information from existing knowledge and formulating responses. Beginning with a database containing approximately 300 frequently asked questions and answers, we employ the Retrieval Augmented Generation (RAG) technique to generate responses. This process involves embedding common questions into a vector database, identifying and retrieving the most relevant Q&A pairs to the user query, and employing three large LLMs – GPT 3.5 Turbo, GPT 4, and Llama II – to generate responses based on the retrieved information. Once developed, the application will be deployed on a website interface constructed using React, a widely used technology for web development. The website will enable administrators to integrate new questions and human-validated responses into the Q&A database, thus enriching the knowledge base and elevating answer quality over time.

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DAHANA MOZ RUIZ

Faculty Mentor: Patricia Morreale

“From Workshops to Classrooms: Faculty Experiences with Implementing Inclusive Design Principles”

Computer science (CS) and information technology (IT) curricula are grounded in theoretical and technical skills. Topics like equity and inclusive design are rarely found in mainstream student studies. This results in graduates with outdated practices and limitations in software development. A research project was conducted to educate the faculty to integrate inclusive software design into the CS undergraduate curriculum. The objective is to produce graduates with the ability to develop inclusive software. This experience report presents the results of teaching inclusive design throughout the four-year CS and IT curriculum, focusing on the impact on faculty. This easy-to-adopt, high-impact approach improved student retention and classroom climate, broadening participation. Research questions address faculty understanding of inclusive software design, the approach's feasibility, improvement in students' ability to design equitable software, and assessment of the inclusiveness culture for students in computing programs. Faculty attended a summer workshop to learn about inclusive design and update their teaching materials to include the GenderMag method. Beginning in CS0 and CS1 and continuing through Senior Capstone, faculty used updated course assignments to include inclusive design in 10 courses for 44 sections taught.

DAHANA MOZ RUIZ, ANNALIESE WATSON, ANJANA MANIKANDAN, ZACHARY GORDON

Faculty Mentor: Yulia Kumar, Dr. J.Jenny Li, Patricia Morreale

“Reducing Bias in Cyberbullying Detection with Advanced LLMs and Transformer Models”

This paper delves into a comprehensive exploration of the inherent biases present in Large Language Models (LLMs) and various Transformer models. These models, which are optimized for the purpose of identifying and dissecting instances of cyberbullying, form the focal point of our investigation. The aim is to refine and enhance the accuracy and fairness of these models by mitigating the deeply rooted biases that permeate their structures. This is essential to target because language models can inadvertently perpetuate and amplify existing biases present in the data they are trained on. The foundation of this study is robust, relying on empirical data meticulously gathered from 'X' (former Twitter), where cyberbullying is systematically classified into several categories including Age, Ethnicity, Gender, Religion, Other and includes instances where no cyberbullying is observed. It allows for a comprehensive and well-rounded dataset for analysis. A sophisticated cyberbullying detection application was engineered, utilizing the advanced capabilities of the OpenAI API as its backbone. This application serves as a filtering mechanism, designed to issue alerts for content that is identified as inappropriate, thereby fostering a safer and more respectful online environment. In this study, an overview of the latest innovations and developments in cyberbullying detection, emphasizing the pivotal roles of

LLMs and Transformer models was presented. Our main research questions under study are: How does the implementation of bias mitigation strategies impact the accuracy and fairness of models in detecting cyberbullying across diverse demographic groups? Can LLMs like ChatGPT improve the cyberbullying detection compared to previously well-known Transformer neural networks? Can LLMs like ChatGPT ease and simplify the cyberbullying detection compared to previously well-known Transformer neural networks?

CHIGOZIE OFODIKE

Faculty Mentor: Ching-yu Huang

“Data Mining for Sustainable Urban Safety: Uncovering Patterns in Mass Killings for Safer Communities”

This study delves into the complexities of mass killings in the United States, leveraging data from multiple gun violence databases. Examining incidents with three or more fatalities excluding the perpetrator as “mass killings,” this analysis reveals a deeply troubling trend: 2019 saw the highest number of such events since the 1970s, with mass shootings constituting the majority. While family annihilations remained the most frequent type, public mass shootings, although less common, have become alarmingly more frequent since 2011. This research employs interactive visualizations and analysis exploring mass killings’ temporal and typological distribution nationwide. By highlighting the rise in public mass shootings and limitations in gun violence research, this study emphasizes the need for comprehensive, data-driven research that transcends political agendas. This research can influence policy interventions prioritizing safety and well-being, ultimately contributing to curbing this national epidemic.

DAHANA MOZ RUIZ

Faculty Mentor: Daehan Kwak

“Using Deep Learning Models to Detect Brain Tumors from MRI Images”

In the medical diagnostics field, a major challenge is accurately and promptly detecting brain tumors in MRI images. Integrating image classification models has the potential to enhance diagnostic practices, reduce errors, and expedite tumor identification. This research utilized deep learning algorithms to create an automated system for reliable brain tumor identification from MRI scans aligning with the broader goal of advancing medical technology. Additionally, investigating various classification model types contributes to improved healthcare diagnostics, aiding early detection for better patient care. The research utilized a dataset comprising two folders of brain MRI images—one with tumor-free images and the other with images featuring tumors—gathered from Kaggle. Four pre-trained models were applied, and the same dataset was used for testing different image classification models and frameworks. Data preprocessing steps, such as resizing, augmentations, segmentation, normalization, and contrast enhancement, were standardized across models to authenticate accuracies. Validation tests assessed the accuracy and precision of the models, involving the saving of models in H5 format for seamless reuse and evaluation. A graphical user interface (GUI) was developed using the ‘ipywidgets’ library, offering an

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interactive platform for testing model performance. Testing involved four distinct brain images from outside the dataset to evaluate the model's generalization capabilities. Results indicated accuracy rates ranging from 75% to 90%, reflecting the model's ability to identify brain tumors. Variability in accuracy was attributed to factors like image diversity, dataset size, model complexity, and sensitivity to different tumor types and sizes. The research's short-term goal was to develop a deep learning model for accurate brain tumor detection, while the long-term objective involves refining detection algorithms for broader medical applications. Future work includes incorporating diverse datasets to assess how accuracy percentages evolve in detecting brain tumors and experimenting with popular continuous learning algorithms.

DANNY MUNOZ

Faculty Mentor: Daehan Kwak

“News Authenticity Detection With Machine Learning”

The media has long been a major source of information for the public, providing substantial coverage on various topics. However, much of the fake news in those articles is missed by the general public. It is something that has been repeatedly happening on the internet, as seen in various instances where news outlets have fabricated articles about political figures during important events. Therefore, the primary objective of this research is to accurately identify genuine and fake news articles using the GloVe model, aided by Natural Language Processing. Our goal is to provide a reliable means of distinguishing between real and fake news articles. The dataset selected was provided by Kaggle and included articles from different media outlets on the internet. The dataset includes two separate CSV files, with one being “false” and the other “true.” Each individual file has columns labeled “Title”, “Text”, “Subject”, and “Date”. In total, the dataset consisted of 23,481 fake news articles and 21,417 true news articles. With the dataset being fairly large, there needs to be some cleaning done to it so that the model can easily process it. Removing unnecessary columns would be the first step, like “date” and “subject,” since these columns do not determine whether a news article is fake or not. Using the Python libraries (Beautiful Soup) and Python functions, the dataset would be processed and stripped from any unnecessary text to ensure the model accurately detects fake news. Now that the dataset is cleaned, it is ready for training and testing. The model processes 33,673 articles and calculates accuracy after each epoch, using 11,225 articles to validate the accuracy of the model. Once all epochs were completed, the results were obtained. The training phase of the model started off at a low percentage of 0.93% but substantially increased as it learned from the dataset, eventually reaching a peak of 0.99%. As for the test portion of the model run, the results indicated that it commenced at a high percentage in contrast to the training portion. It started at 0.97% and slowly increased throughout the epochs, quickly reaching its highest point of 0.99% in the second epoch. Based on these results, the model was able to learn from the dataset and increase its accuracy per epoch. In conclusion, this research project aimed to address the problem of fake news in the media using the GloVe model and Natural Language Processing (NLP). Training and testing the model showed that our model could learn from the data and become highly proficient at distinguishing fake news from real news. In the future, we can explore other computer models like BERT and Word2Vec to determine if they yield better

results. Additionally, expanding the dataset pool and potentially creating a user-friendly website for news article verification could have a significant positive impact. This could greatly facilitate the process of identifying fake news and keep our information more reliable.

ABIODUN OBAFEMI

Faculty Mentor: Daehan Kwak

“The Perception of ChatGPT on Social Media”

ChatGPT has seen a rise in popularity, going viral across several social media platforms since its release in November of 2022. ChatGPT is an artificial intelligence chatbot developed to enable users to engage in human-like conversations and much more with a chatbot. The objective of this research was to understand the global impact of ChatGPT and the influence it has across the world. Reddit and Twitter (currently X) are social media platforms, where users can express their thoughts and ideas, sparking conversations among a larger audience. Both platforms offer a variety of data containing valuable information into the sentiments and perceptions surrounding ChatGPT. We looked to gain insight into the sentiments of ChatGPT to provide useful information about the product. We analyzed Reddit and Twitter data using natural language processing tools: Textblob, Vader, NRC Lexicon, and Word2Vec. Using the sentiment analysis tools, Textblob and Vader, we found an overall neutral sentiment within the 52, 416 comments gathered from Reddit and 478, 265 tweets from Twitter. This suggested that the sentiments expressed on social media were balanced and did not significantly lean towards either positive or negative. From NRC Lexicon, we found more positivity and optimism in the data. Additionally, we discovered the topics of ChatGPT in different contexts such as social, academic, and economic aspects in Reddit posts and communities. From Word2Vec, we collected 50 of the different topics that were frequently discussed. It is important to note that human interpretation plays a crucial role in understanding the sentiment analysis. Our findings shed light and contribute to a deeper understanding of the impact of ChatGPT and the discussions surrounding this technology.

HENI PATEL, GURDEEP SINGH

Faculty Mentor: Stanley Mierzwa

“Creation of a Non-Profit and Non-Governmental Organization Cybersecurity Incident Reporting and Dataset Repository”

Organizations of all types are prone to cybersecurity and information security attacks. Non-Profit Organizations (NPOs) and Non-Governmental Organizations (NGOs) are not exempt from using information technology solutions and, thus, have been the recipient victims of cyber attackers. There exist many areas and venues where data are collected to report back annually on the status and numbers of cybersecurity attacks against many sectors of our society. This effort and write-up will focus on the NPO and NGO community and provide the process followed to research and create the data repository, created categorization of attacks or taxonomy, fields captured, outlets and areas where data that

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is relevant to historical cybersecurity incidents in these types of agencies is available. In addition, the beginning of a running log and dataset for the NPO and NGO community will emerge. A dataset will be made available that can be referenced by researchers, students, and leaders investigating risk management and analysis of the NPO and NGO sectors.

CHIGOZIE OFODIKE

Faculty Mentor: Kuan Huang

“Intelligent Eyes: A Forward-Thinking Proposal for Smart Camera Systems for Education Institutions”

The persistent threat of school shootings demands a pervasive need for alternative school safety solutions that go beyond reactive behavior. This paper investigates the potential of a computer vision (CV) system called “Intelligent Eyes” to contribute to a safer learning environment by detecting and tracking conventional weapons of mass destruction in real time. Leveraging the power of machine learning, specifically deep learning models and architectures, Intelligent Eyes aims to identify weapons and enhance situational awareness proactively in real-time. Convolutional Neural Networks (CNNs), trained on extensive datasets of weapons, form the core of this object detection system. These CNNs can learn to distinguish weapons from other objects with high accuracy. With transfer learning, we improve efficiency by utilizing pre-trained models on large image datasets for feature extraction. We fine-tune these pre-trained models for specific weapon recognition within educational institutions. A You Only Look Once (YOLO) algorithm allows real-time tracking and detection. We expect this research to demonstrate CV’s advanced technology, and its potential, effectiveness, and feasibility in mitigating risk while guiding the adoption of proactive ML and AI-driven solutions for school safety, enabling early intervention, and increasing situational awareness in educational institutions nationwide.

KIMBERLY OPARA

Faculty Mentor: Eunice Nkansah

“Exploring the Impact of Gender Imbalance on the Learning and Motivation of Female Computer Science Students at a Four-year Public University”

Gender Imbalance is a pervasive phenomenon in modern society, specifically in computer science higher education. This study explored the impact of gender imbalance on the learning and motivation of female Computer Science(CS) college students. This study aimed to determine how gender imbalance affects learning and retention, the causes of the imbalance, and prevalence among female Computer Science students. Data was gathered through semi-structured interviews using a qualitative study design- a focus group. The focus group comprised three(3) female CS participants at Kean University. The open-ended interview questions covered subjects like personal experiences in the classroom, scientific self-efficacy, and external influences on pursuing a degree in CS. Data analysis of the results revealed three significant findings. The first theme revealed a significant association between gender dynamics and social exclusion.

The second theme revealed that despite high self-efficacy among female CS students, most participants needed help to effectively convey technological knowledge. The third theme revealed that most participants displayed good self-regulatory abilities, as shown by their excellent grades despite adversities. Based on these findings, the researcher recommends that higher education, faculty and other organizations offer Computer Science-related services while prioritizing gender diversity and inclusion programs. Additionally, college students should develop social sensitivity and embrace inclusive efforts.

RAYLEEN RAMOS

Faculty Mentor: Daehan Kwak

“Phishing Email Detection: Exploring Machine Learning And AI Approaches”

Phishing attacks pose a growing cybersecurity threat, demanding effective detection mechanisms. This study explores the utilization of machine learning and natural language processing techniques to enhance the detection of phishing emails. The research objectives include analyzing linguistic patterns, evaluating model performance, and exploring the applicability of AI models. The investigation drew upon a comprehensive literature review. It utilized a labeled dataset to develop and evaluate an algorithm capable of classifying unseen data as spam or non-spam. Pre-processing techniques included tokenization, stopword removal, logistic regression, and other classification algorithms. Evaluation metrics such as accuracy, precision, and confusion matrices were used to assess model performance. The research demonstrates the effectiveness of machine learning models in accurately identifying and classifying phishing emails. The logistic regression model achieved a high accuracy score of 98.3% and 98% precision, supported by the logistic regression classification report. The analysis highlights the significance of linguistic patterns in distinguishing phishing emails from legitimate ones. Furthermore, a generative AI, ChatGPT, is incorporated to generate and identify phishing emails, using prompt engineering to improve questions for the best results. Those results were tested on the created model to see how well it could categorize them as spam, and the results confirmed the model's competence in distinguishing between genuine and simulated phishing efforts. This investigation showcases the crucial role of machine learning and natural language processing in enhancing phishing detection and emphasizes their potential to strengthen cybersecurity defenses. In the future, the scope of the research will broaden by testing and training the model on a more diverse dataset to improve its adaptability in detecting phishing attempts.

OWENS RIVERA

Faculty Mentor: Amani Ayad

“Is Mutation Score Highly Correlated With The Size of the Test Suite and Mutation Operators”

Mutation testing as a whole is a form of white box testing in which specific components of a code or source code of an application are changed to ensure that test suites can detect the changes, however more specifically in this research, mutation testing is used to measure the effectiveness of test suites.

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When a mutation testing system, in our case the Pitest mutation testing system, is applied to a base program it generates both killed and equivalent mutants. Killed mutants are mutants that are both syntactically and semantically different from the base program. Mutants known as the survived mutants are syntactically different from the base program but semantically equivalent. The more mutants that are killed, the better the test suite. The overall goal of this research is to see if mutation score correlates with the test suite size as well as the mutation operators, if it correlates and if so how correlated are the specific test suite size and specific mutation operators when applied to a base program.

GILLIAN ROBERTS, ROILAN IGELSIAS, NICOLE YEH, KEVIN LOCHARD, BRIA WILLIAMS

Faculty Mentor: Jing-chiou Liou

“EcoChamp”

As stated on the United Nations’ website, the 13th sustainable goal is to “take urgent action to combat climate change and its impacts”. Our project EcoChamp is our approach at doing just that. EcoChamp is a lifestyle web application to assist Kean students and faculty in lowering their carbon footprint and evaluating their impact on our environment. Our application has been developed using a 3 tier software architecture pattern with the presentation layer consisting of a graphical user interface, an application layer on Kean’s OBI server and a data layer on Kean IMC Server. It provides, through a web application interface, interactive features that makes it intuitive and easy to use. It has 3 main feature categories. The first is centered around facilitating Kean Union students and faculty to closely approximate a baseline of their greenhouse gas emissions (GGE) through a reflection of their lifestyle as a college student or staff member. By visualizing their GGEs on an ongoing basis, they are able to improve their lifestyle. Secondly, we have encouraged friendly competition among all users by introducing weekly/monthly challenges for users to participate in and the ability to keep score on a leaderboard. Our activities are a core part of the application and create an enticing method to be more eco-aware. Thirdly, we implement opportunities for users to learn more about Environmental Responsibility (ER) with an ER Library that contains helpful, relevant topics about how they can reduce their impact on the environment. This not only engages the user, but educates them as well.

JULIO RODRIGUEZ

Faculty Mentor: Kuan Huang

“Multi-task Breast Ultrasound Image Classification and Segmentation Using Convolutional Neural Networks and Vision Transformer”

This study delves into applying advanced machine learning techniques, specifically convolutional neural networks (CNNs) and Vision Transformers, to classify and segment breast ultrasound images. The primary objective is to enhance breast cancer detection by differentiating between benign and malignant tumors with higher precision. By employing renowned deep learning

architectures such as VGG-16 and ResNet-50, this research not only benchmarks their performance in medical image analysis but also explores the integration of classification and segmentation tasks to improve diagnostic accuracy. Furthermore, the introduction of Spring Transformers offers a novel approach to handling image data, promising to refine model efficiency and effectiveness in medical imaging tasks. The study conducted on the Google Colab Notebook platform presents a comparative analysis of the models' performance, revealing VGG-16's superior accuracy. However, the most significant contribution lies in the proposed multi-task of VGG-16 and ResNet-50 framework, which amalgamates classification and segmentation, potentially setting a new standard in AI-assisted medical imaging. This research underscores the pivotal role of AI in early cancer detection, pushing the boundaries of what is possible in medical diagnostics.

BRIAN RUIZ, MOSTAFA MOAMEN, JUAN PATINO

Faculty Mentor: Ching-yu Huang

“Home Price Prediction”

This study looks at how different features of a house, like its size, age, number of rooms, bathrooms, and other features, affect its price. We use 3 datasets with different attributes on a bunch of homes that include all these details. This helps us see the bigger picture of what makes some homes more expensive than others. Our main goal is to figure out what matters most when it comes to the price of a house. We're using simple tools to analyze the data and try to predict home prices based on the features we mentioned. With 3 different datasets with different attributes, we are researching the different combinations of features that make the prediction the most accurate. This research is important because it can help people who are looking to buy a house understand what makes a home valuable. It can also help those who sell houses or are involved in planning and building homes. We hope our findings will make it easier for everyone to make smart decisions when it comes to buying, selling, or building homes.

PETER SORIAL

Faculty Mentor: Yulia Kumar

“Advanced Pokémon Detection and Verification”

This project introduces a novel two-stage AI framework aimed at enhancing the detection and verification of Pokémon in images. Initially, the framework employs a Transformer-based model for object detection, accurately identifying Pokémon across various poses and lighting conditions. Following identification, a specialized model assesses whether the images are AI-generated or authentic, ensuring the integrity of digital Pokémon collections and aiding copyright protection. The researchers are in the process of developing an application intended for deployment on Google Cloud. The evaluation of this application will primarily focus on assessing its accuracy, precision, recall, and its ability to distinguish synthetic images from genuine ones. This advanced framework promises to make significant contributions to Pokémon research, education, and entertainment. By addressing challenges in synthetic image proliferation,

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it facilitates the engagement with authentic Pokémon content. Furthermore, its potential extends to various domains, including copyright protection and content management. Overall, this innovative AI framework holds promise not only for Pokémon enthusiasts but also for industries reliant on image authentication. Its implementation signifies a step forward in leveraging AI for ensuring the integrity and authenticity of digital content.

NOORUL SAMAH SAHEL

Faculty Mentor: Daehan Kwak

“A Comparative Study in Recommendation Systems”

Recommender systems play a crucial role in various fields such as e-commerce and entertainment platforms. For book recommendation systems, two common approaches are collaborative filtering (CF) and exploratory data analysis (EDA). While both aim to understand user preferences and suggest relevant books, they utilize in different ways. This comparative study explores the characteristics, functionalities, and efficiency of these approaches within the context of book recommendation systems. Collaborative filtering, a widely used technique, leverages user-item interactions to generate personalized recommendations. It analyzes user interactions with items, such as ratings or purchase history, to identify users with similar preferences. The system then recommends items that those users have enjoyed but the target user has not yet explored. However, CF may face challenges such as the cold-start problem for new users or items with limited ratings, and scalability issues with large datasets. On the other hand, exploratory data analysis (EDA) focuses on understanding the underlying characteristics of the data itself. In the context of book recommendations, EDA involves analyzing various book attributes like title, author, genre, publication date, and user ratings. By uncovering patterns and relationships within the data, EDA can inform recommendations based on content similarity, user demographics, or even temporal trends. While EDA provides valuable insights into the data, it doesn't directly capture user preferences and might not always translate effectively into personalized recommendations. When it comes to data use, collaborative filtering is primarily dependent on user-item interactions, while exploratory data analysis (EDA) looks at a wider range of data attributes than user ratings. EDA offers a comprehensive understanding of the dataset, identifying potential features and patterns that can improve recommendation systems, whereas CF concentrates on producing personalized recommendations. Each methodology has specific benefits and limitations. While EDA offers descriptive insights and visualizations that help with understanding dataset characteristics, collaborative filtering excels at providing personalized recommendations based on user behavior. Since EDA insights can be used to inform the development and optimization of collaborative filtering algorithms, it is clear that these approaches complement one another. In conclusion, a hybrid strategy that combines the benefits of exploratory data analysis and collaborative filtering shows potential for improving book recommendation systems. Such hybrid systems can provide users with recommendations that are more accurate, relevant, and appealing by combining individualized recommendations with extensive dataset insights. Further research and experimentation are needed to examine how these approaches can work together and create reliable recommendation systems for a range of datasets and user preferences.

OLIVIA TIRSO*Faculty Mentor: Daehan Kwak***“Analyzing Hotel Reviews: Sentiment Analysis and Topic Modeling for Summarization”**

Hotel reviews play a crucial role in shaping perceptions, informing decision-making, and influencing the overall guest experience. In many cases, it is impossible to go over all the reviews to make an informed decision. By summarizing these reviews, we can identify patterns which can help hotels understand their strengths, as well as finding solutions for areas in which consumers saw faults. Using sentiment analysis, it reads an Excel file with review data, performs sentiment analysis using the Vader sentiment analyzer, checks for the presence of specific target words in the reviews, and saves the results in a new Excel file for further analysis. Using nltk's wordnet lemmatizer, it lemmatized and performed word counting on text data, stored in a data frame. It's useful for analyzing the frequency of different lemmatized words in a text dataset. The results display vader scores of neutral, positive, and negative from target words that were extracted from the dataset. As well as calculating the word frequencies in a specific data frame column and then creating and displaying a word cloud visualization based on those frequencies using Python libraries like Pandas, WordCloud, and Matplotlib. The word cloud visually represents the most common words in the text data. Alongside each written review, included is a chart displaying neutral, positive, and negative scores. Additionally, a rating column is provided to classify the reviews as bad, good, or neutral based on their respective scores. This research represents a substantial contribution to the expansive field of sentiment analysis and topic modeling. It engages in a comprehensive exploration of the practical applications of these advanced techniques, with a specific focus on their deployment within the intricate landscape of hotel reviews. By examining and dissecting the intricacies of sentiment analysis and topic modeling within this specific domain, this study not only enhances our understanding but also provides a blueprint for their successful implementation in a broader spectrum of industries and domains. It explores the application of these techniques specifically in the context of hotel reviews, which can serve as a blueprint for similar analysis in other industries. The knowledge acquired through this research extends beyond the hospitality industry, empowering businesses across diverse sectors to leverage customer reviews for informed decision-making based on data.

**JOSEPH TOMASELLO, XAVIER AMPARO, ERIC LANDAVERDE,
MATTHEW FERNANDEZ, JULIO RODRIGUEZ***Faculty Mentor: Jing-chiou Liou***“Law Digest 4 New Jersey”**

For the average citizen, hearing of the new legislation being passed in your area on the daily news is helpful, but how to navigate and comply with these laws can be confusing. You may be a veteran, business owner, retiree, or divorced/widowed, and have no understanding of how the bills that get passed which cover these types of circumstances may affect you or your family. Our system,

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Law Digest 4 New Jersey, seeks to make the entire breadth of past and present New Jersey state law both accessible and easy to comprehend thanks to our Large Language Model (LLM) AI. Our LLM is designed to use its Natural Language Processing (NLP) capabilities to both summarize the official bills taken from the New Jersey Office of Legislative Services in everyday language and answer questions about each bill to clear up any misunderstandings our users may have about New Jersey state law. Our belief is that this will enhance public awareness and therefore increase compliance with newly passed ordinances, leading to less unintended breaches of the law by informed citizens.

BRIA WILLIAMS, KEVIN LOCHARD, BALLA DIAITE

Faculty Mentor: Ching-yu Huang

“Understanding Pakistani E-commerce Consumer Behavior through Analyzing Online Shopping Data”

This research project aims to unveil hidden patterns, relationships, and insights within Pakistan’s burgeoning e-commerce sector. We aim to analyze the most readily available e-commerce dataset from Pakistan, which comprises over half a million transaction records from March 2016 to August 2018. This dataset, sourced from various e-commerce merchants, provides a comprehensive overview of online retail activities and consumer behavior in a rapidly growing digital marketplace. By employing techniques such as ETL (Extract, Transform, Load), outlier detection, correlation analysis, and clustering, our study aims to identify significant trends, customer purchasing behaviors, and potential growth areas within the Pakistani e-commerce landscape. Specifically, our analysis seeks to quantify the extent to which discounts influence Pakistani consumers’ purchasing decisions, revealing how price reductions correlate with increased order volumes and shifts in product category preferences. Additionally, we aim to uncover seasonal trends in e-commerce activity, identifying periods of heightened shopping activity and the types of products most sought after during those times. This analysis offers valuable insights into the state of e-commerce in Pakistan from 2016 to 2018 and aids in forecasting future trends, thereby supporting startups and established businesses in strategic decision-making. Through this research, we anticipate shedding light on the intricate dynamics of online shopping in Pakistan for businesses to tailor their strategies effectively.

LUIS MIGUEL VELAZQUEZ RODRIGUEZ, ABIJITH MANIKANDAN

Faculty Mentor: Yulia Kumar, Dr. J. Jenny Li

“AI Enhanced Gaming Experience”

The integration of AI in gaming is set to redefine user interaction by personalizing experiences through OpenAI’s advanced ChatGPT-4+ and the innovative image generator DALL-E 3. This venture will lead the way in creating an adaptive gaming environment tailored to individual tastes and imaginative inputs. It enables players to immerse themselves in various thematic worlds, from festive Christmas scenes to spooky Halloween adventures, or even motifs inspired by beloved films. Additionally, players can craft unique experiences in their

language, supported by a robust API. ChatGPT and DALL-E 3 will operate behind the scenes, interpreting player choices to customize game elements dynamically. As ChatGPT evolves, it becomes increasingly adept at processing complex user requests, positioning it as an ideal cornerstone for this pioneering project. With its seamless integration, gamers can anticipate unparalleled levels of immersion and customization, ushering in a new era of interactive entertainment that blurs the lines between reality and virtual worlds.

WILBERT VILLALOBOS

Faculty Mentor: Yulia Kumar, Dr. J. Jenny Li

“The Multilingual Multimodal Travelers App”

This academic exploration delves into “The Multilingual Eyes Multimodal Traveler’s App” (MEMTA), an innovative application at the intersection of travel technology and Artificial Intelligence (AI). MEMTA distinguishes itself through the strategic integration of advanced AI technologies, including multimodal Large Language Models (LLMs) like ChatGPT-4, Yolov8 Object Detection, and the Whisper API, to provide unparalleled navigational assistance and situational awareness for a diverse user base comprising tourists and visually impaired individuals. The core of our study lies in assessing MEMTA’s capabilities in real-time, multilingual translation, pronunciation, and context awareness. This investigation reveals how MEMTA leverages the full spectrum of AI advancements to enhance the user experience across various geographical landscapes. By incorporating cutting-edge AI technologies, MEMTA not only interprets the visual world into actionable insights but also transcends language barriers, facilitating seamless communication and interaction in multilingual contexts. Moreover, this study expands the understanding of MEMTA’s applications beyond conventional travel assistance. It shows potential in revolutionizing sectors such as robotics, virtual reality, and military operations, thereby highlighting its extensive applicability and transformative impact. The exploration into these diverse fields reveals MEMTA’s role in advancing human-AI interaction, providing innovative solutions to complex challenges, and enhancing operational efficiency and safety in high-stakes environments. Through this exploration, the study contributes novel insights into the fields of AI-enhanced travel, assistive technologies, and the broader scope of human-AI interaction.

AMIR ZAMAN, AYAN DESAI

Faculty Mentor: Ching-yu Huang

“US Utility Price Disparity Analysis”

Policy for housing utilities have geographic variances. Utility corporation habits also vary with location. We aim to find disparities in housing affordability by geographic location through comparing the United States individuals’ tax information to US utility rates in the year 2020. Our study delves into the implications of these differences in essential living expenses. We seek to identify regional discrepancies in the affordability of essential utilities such as

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water, gas, and electricity but also examine how these variations intersect with socioeconomic factors. Methods: data visualization with histogram and heat map of the US, attribute correlation, Chi-Square test, normalization. Histogram is used to show the proportion of individuals income over individual income ranges. Normalizing the relationship reveals an uneven distribution which illuminates disparities of lower income households using a larger proportion of their income towards utilities. A heat map then shows higher vs lower priced utility locations alongside the locations of low income housing vs higher income housing. Further investigation is needed to render a complete view of the numerous factors encroaching on the individuals' financial burdens as well as unanticipated pressures imposed onto utility pricing. However, this study provides a step forward in unearthing inequity buried in the complexities surrounding essential services.

AMIR ZAMAN

Faculty Mentor: Ching-yu Huang

“Learning NoSql through MongoDB Web Development”

Non-relational databases, often referred to as NoSQL databases, deviate from the traditional table structures of relational databases by organizing data around objects rather than predefined tables. Consequently, querying in non-relational databases presents challenges, especially with the absence of the “join” operation commonly used in relational databases to merge structured data. MongoDB, a prominent NoSQL database application, offers a developer-friendly alternative for individuals accustomed to relational querying. Our objective is to achieve practical proficiency in NoSQL databases by leveraging the capabilities of MongoDB alongside PHP web programming. Initially, we establish the necessary software components on both a local Windows workstation and an AWS cloud Ubuntu server, including MongoDB, Apache, and MongoDB PHP drivers and libraries. Subsequently, we develop a basic web interface using HTML and PHP to facilitate user registration, login functionality, and interaction with social media features stored in the MongoDB database server. The culmination of our efforts results in the creation of a website reminiscent of Twitter, where all data is stored and organized within the MongoDB NoSQL database. This hands-on approach serves as a foundational learning experience, providing valuable insights into querying techniques and the real-world application of non-relational databases. Furthermore, aggregated results are displayed in formatted tables and visual graphs on the browser, enhancing user comprehension and analysis.

NICOLE YEH, LIAM HEALY, CHRISTOPHER LECOQ

Faculty Mentor: Ching-yu Huang

“Historical US Oil and Weather”

This project surmises that there is a correlation between severe weather events and the economic success of the areas they occur. Using three datasets, one focused on weather and two on economic data we plan to compare the intensity and number of weather events in an area to its prosperity economically. The

first dataset consists of major weather events throughout the United States from January 1996 to November 2023. Forty-eight different weather event types are included such as, tornadoes, hurricanes, and winter storms. Key attributes included in this dataset include the location, given by latitude and longitude, county, and state, the type of event, damages, injuries and deaths, and duration of event. The second dataset is stocks of XOM (Exxon Mobil Corporation) opening and closing stock prices from January 1996 through November 2023 collected from Yahoo!Finance. The third dataset is the average retail gasoline price in the United States for all formulations, reported weekly from April 1993 to February 2024. We plan to take the common dates between these sets, January 1996 to November 2023 and look for a correlation between the number of weather events occurring in the United States and the price of gasoline. We will also compare the rising and falling of gas prices in the United States to the stock price of gasoline company Exxonmobil, to see if their stock suffers or prospers when prices are low or high respectively.

MARIAH WEATHERSPOON

Faculty Mentor: Sophia Manning

“Globalitez”

“Globalitez”, a digital space with content customized exclusively for the humanities will expose learners to intricate details about global cultures. Individuals will engage, interact, and communicate extensively with limitless academic materials and social activities. A mixed methodology was used to conduct this study. Research instruments include surveys, interviews, and literature reviews. Although there are existing platforms located in developed countries, the findings show that language and cultural barriers limit diverse content and the ability to display digital humanities on a global scale. Since there are such limitations one of the main aims of this study is to bridge the gap. The purpose of this study is to create a platform that uniquely connects Generation Z to humanities in a global digital space. Accessing or studying the humanities from a central space that is customized to Generation Z would expose learners to broad-based resources specific to the humanities. The research consists of mixed methods— qualitative and quantitative. Research instruments will include but not be limited to hands-on research of literature, surveys, interviews, observation, and participation. In the literature review, we found two pressing issues. The first is the language and cultural barrier and the second is a disconnect between humanity scholars and computer scientists. Globalitez aims to solve both of these issues by creating our platform globally for all participants of the world along with including researchers specializing in both technological information and humanities.

IDUNNUOLUWA ADENIJI

Faculty Mentor: David Joiner

“Using the Quest to Explore Large Scientific Data in Virtual Reality”

Traditional scientific data exploration relies on 2D and 3D visualization tools. However, a transformation is occurring with lower cost virtual reality (VR) hardware. This study showcases a data pipeline developed from ParaView to Unity Game Engine and the Oculus Quest 2 headset to explore this transition. This project applied VR to the identification of patterns and clusters within point cloud data generated by a Hardware/Hybrid Accelerated Cosmology Code (HACC) simulation. We enabled effective user interaction by integrating VR into the broader field of large data exploration. We implemented functions to pinpoint the position and value of dark matter halos simply by pointing at them. These custom interactions are crucial because they extend beyond the capabilities of ParaView's VR mode. We use a custom script to import a sample of approximately 4 million particles (out of up to 2 trillion simulated), generated by a HACC simulation. Additional halo and iso surface data is also introduced into the VR environment. The point cloud data is rendered as a point topology mesh using a custom geometry shader, the halos are represented by spherical game objects, and the isos are imported as it is rendered in ParaView. These sphere objects offer interactive functionality, allowing users to interact with them and retrieve specific details. Through VR immersion, this study significantly amplifies the identification of patterns and clusters when compared to conventional methods. In our HACC visualization, we implemented the ability to highlight each halo as part of the visualization user interface. In addition to these features, we achieved an average PC frame rate of approximately 1012.3 frames per second (FPS) when visualizing 10,000 particles on a Alienware Aurora R15 with a GeForce 3090, and for 4 million particles, we attained an average PC frame rate of approximately 235.9 FPS.

JANAI CAMPBELL

Faculty Mentor: Dr. David Joiner

“Transporting pollen grain code from PC to VR cave”

The goal of this project was to deploy existing 3D visualizations of hyperstack images and point clouds in a CAVE environment, with a particular application to a 3D pollen database. Through the process of conducting this research, I have gained practical experience with programming software engineering, graphics, shader programming, and cross platform design. The first test code that was imported into the cave was the 10 million point cloud code running at 30 - 60 frames per second. It ran smoothly without any lagging or glitching considering the amount of points within the code. The 1 million point cloud code ran at the machine limit of 60 frames per second. The third and final code that was imported into the code was the pollen grain code. We examined the ragweed

pollen specifically and was able to thoroughly look through it to see if there were any lagging or unclear spots in the pollen. This research was successful with the desired goal achieved.

CYMANTHA BLACKMON, HABIBA MORSY, ESSENCE TOONE, MOSTAFA MOAMEN, NATALIE OLENKOVSKY

Faculty Mentor: Ensela Mema, George Avirappattu

“Natural Language Integration into a React Based User Interface”

The goal of this project is to develop a cohesive and immersive conversational experience for users, focusing on personalized AI interactions and conversation flow. We focus on the development of a question and answering application tailored to the Carnegie Classifications of Institutions of Higher Education (CCIHE), aiming to optimize the integration of natural language processing models with a React based user interface. React is a JavaScript library developed by Facebook that allows developers to build modular interfaces via a component-based architecture where reusable UI components can be updated and managed efficiently. Testing has been conducted using two advanced Large Language Models (LLM), GPT 3.5 (OpenAI) and Llama II (Facebook), both employing artificial intelligence-driven language comprehension to generate appropriate responses to user queries. During the model development, we employ Retrieval Augmented Generation, an AI framework that allows the LLMs to retrieve and generate responses tailored to specific categories or phrasing within user inquiries.

MICHAEL CASARONA, LARK BANCAIREN

Faculty Mentor: David Joiner

“Networked 3D/ VR Cell Virtualization”

Our research project “Networked 3D/ VR Cell Virtualization” is focused on creating an open sourced, user-friendly application that allows researchers to create, edit, and analyze custom 3D cell models (generated based on user-defined parameters and 2D confocal images) within a multi-user VR lab. A web front end allows users to create an account that allows them to seamlessly track and edit their models and data. Additionally, users can leverage this online platform to create new models and/ or run an AI cell count analysis, by uploading a series of confocal microscope images; this information is then stored in a database for users to access at a later time or in the VR viewer. The web app also provides a centralized location for users to download the VR viewing software, access documentation, and view user FAQs, making the software easy to obtain and understand. The VR viewing software, created utilizing the Unity Game engine, takes the raw data from the 2D confocal microscope images and layers the sprites on top of each other to create a 3D model, while editing tools allow the user to change the model's parameters such as the transparency or intensity viewing threshold, to obtain the best view of the cells. The data output from the AI analysis (in the form of x, y, and z coordinates) is used to generate centroid markers for each cell found by the AI tool, which can then be compared to the visual model. Furthermore, Photon Unity Networking 2 (PUN2) allows multiple

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users to view, interact, and edit the same models in real-time, while Vivox Voice And Text Chat provides built-in text and voice chat functionality, allowing users to discuss the data without the need for third-party software. This application will provide a collaborative platform that enables scientists to count, analyze, and interpret cell data, leveraging a combination of AI analysis and human verification to ensure accuracy and efficiency.

ASHLEY PACHECO

Faculty Mentor: Edward Farnum

“Mathematical and Physical Models for Coupled Oscillators”

Sympathetic resonance on a stringed instrument is the tendency for a mechanical vibration, possibly from one string, to excite other strings, leading to additional sound production. This can be modeled by a partial differential equation, which we have solved both analytically and numerically. We have a novel stringed instrument which demonstrates this sympathetic resonance, subject to a variety of mechanical driving forces. This will be of interest both musically as well as a teaching tool. The short term goal is to use a synthetically generated driving force to excite the strings to resonance, without directly touching them, as in plucking or bowing. We will study this induced resonance to optimize its efficiency and sustain, in an effort to design better prototypes. To accomplish this, a physical and mathematical model will be required. The physical instrument resembles a zither with a sound hole large enough to be placed on top of a speaker, which provides a controllable driving force. We record the plucked instrument directly, identify its dominant frequencies, and then use the gathered information to construct a driving signal. This signal will be played through the speaker, and we measure the induced excitation on the physical model. Preliminary tests suggest that the resonance is feasible. We hypothesize that the amplitude of the response will depend on the duration of the driving force. However, we don't know if all frequencies will be equally excitable, nor whether upper harmonics are easily induced. Once we better understand the response from a controlled driving signal, we consider the much more complicated acoustic input signals from a trumpet.

CYMANTHA BLACKMON

Faculty Mentor: David Joiner

“Shader Development for VR Tools for Confocal Microscope Data Visualization”

This research extends upon prior developments of a user interface (UI) focusing on the visualization of 3D data collections derived from hyperstack images, including pollen grains and fruit fly stem cells captured using a confocal microscope. In addition, the visualizations have been refined to facilitate the manipulation of an adjustable cut plane object, offering features such as the display of multiple layers of the data while maintaining its integrity, dynamic movement (slide/rotate/drag), transparent viewing, and other color adjustments. The UI was designed using Unity Game Engine, and a customized vertex fragment

shader was implemented using the CG shader language. The shader, linked to the aforementioned cut plane object, was updated to incorporate a property that correlates with the cut plane's position relative to the base position and normal vector. Expanding beyond a singular type of pollen, this research begins to establish a universal structure for discerning and selecting between various known pollen types. Other use cases of the visualization tool include pollen adjustments via external controllers, the addition of automated counting, and database creation for 3D pollen grain images. Future research includes the implementation of a multi-scene layout to visualize diverse pollen grains efficiently through Unity AssetBundles.

ANNALIESE WATSON

Faculty Mentor: David Joiner

“Shader Development and User Interface Design for 3D Scientific Visualization in VR Headset”

This research introduces an innovative user interface tailored specifically for the visualization of three-dimensional (3D) hyper stack images obtained through confocal microscopy. Focused on specimens like pollen grains and fruit fly stem cells, the interface uses virtual reality (VR) technology to deliver volumetric renditions of hyper stack images, employing transparency to enrich the viewing experience within VR headset environments. Core functionalities include seamless manipulation of x, y, and z cut-planes for navigation through image layers while upholding data integrity. Leveraging advanced shader techniques, users can dynamically adjust transparency, rotation, and color enhancements directly through VR headset controllers. Moreover, an interactive menu facilitates further customization through sliders, checkboxes, and the exploration of data through other types of manipulation using different shapes and functions. This visualization tool not only aids in validating object detection algorithms for cell counting but also contributes to building a comprehensive database of 3D pollen grain images. The operation has been tested on Oculus Quest 2, 3 and pro headsets.

ANNALIESE WATSON

Faculty Mentor: Yulia Kumar

“Applying Swin Architecture to diverse Sign Language Datasets”

In the era of Artificial Intelligence (AI), the ability to seamlessly comprehend and respond to non-verbal communication is paramount. This research broadens the scope of AI in reducing the communication gap, contributing significantly to both American Sign Language (ASL) and Taiwan Sign Language (TSL) communities. Central to this study is the application of various AI models, with a primary focus on the Hierarchical Vision Transformer using Shifted Windows (Swin) models, to recognize diverse sign language datasets. The study evaluates the Swin architecture's adaptability to the unique aspects of different sign languages, aiming to establish a universal platform for 'Unvoiced' communities. By leveraging deep learning and transformer technologies, we developed a mobile application prototype that enables ASL-to-English translations and vice versa. The goal is to extend this capability to multiple sign languages. Trained on datasets of varying sizes, the Swin models demonstrate notable accuracy, showcasing their

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flexibility and effectiveness. This research highlights significant technological advancements in sign language recognition and reaffirms our commitment to inclusive communication in the digital age. Future efforts will concentrate on refining these models and expanding their application to encompass a broader range of sign languages, thus promoting global inclusivity.

ANJANA MANIKANDAN

Faculty Mentor: Yulia Kumar, Jenny Li

“LLMs in Education”

There is an increasing demand for personalized and interactive learning experiences in Computer Science (CS) education, which can be fulfilled with the usage of Large Language Models (LLMs). This research proposes the creation of an AI-based CS tutor and Auto Quiz generator application with multimodal functionalities. The application features a chatbot interface that enables users to interact with the AI tutor, creating an immersive and dynamic learning environment which adheres to the principles of GMS (Growth Mindset). In addition to the chatbot functionality, the system includes an auto quiz generator designed to create quizzes dynamically based on the knowledge base. Users have the flexibility to customize quiz topics they want to cover, as well as receive instant feedback from the application, leveraging LLMs to return meaningful responses to the student. The enhancement of user engagement and accessibility will also be explored, as we are looking to integrate multimodal functionalities into the CS tutor and quiz generator.

KATHLEEN BLAIN

Faculty Mentor: David Joiner

“Automated 3D Detection and Analysis of Fruit Fly Stem Cells in Confocal Microscopy”

This project is focused on applying computer vision to 3D confocal microscope images of fruit fly stem cells. Prior work focused on finding objects in 2D image slices of the 3D image, and then aligning them across images. I have developed a cost function that takes a prototype mask shape and applies it on top of the 3D image at a suspected object location and returns an overlap score between the prototype stem cell and the actual pixel values. I then created voxel plots of the function and stem cells in order to track the accuracy of these findings. This is then used as input to a minimization routine to locate likely objects in the data. I will present the results of this new approach, and compare it to our prior 2D process.

CSMT | ENVIRONMENT AND SUSTAINABILITY SCIENCES**ROSEMARY BROWN, ANDREW RUIZ, ELIZABETH HOLDEN,
JOANNA KEPA, LUKE FOSTER, TESS MULLEN, SHANA GADAIRE***Faculty Mentor: Joseph Sarnoski, Daniela Shebitz***“Kean Skylands Community Day”**

A scientific and educational two-day community event at the Kean Skylands Campus will take place in early May. By researching the New Jersey scientific education curriculum, and utilizing the New Jersey State Learning Standards, this group hopes to gain an understanding of how to create an engaging, unique event with learning experiences for both students and community members of all ages. It also brings awareness that Kean Skylands exists and wants to contribute to local community activities. In order to organize a successful outreach program, the team is collaborating with Skylands administrative staff, local schools, departments within Kean University, and other community members to plan the educational activities, get head counts of attendee numbers, and work within the provided budget. Questionnaires about the experiential learning helped to gauge involvement and attendance before and after the event, and flyers to inform schools, students, and the community. This successful community day demonstrates the positive impact that our Kean outreach programs can have.

NATHALY GALARZA, DEREK GALI-MARINES, HANNAH BOYSEN*Faculty Mentor: Dongyan Mu***“Findings of Using Compost Tea to Grow Lettuce in Hydroponics and Nutrient Changes.”**

The limited application of compost on water-based farming technologies led this study to investigate the nutrient changes and impact of two compost teas on the growth of Five Star Lettuce Mix in hydroponic systems, with a main focus on enhancing the promotion of vegetable production in an environmentally sustainable manner. The experimental design employed a well-established method to brew commercially compost, which resulted in a liquid nutrient. The compost tea was monitored throughout the brewing stage, served as a growth booster, enhancing nutrient uptake by plant roots and promoting overall plant growth. Hydroponic systems: NFT (Nutrient Film Technique) and DWC (Deep Water Culture) were utilized to evaluate lettuce growth over a 23-36 day period. Harvested lettuce underwent laboratory examination to analyze plant tissues. Results indicated similar growth between plants cultivated with compost tea and those with synthetic fertilizers. Future research on brewing using various composts, including the application of compost produced at Kean University, will contribute further insights into promoting eco-friendly vegetable production in hydroponic settings.

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DEREK GALI-MARTINEZ

Faculty Mentor: Dongyan Mu

“Examining the Impacts of Different Diets on Nutrients in Compost Leachate Produced from Eisenia Fetida (Red Worms)”

The transformation of organic materials into compost offers a sustainable alternative to synthetic fertilizers, playing a critical role in enhancing soil health. The incorporation of compost into the soil significantly ameliorates soil structure, which is paramount for ensuring adequate aeration and internal drainage. It greatly enhances the soil's capacity to retain nutrients and moisture, which are vital for plant growth and health. Concurrently, the process of composting serves as an effective strategy for the recycling and reuse of food waste. This reduction in landfill waste directly translates to a decrease in carbon emissions, further underscoring the environmental benefits of composting. *Eisenia fetida*, commonly referred to as the red worm, is a species particularly adept at converting organic wastes into valuable soil amendments through a process known as vermicomposting. Vermicomposting involves the use of these worms to expedite the breakdown of food scraps, resulting in the production of a highly nutritious soil amendment. This process also generates leachate, a nutrient-rich liquid by-product that can be directly applied to the soil as a potent liquid fertilizer. This study plans to meticulously analyze the nutrient composition of the leachate produced under varying diets fed to the *Eisenia fetida* worms. By systematically evaluating how different food scraps influence the nutritional content of the resulting leachate, this research aims to identify an optimal diet for the worms. Such a diet would not only enhance the efficiency and output of the composting process but also yield a leachate that is rich in essential nutrients directly beneficial to plant growth and health. Through this exploration, the study endeavors to refine vermicomposting practices, thereby maximizing the environmental benefits and agricultural utility of worm composting as a sustainable method for waste management and soil enrichment.

KENYA DE DIOS

Faculty Mentor: Daniela Shebitz

“Evaluating Effects of the Plastic Bag Ban Using Public Clean-up Event Data”

Working with New Jersey Clean Communities, data on litter were collected from Clean Ocean Action Beach Sweeps. The New Jersey Clean Communities is a trash abatement program. The Clean Ocean Action is a nonprofit organization from New Jersey. The organization conducts a yearly coastal clean-up. Focusing on the annual clean-ups from Clean Ocean Action, data were collected and analyzed to compare pre and post ban of plastic bags in the clean up. As of May 4, 2022, retail establishments, supermarkets, and food service establishments in New Jersey have been prohibited from offering or selling single-use plastic carryout bags. Having a ban on plastic store bags will lower the abundance of plastic bags in clean ups. Did the quantity of plastic bags discovered at clean-up events reduce considerably after the ban? Numbers and percentages will show plastic bags being less littered in NJ/NY ocean coasts followed by the Plastic Bag Ban.

ARIANA GALYA*Faculty Mentor: Jun Cheng***“Outreach to Youth Ages K-12 Regarding Environmental Issues and Impact at Sandy Hook, New Jersey”**

This study will focus on the outreach to youth ages k-12 on coastal environments and sustainability. Several issues about environments will be discussed including crucial factors that control beach erosion and flood protection, native plants and other natural vegetation on coastal dune (the importance of removing invasive species), and declining population of horseshoe crabs, whose eggs are a main food source for several coastal species including shore birds. It is important for K-12 students to understand these coastal environmental issues occurred at Sandy Hook, New Jersey. To educate these K-12 students, there are several steps that can be taken. These students can take class trips to Sandy Hook, NJ where there are several programs run through Sea Grant that supplies learning about these topics. Students can also be shown videos or have a special course added to their curriculum that will educate them about these matters. Another action that can be taken is to provide this as a homework assignment. Students can be given a handout and must read about these issues and reply with a summary of what they have learned. In the day of technology, it is quite easy to supply a handout that students must read and discuss what they've learned from it. It is important for the youth to learn and understand why these issues are important. By educating K-12 students, there is a chance that they will understand and respect the environment and eventually take initiative to help resolve these matters.

MADDISON GONZALES, CLAUDIA BAYDAR, ALONDRA VALERIO, MATTHEW WOLFE, CARLOS MARTINEZ, JULIANNA COFINAS, GABRIELLA REESE, TOLANEY ANDERSON*Faculty Mentor: Daniela Shebitz***“Cedar Street Park Living Shoreline Restoration”**

Cedar Street Park in the Town of Keyport, NJ, faces ecological threats from rising sea levels and increased storm damage associated with climate change, severe erosion, and the abundance of invasive plant species that are actively displacing native vegetation. Past restoration efforts conducted by Keyport's Environmental Commission in Cedar Street Park have included the planting of American beach grass (*Ammophila breviligulata*) and other native species and the installation of Christmas trees horizontally into the sand as a means to fill the swale behind the dune to limit erosion. This senior capstone project through the Independent Practicum for Sustainability (SUST 4300) focuses on further developing a restoration plan for the town of Keyport that focuses on the identification and removal of invasive species found at the site and other methods of fortifying and growing the dunes to combat storm damage. We are using Global Information Systems (GIS) to develop a map of where invasive species are found in Cedar Street Park and create a restoration plan using local plant resources. Necessary permits and restoration methodology for mitigating the impact of waves on the coastline will be researched (such as living shoreline installation). The end product will be a comprehensive restoration plan, budget, and timeline for Cedar Street Park.

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MICHAEL GOVER

Faculty Mentor: Feng Qi

“Immersive Visualization of Google Street View Images using VR for an Environmental Perception Study”

Characteristics of the environment affects our psychological and general well-being. The mechanisms of the environment’s psychological impacts on humans have been long studied, but many questions remain unanswered. The long-term goal of our project is to explore the impact of urban environmental settings on the psychology of individuals in modern urban living. To achieve this, we use Google Street View (GSV) images to represent environments in urbanized communities in NJ. Participants will be recruited for immersive visualization and answer questions about their perceptions of the environment and related psychological status. Data collected will be used to derive relationships between environmental attributes and psychological variables. The short-term goal is to investigate Virtual Reality (VR) technology for immersive visualization of GSVs. We developed procedures for three VR setups for this purpose. User-testing has been conducted for a comparison of the setups in terms of feasibility, image quality, and user comfort. Results show that...This allows the collection of valuable data to investigate various environmental settings and their psychological impacts. Laying the foundation for evidence-based interventions and policies for healthier and more supportive urban environments.

AMY JOHNSON, JUSTIN MILLER

Faculty Mentor: Jun Cheng

“How Do Beaches Recover After Frequent Storm Events and What is the Threshold of Beach Width for Coastal Safety?”

The Northeastern coast of US, facing the Atlantic Ocean, experienced impacts from passages of two hurricanes in fall 2023, including Hurricane Lee in mid-September followed by Tropical Storm Ophelia in late September. A total of 20 beach profiles spaced by 100 meters each at Ortley Beach and surrounding beaches in Ocean County, New Jersey, were established. Weekly beach surveys using RTK-GPS from the edge of the dune to mean low water was conducted from September 14 to October 12, 2023. The data captures the severe dune/beach erosion induced by the passage of TS Ophelia, with large waves and storm surges. The natural recovery processes of beach post tropical storm were interrupted by the subsequent winter storms starting from mid to late October. The systematic beach survey will be conducted monthly until February 2024, the peak of winter season. Given the context of global climate change, the chance of a sequence of storms (tropical or winter storm) have considerably increased. Field observations on beach changes induced by storms will enhance our understanding of beach management.

AMY JOHNSON*Faculty Mentor: Daniela Shebitz***“How Can NJ Environmental Nonprofit Organizations Utilize Social Media to Gain Exposure?”**

Environmental nonprofit organizations can utilize conservation photography to further convey messages. My research question is: What type of posts attract the highest level of interactions among followers of four NJ based environmental nonprofit organizations. Through the analysis of content, likes, shares and comments we can see which type of content receives the most engagement. To decipher what kind of Facebook posts on local environmental nonprofit organizations accounts receive the most attention I chose four organizations: Save Barnegat Bay, American Littoral Society, New Jersey Conservation Foundation, and Barnegat Bay Partnership. Throughout the course of 2023 I randomly chose 4 posts per organization to examine. Based on this study, the public is more likely to be drawn in and interact with photos of plants and animals, regardless of the message you are looking to convey, as well as advertising events are the greatest ways to build a following and reach more people.

**CHELSEA OTI, SHUTING LIU, BENJAMIN AHARONI,
DEREK MELENDEZ, SPENCER THOMPSON***Faculty Mentor: Shuting Liu***“Investigation of Temporospatial Water Quality and Algae-Bacteria Interactions in Keyport, NJ”**

Urban development has caused an overload of inorganic nutrients in coastal areas in New Jersey causing a shift in water quality from moderately eutrophic to intensely eutrophic. As a result, there are seasonal algal bloom events, which produce large amounts of dissolved organic carbon in which bacteria metabolize and regenerate nutrients that further feed algae. Algal bloom events may degrade water quality and pose a risk to public health in the area when certain harmful algae release toxins. The goal of this ongoing project is to assess the temporal-spatial shifts in water quality concurrent with algal growth and how this influences the carbon cycling and interactions between algae and bacteria in Keyport, NJ. For the scope of this project, we focused on 4 different sites under various anthropogenic influences (from fishing piers to industrial production to riverine input). At each sampling site data was collected to study inorganic nutrients, dissolved organic carbon (DOC), chlorophyll-a, and bacteria biomass over seasonal cycles. In correspondence to the increased temperature and decreased dissolved oxygen, chlorophyll-a concentrations peaked in late spring to summer, indicating the growth of algae biomass in this period. The increase in chlorophyll concentrations was also correlated with the decrease of inorganic nitrogen concentrations in surface water, suggesting nitrogen acted as a limiting factor for algae growth. Higher DOC concentrations and bacterial biomass were observed during the algal bloom time, suggesting a bacterial response to fresh produced algal-DOM in the water. Algae-bacteria interactions were also assessed through an in-lab microbial remineralization incubation study monitoring changes in DOC concentration together with bacterial abundance over time.

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More bacterial growth and DOC removal percentages were observed during the bloom period than the non-bloom period.

JACKIE PARK ALBAUM

Faculty Mentor: William Heyniger

“Air quality in ultra-urbanized Elizabeth, NJ”

This research assesses two air quality monitoring networks within Elizabeth, NJ and investigates the impacts of air quality of this environmentally overburdened community. The air monitoring networks are overseen by local environmental non-profit Groundwork Elizabeth in partnership with the Housing Authority of the City of Elizabeth. This study will research different air quality monitor types, data analysis systems, and public facing notification systems. Surveys of resident attitudes of notification systems will be administered. Criteria pollutants, as defined by the EPA, will be tracked in different combinations across the networks. Data on air quality and related health impacts will be collected from Groundwork Elizabeth, the EPA, the New Jersey Department of Environmental Protection and NJ ADAPT. NJ Public Health Adapt. This research project will explore how pollution in an ultra-urbanized environment impacts an environmental justice community while investigating the creation of a localized mechanism for alerting community members of air pollution levels.

JACKIE PARK ALBAUM, KEITH M. WAMAH, KENYA DE DIOS, NATHALY, AMANDA CUNNINGHAM, FRANCISCO RODRIGUEZ

Faculty Mentor: Daniela Shebitz

“Environmental Resource Inventory of Westfield, NJ.”

This research presents the building processes and discoveries for an Environmental Resource Inventory (ERI) conducted for the Town of Westfield, New Jersey as part of a team-based senior practicum project. The ERI comprehensively assesses natural resources within the town, including biodiversity, land use, hydrology, geology, topography, and designated historical sites. The information collection phase includes document and data collection from online resources, site visits including field surveys, use of archival information from local city and state municipalities, remote sensing techniques, and GIS analysis to collect and analyze spatial data. Additional research data were used from the Association of New Jersey Environmental Commissions (ANJEC), New Jersey Department of Environmental Protection (NJDEP), New Jersey Geological and Water Survey (NJGS), and the U.S. Geological Survey (USGS). The ERI serves as a valuable tool for land use planning, environmental management, and conservation initiatives in the region. Key findings will be discussed, emphasizing the sustainable resource utilization and preservation efforts for future generations. This ERI can serve as an integral part of the town’s Master Plan and Climate Resiliency Inventory.

JUSTIN MILLER, AMY LYNN JOHNSON

Faculty Mentor: Jun Cheng

“Beach Management of Ocean County Beaches”

The northeastern coast of the US, facing the Atlantic Ocean, experienced impacts from two hurricanes in the early fall of 2023, which included hurricane Lee in mid-September and followed by tropical storm Ophelia in late September. A total of 20 beach profiles spaced at 100 meters at Ortlely Beach, New Jersey as well as surrounding beaches in Ocean County, were established. Using weekly beach surveys implementing RTK-GPS from the edge of the dune to mean low water was conducted from September 14 to October 12, 2023. The data captures the severe dune/beach erosion induced by passage of TS Ophelia, with large waves and storm surges. The natural recovery processes of beach post tropical storm were interrupted by the subsequent winter storms starting from mid to late October. The systematic beach survey will be conducted monthly until February 2024, the peak of winter season. Given the context of global climate change, the chance of storm sequences like the ones in September of 2023 (tropical or winter storm) have considerably increased. Field observations on beach changes induced by storms will enhance our understanding of beach management.

**SPENCER THOMPSON, CHELSEA OTI, BENJAMIN AHARONI,
DEREK MELENDEZ, SHUTING LIU**

Faculty Mentor: Shuting Liu

“Predicting Eutrophication Through Chlorophyll and Bacteria Levels in New Jersey Coastal Waters”

Eutrophication, the process of how increases in aquatic nutrients increase algal growth and decrease dissolved oxygen levels, poses immense risk to local ecosystems, communities, and human health. Eutrophication is typically attributed to anthropogenic factors such as fertilizer or sewage runoff. Understanding how eutrophication occurs and its ecosystem impacts will be the first step for providing potential solutions to anthropogenic eutrophication in the future. In this study, we conducted quantitative research on the coastal water from Keyport Beach, NJ to see how eutrophication from urbanized areas affect algae blooms and algae and bacteria interactions. We focused on studying chlorophyll-a and bacteria levels from April 2023 to Dec 2023 to see if there is a correlation between the two variables that can be used in the development of a predictive model for eutrophication. Chlorophyll-a concentrations increased during the spring-summer seasons compared to the fall-winter seasons, corresponding to higher temperature and lower dissolved oxygen level during the spring-summer seasons. Increased algal growth in the spring-summer seasons also triggered growth of bacteria in the water. One exception to these seasonal changes was in June 2023, the same month when a wildfire occurred, suggesting harmful effects of air pollution on algal growth either through decreased light availability or increased atmospheric deposition and subsequent turbidity increase in the water. By focusing on monitoring chlorophyll levels throughout the season and investigating whether or not bacteria levels are correlated to chlorophyll levels, the study evaluated the potential of using these variables for eutrophication assessment, which will assist scientists protect vulnerable communities from eutrophication and algal blooms in the future.

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ANDREW RUIZ

Faculty Mentor: Cailin O'Connor Fitzpatrick

“Summer 2023 Fish Inventory of the Hackensack River Drainage (2023)”

This project summarizes the results of the summer 2023 iteration of the Meadowlands Fish Inventory in and around the Hackensack River. The Hackensack River is a brackish, tidal river surrounded by urbanized areas and invasive Phragmites flats. These inventories are conducted by the New Jersey Sports & Exposition Authority to understand changes in the ichthyofauna of the Meadowlands over time. All sampling was completed within the regulations and limits of NJSEA's state approved sampling permit. Sampling took place 3-4 times per week in accordance with favorable tidal conditions from June - September with a set number of collections for each sampling type. Sampling types included trawls, seines, and trap-nets. Over the course of the season, 934 individuals of 28 species were recorded. The most common species encountered were White Perch, Spot Croaker, Mummichog, and Atlantic Menhaden, together comprising 80% of all individuals. Many new species that had not appeared in previous Meadowlands Fish Inventories were found during this survey, such as non-larval Atlantic Croaker, Black Sea Bass, and Black Drum. Reasons for noted changes in the compiled ichthyofauna data are presently unknown.

MATTHEW WOLFE

Faculty Mentor: Cailin O'Connor Fitzpatrick

“2022-2023 Comparison of Avian Biodiversity Before and After Revegetation on Erie Landfill”

Bird abundance and diversity were compared before and after invasive plant species remediation on a capped landfill in North Arlington, New Jersey. Data were collected during the summer breeding season and fall migration of 2022 and 2023, before and after removal of invasive plants. Data collected in summer followed Monitoring Avian Productivity and Survivorship (MAPS) protocol. In summer 2023, the landfill was revegetated with native plants. Prior to revegetation, the habitat of Erie Landfill was primarily made up of invasive Mugwort (*Artemisia vulgaris*) and Common Reed (*Phragmites australis*). The landfill was revegetated with native grasses and forbs (eg. Echinacea, milkweed) and shrubs (eg. bayberry, sumac). Sampling avian diversity in revegetated areas showed an increase in both species richness and abundance after revegetation. At one site, 44 individuals of 12 species were banded in 2022 while 206 individuals of 19 species were banded in 2023 after revegetation. These data will be published to emphasize the benefit of native plants on avian biodiversity.

KEITH WAMAH*Faculty Mentor: Daniela Shebitz***“Growth Comparison of Sweet Basil (*Ocimum basilicum*) Grown Using Compost from Kean University’s In-vessel Composter Versus Synthetic Fertilizer”**

Synthetic fertilizers (SF) are relied upon in 30-50% of all agricultural production and are the most significant contributors to soil nutrient input (Stewart et al., 2005). While SFs often improve food production, they also have negative impacts on the environment that are costly to mitigate. Compost, a much older soil improvement method (Sidder, 2016), can enhance the quality of nutrient-exhausted soils while decreasing surface runoff (Ashrap & Cathey, 2019). It can potentially be used as a substitute for SF, providing similar benefits without negative environmental impacts. The composter at Kean University (KU) turns food scraps obtained from dining facilities on campus into compost in less than a week. It has been in operation since 2010 and has processed over 600,000 lb. of food waste (Kean University, 2021). This study was designed to compare the growth of plants with KU’s compost and SF as nutrient sources. Over 45 days, in a greenhouse at KU, an experiment was carried out using two groups—synthetic fertilizer (SF) and compost (CP). Each of the groups had three treatments with six replicates: the CP group was treated with compost at 25%, 50%, and 75%; and the SF group contained solutions of FloraMicro and FloraGro, at concentrations 6.0 ml/gal and 5.6 ml/gal, 6.8 ml/gal and 6.4 ml/gal, and 8.5 ml/gal and 8.0 ml/gal respectively. The study’s objective was to use the compost produced by the KU’s composter to test the growth—shoot height, fresh weight, and leaf quantity—of sweet basil (*Ocimum basilicum*), an aromatic plant of the Lamiaceae family (Ciriello et al., 2020), to that of SF. The alternative hypothesis for this study was that there will be a statistical difference in basil growth between the two media. Using a one-way ANOVA test, the results revealed that at $p = 0.05$, statistically, there was no significant difference in the shoot length and leaf quantity between the SF and CP groups. There was indeed a significant difference in the fresh weight between the treatments, with basil from the SF group having a greater mass at harvesting time. The qualitative analysis showed that the CP group treated with 25% compost could replace SF due to its overall samples’ health and survival rate. The result of this study is important because it provides practical evidence that can sway the community to use CP instead of SF, which can reduce environmental pollution and protect the environment.

RENATO MENDEZ, ALYSSA MOFFITT, AYUSH PATEL*Faculty Mentor: Brenna Levine***“Effect of Urbanization on Invasive Spotted Lanternfly Body Size”**

Body size is an important trait related to reproductive success and overall fitness, and in ectotherms, it is affected by the temperature of the environment. According to an ecological principle known as the temperature-size rule, cooler environmental temperatures result in slower development but overall larger adult size. While the temperature-size rule is most often considered with regards to latitude (i.e., Bergmann’s Rule), the warmer temperatures in urban environments (i.e., urban heat island effect) may similarly affect body

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size. Here, we used the invasive spotted lanternfly as a model to understand how urbanization affects ectotherm body size. The spotted lanternfly (*Lycorma delicatula*), an invasive insect native to China, began to invade the mid-Atlantic and northeastern regions of the United States circa 2014. In Fall 2021, we collected 872 spotted lanternflies from 51 sites spanning an urban-rural gradient. Using digital calipers, we took two body size measurements for each individual: the distance from the nose tip to the wing tip and the distance from the nose tip to the abdomen tip. We also calculated this measure, the ratio between the two body size metrics. We used arcGIS to quantify percent impervious surface for each site from the National Land Cover Database as a proxy for degree of urbanization. Mean percent impervious surface at each site ranged from 5% in rural areas to 64% in urbanized settings. We report on the relationships between percent impervious surface and body size metrics for males and females. The results of our study clarify the relationship between urbanization and body size with important implications for the management of invasive ectotherms.

ASHLEY CARDOSO

Faculty Advisor: Adara Goldberg

“The Warsaw Ghetto Uprising”

The Warsaw Ghetto, established by Nazis in 1940, aimed to consolidate the entire Jewish population of Warsaw, Poland into a confined area. As it became the largest ghetto in Europe, Jews forced to live here faced harsh conditions from German soldiers, along with constant threats of deportation. The ghetto itself had horrible conditions, with many becoming sick from diseases or suffering from starvation with little food. Those trapped in the Warsaw Ghetto began to collectivize and resist the violence from the German soldiers. These groups began to solidify into a civilian army, and this army put up a fight against the Nazis for weeks, before ultimately falling to German aggression. The period of conflict framed by the Polish Jews resistance to Nazi power is known today as the Warsaw Ghetto Uprising. This study examines the Jewish response to the Warsaw Ghetto, and examines the subsequent uprising that emerged from the internment.

**RUNDONG LI, HAORAN WU, QIANGWEI WENG, XUN SHAO,
JIASHUO WANG, MINGHONG GAO***Faculty Mentor: Israel Curbelo***“Exploring Markov Decision Processes for Reinforcement Learning in MiniGrid”**

This project endeavors to bridge the gap between theoretical reinforcement learning (RL) frameworks and practical application, focusing on the enhancement of RL algorithms through Markov Decision Processes (MDPs) within the MiniGrid environment, part of the OpenAI Gym suite. MiniGrid, known for its modular and challenging scenarios, provides a versatile platform for exploring the capabilities and limitations of RL algorithms in navigating complex tasks. The initiative is rooted in the application of MDPs to model the environment's dynamics, facilitating the exploration of how agents can develop optimal strategies for task completion through iterative interaction, without prior knowledge of the environment's intricacies. The exploration begins with a foundational discussion on RL and MDPs, followed by an introduction to the MiniGrid environment and the specific challenges it poses for RL agents. Subsequently, the project outlines the selection and implementation of various RL algorithms, including Policy Iteration, Value Iteration, Q-learning, and Deep Q-Networks (DQN), demonstrating their theoretical underpinnings and the motivation behind their choice. A significant portion of the project is dedicated to experimental analysis, where we rigorously evaluate the algorithms' performance across diverse MiniGrid scenarios. This examination not only benchmarks success rates and efficiency but also explores the impact of varying reward structures and state representations on learning outcomes. Crucially, the project is committed to exploring and implementing improvements to these algorithms, aiming to enhance their adaptability, convergence speed, and overall effectiveness within the MiniGrid framework. Our findings contribute to the RL field by offering a detailed comparison of algorithmic performance, underscored by insights into the essential factors that influence the success of RL agents in discrete, challenging environments. Moreover, by proposing and evaluating algorithmic enhancements, this study advances the understanding of how theoretical RL principles can be optimized and applied to solve practical, complex decision-making tasks.

GEORGE SIMONOVICH*Faculty Mentor: Sardar Mohib Ali Khan***“Structure of Zero Divisor Graphs”**

Zero divisor graphs were introduced by I. Beck [1] in 1988 to study the combinatorial and structural properties of a commutative ring R . We will consider the ring of integers modulo n , \mathbb{Z}_n for our study. The graph structure of zero divisor graph upto isomorphism and invariant like diameter, clique, eccentricity, girth and radius has been discussed in recent years [2, 3] for special cases like

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Zpk or $Zpk \times Zq$ t for $k, t = 1, 2, 3$. We will extend the study by investigating the structural and combinatorial properties for $k, t > 3$ and for composite numbers $n = p \cdot k \cdot q \cdot r$ where r can be a power of prime or composite number.

HANNAH MALKO

Faculty Mentor: Israel Curbelo

“On-line Interval Partitioning in Proper”

The on-line coloring of interval graphs, in which intervals are drawn on the real line and cannot share a color if intersecting, is the problem of finding the most efficient algorithm for allocating data. It can be represented as a two-person game played by Alice, who presents intervals, and Bob, who colors those intervals arbitrarily. For the presented problem, once an interval is drawn by Alice, it must be colored by Bob before the next interval is presented. Once a color is designated it cannot be changed. Alice's goal is to force as many colors as possible, while Bob attempts to minimize the number of colors used. The number of intervals that can intersect at a given point on the graph is denoted by the letter w . We consider the problem restricted to proper intervals, meaning intervals of any length may be presented but no interval can be contained by another. For on-line coloring of proper interval graphs, the upperbound is $2w-1$ (Chrobak & Slusarek, 1981) and the lower bound is $3/2w$ (Epstein & Levy, 2005; Biro & Curbelo, 2023). For over 40 years, the problem remained open for $w > 3$. We solve the problem for $w=4$.

DAN MCCLUNG

Faculty Mentor: Raymond Viglione

“Generalizing Bertrand's Paradox”

Bertrand's Paradox begins with a circle with a radius of one with an equilateral triangle inscribed inside. The problem is to determine the probability that a randomly selected chord is longer than one of the sides of the equilateral triangle. Despite seeming like a simple geometry problem, the process by which a chord is randomly selected leads to seemingly contradictory results. It is expected that regardless of the method used, the probability of this occurring should not change, since the diagram of the circle and inscribed triangle do not change. However, three common methods used to solve lead to unequal probability values, which has resulted in the problem receiving much interest from mathematicians. This project is intended to see if the paradox still exists when the equilateral triangle is not fixed. It is desired to see if the paradox exists for an equilateral rectangle, pentagon, hexagon, or a polygon with any number of sides greater than three. Each of the methods used for the original interpretation of the problem is applied to the problem, just without fixing the number of sides of the polygon at three. As a result, equations are derived for each individual method where the probability can be determined by substituting any integer for the number of sides in. This allows a generalized form of Bertrand's Paradox so that more meaningful interpretations can be examined.

NATALIE OLENKOVSKY*Faculty Mentor: Sharmistha Das Iyer***“Food Insecurity and Its Impact on College Students”**

This study investigates the issue of food insecurity among college undergraduates focused on the undergraduate population at Kean University, and its effects on physical well-being and mental health. The research aims to challenge the normalization of food insecurity as a common element of the college experience. Utilizing a Quantitative approach, surveys were distributed through email, social media, and in-person interactions to collect the data on demographic information, the perception of food insecurity in students' lives, and the impacts of it on their mental and physical well-being, with different questions for one portion of the survey for commuters and those who live on campus to gauge the impact of the campus environment. Over three weeks, 40 students responded to the questionnaires. The research explores students' perceptions of food insecurity in their lives and its varied impacts. The study delves into the students' participants' perceptions of food insecurity and its varied impacts on physical and mental well-being. The results reveal a significant disconnect between students' self-perceived food security and the objective prevalence of food insecurity as interpreted by the study's adjusted food insecurity raw scores, as a substantial majority of participants, especially those falling into the first-generation and commuter demographics, face some level of food insecurity without being fully aware of it. Food insecurity significantly affects Kean University students, necessitating a cultural shift and supportive policies. Proposed interventions include campus-wide awareness initiatives, destigmatization efforts, improved financial aid accessibility, and policy changes promoting affordable, nutritious food options.

GEORGE SIMONOVICH*Faculty Mentor: Jun Cheng***“New Jersey Coastal Wave Changes”**

Climate change has caused meteorological and environmental shifts, and our coasts are experiencing more frequent and energetic storm impacts, which caused severe impacts on coastal infrastructure. Beaches and near shore infrastructure play a critical role in New Jersey's economy; thus, to better understand the localizations of this effect, this research will be undertaken to detect changes in wave activity off of the New Jersey coast. In order to do this, wave data from National Oceanic and Atmospheric Administration's stations 44009, 44091, and 44065 was collected. This data, spanning over three decades, allowed for a standard normal distribution to be assumed and from which a significant wave height was determined. Given these parameters, changes in the probability of such waves as well as the overall changes in wave activity was extrapolated. This data can be used to better understand oceanic wave activities off the New Jersey shore as well as give insight into coastal vulnerability and sustainability.

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XINYI SUN, YUYANG ZHANG

Faculty Mentor: Maryam Cheraghy

“The trajectory optimization for autonomous wireless communication via machine learning”

Drones often operate under stringent time constraints, particularly in tasks such as geographic surveying, agricultural monitoring, and emergency response. Thus, developing trajectory optimization strategies capable of completing tasks within limited timeframes while maximizing data collection has become a pivotal focus of contemporary research. Prior literature has proposed various trajectory optimization techniques, including model-based predictive control and heuristic search strategies. In response to these challenges, this research endeavors to devise a method facilitating efficient trajectory planning in unknown environments. Deep learning and reinforcement learning serve as the core technologies due to their capacity to enable drones to learn and adapt through real-time interactions with the environment. This study employs the Deep Q-Network (DQN) algorithm, which enables drones to make decisions autonomously when confronted with unfamiliar obstacles, without relying on detailed prior environmental knowledge. Firstly, The environment and behavior of drones are modeled using Markov decision processes (MDP) to make appropriate decisions in unknown environments. Secondly, we use data sample acquisition technology to obtain a large amount of data for training by simulating the flight of drones under different environmental conditions. This data is then used to train the Deep Q Network (DQN), which enables the drone to autonomously adjust its flight trajectory based on the state of the environment to maximize data collection efficiency. Finally, the effectiveness and feasibility of the proposed method in practical scenarios are verified by the UAV data acquisition simulation. With further experiments and data analysis, we will provide a more comprehensive evaluation and performance analysis of the method.

AMELIA VELEZ, VICTORIA VILLANUEVA, AMANDA SWARTWOUT, IRENE TAGGART, MARCIA WALKER

Faculty Mentor: Dawn Adams-Harmon

“Elizabeth Board of Education v. Nelson, 466 N.J. Super. 325”

A non-jury trial argued from November 10, 2020 and decided on January 26, 2021. Kirk C. Nelson, defendant, is a licensed attorney in the State of New Jersey. Nelson worked for numerous years for the Elizabeth Board of Education counsel before entering into a three year employment contract to “maintain stability in the back offices”. The agreement was an annual salary of \$175,000, with annual increases of two and a half percent. Nelson could not be fired during these three years unless there was a breach of obligations, connection of a felony or a crime involving moral turpitude, gross negligence or intentional misconduct. On January 8, 2014, Nelson received a letter from Elizabeth Board of Education stating that on December 23, 2013 the Board had a meeting and approved Nelson’s termination effective immediately, although Nelson’s contract did not end for another eighteen months, entitling him to \$273,546.88. Nelson’s contract was broken against the guidelines seen fit to terminate him. We will be outlining

the ethics that were violated in this case and to do our own research on how or why this could've occurred.

WEIXUN XIE, SIHAN FU

Faculty Mentor: Abootaleb Shirvani

“Exploring Extreme Downside Risks: A Comparative Analysis of the S&P 500 and CSI 300 Index Using Various Risk Metrics”

This research project conducts a comparative analysis of the S&P 500 and CSI 300 Index over a ten-year period to investigate extreme downside risks. The study employs a range of risk metrics, including drawdown, Value at Risk (VaR), and Conditional Value at Risk (CVaR) methodologies, with a focus on assessing and contrasting the markets' risk exposure at significant confidence levels during periods of extreme downside movement. To capture the evolving dynamics of extreme downside risks within each market, a comprehensive dataset spanning a decade is utilized. The research adopts a rolling window approach, recalculating the risk metrics with a one-day forward shift of the window to ensure relevance and adaptability to changing market conditions. This methodology provides a nuanced understanding of risk exposure over time. Furthermore, the study integrates stock returns with the risk metrics to shed light on the intricate relationship between market performance and risk management. By employing visual representations, the research offers insights into the risk-return trade-off within the S&P 500 and CSI 300 Index, providing an understanding of how extreme downside risks impact investment outcomes. The project's primary objective is to unveil the distinct risk characteristics of these major stock exchanges, contributing to the advancement of risk management practices. The findings aim to inform investors, policymakers, and researchers about the nuances of extreme downside risks in financial markets. By empowering stakeholders with valuable insights, the research facilitates more informed decision-making and robust risk mitigation strategies in an ever-changing financial landscape.

KRISTINE BRAGG, LAUREN DONOHUE

Faculty Advisor: Brian Baldwin

“Pre-Covid vs Post-Covid Mathematical Standardized Test Scores New Jersey VS South Carolina”

The purpose of this study is to investigate the factors that may influence student achievement in math and science in New Jersey and South Carolina. Specifically, we will be analyzing the data of pre-covid to post-covid test scores. Analyzing the data from the state Department of Education on student performance on standardized tests, as well as information on teacher qualifications, school funding, and other factors. By analyzing this data, we hope to identify any patterns or correlations that may exist between these variables and student achievement. The findings of this study may help to inform policy decisions and target resources in ways that can improve student performance in STEM subjects, as well as inform efforts to recruit and retain high-quality STEM teachers and

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improve conditions in schools serving disadvantaged populations. Additionally, understanding the relationship between teacher and school characteristics and student achievement may help to inform efforts to recruit and retain high-quality STEM teachers and improve conditions in schools serving disadvantaged populations.

KIERA REDFERN, THAIRAH CASTILLO, ALEXANDER KEATING, WESLEY LEWIS, CHEYENNE SMART, ORKA KALDS

Faculty Advisor: Brian Baldwin

“Absenteeism Archives: Chronic Absenteeism Patterns Over the Past Decade in New Jersey Public Schools, Organized by Socioeconomic Factors”

This research investigates the prevalence and trends of chronic absenteeism in New Jersey public schools over a decade-long period from 2012 to 2022, with a focus on the influence of District Factor Groups (DFGs). Chronic absenteeism, defined as missing 10% or more of school days for any reason, has significant implications for student academic achievement and long-term outcomes. By analyzing extensive data encompassing diverse socioeconomic and demographic factors, this study aims to discern patterns and disparities across different DFGs. The methodology integrates quantitative analysis of attendance records with qualitative examination of socio-economic indicators within each DFG. Through regression modeling and trend analysis, this research elucidates the relationship between DFG classification and chronic absenteeism rates, considering factors such as income levels, parental education, and community resources. The findings provide critical insights into the complex interplay of socio-economic factors and educational outcomes, offering actionable recommendations for targeted interventions and policy strategies to address chronic absenteeism effectively. Ultimately, this research contributes to a deeper understanding of the multifaceted dynamics shaping educational equity and student success in New Jersey's public schools.

KAYLA VARES, TATIANA DEL VALLE

Faculty Advisor: Brian Baldwin

“Analyzing Chronic Absenteeism Trends in New Jersey Schools: A Comprehensive Study from 2012 to Present”

This research conducts a thorough exploration of chronic absenteeism in New Jersey schools, spanning the extensive period from 2012 to the present day. Employing robust data analysis techniques, we seek to unravel intricate attendance trends, discerning patterns and potential influential factors. Our investigation extends beyond the surface by examining correlations with a spectrum of socio-economic variables, educational policies, and community characteristics. By navigating through this complex interplay, we endeavor to pinpoint the root causes of persistent student absenteeism. The insights gleaned from this research have the potential to serve as a compass for targeted interventions and evidence-based policy recommendations. Ultimately, our objective is to contribute to the development of an educational landscape in

New Jersey that addresses chronic absenteeism systematically, thereby fostering an environment conducive to improved academic outcomes for students statewide. This research endeavors to be a vital resource for educators, policymakers, and stakeholders invested in enhancing the educational experience in New Jersey schools.

MCG | ARCHITECTURE

ABIGAIL BOUSSIOS

Faculty Mentor: Venesa Alicea-Chuqui

“Equitable and Inclusive Design”

Gender bias can be found in the design of public, urban spaces. Women historically do not have a significant voice in the way our communities are planned and developed. A recent 2022 report from the United Nations Development Programme highlights that “most cities are built by men, for men, with little or no thought for women’s and girls’ needs, aspirations or safety.” In observing the sustainable goals depicted by the United Nations, we can understand that reducing inequalities, especially under gender equity, and the well being and safety of our communities is a necessity as much as it is a priority to create welcoming and inclusive environments for all to experience. Our public, communal spaces influence and shape the social dynamics of society, affecting peoples mental health and well-being. Density, visibility, accessibility, transportation, diversity, lighting, and shading are all inclusive urban elements to review in designing safe and inclusive spaces. My research explores how these inequitable, gendered spaces in our urban environments create obstacles for women such as violence, indigence, unequal/limitation of job opportunities, and a deficiency in the ability to voice their opinions in public/private decision making. In analyzing data completed in a survey, it seems that simple public amenities, such as visibility, lack of lighting, walkable areas, and so on are elements that make women feel unsafe in urban areas. Equitable design in urban areas can create spatially dynamic, inclusive, and safe spaces for women to experience.

GIOVANNY MARTINEZ CANO

Faculty Mentor: Venesa Alicea-Chuqui

“NetWeb Center”

The NetWeb Center represents a bold departure from conventional data center design, transcending the mere storage of servers to embrace a holistic vision of community integration and technological innovation. Unlike its traditional counterparts, which are often relegated to utilitarian structures, this groundbreaking facility reimagines the very concept of data infrastructure. By leveraging an external structural system, the center liberates its interior space, allowing for unparalleled experimentation and creativity. Central to this transformative approach is the repurposing of servers as dynamic, non-

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structural dividers, seamlessly blending functionality with architectural form. These innovative partitions not only delineate distinct zones within the center but also serve as catalysts for collaboration and interaction. Through this synergy of technology and design, the NetWeb Center becomes more than just a repository of data; it evolves into a vibrant ecosystem where ideas flourish and communities thrive. As a beacon of progress and connectivity, the center not only facilitates the seamless flow of information but also fosters meaningful connections between individuals and communities. By embracing this forward-thinking ethos, the NetWeb Center heralds a new era in data center architecture—one defined by innovation, inclusivity, and human-centered design.

JASON MORGAN

Faculty Mentor: Stephanie Sang Delgado

“Designing For Food Equity”

In this fourth-year studio, we will be focused on studying the relationship between food, production, dining, and community at the scale of a large structure. Through this project, students are asked to think about biomaterials and organic matter as conceptual materials (food as a source of inspiration) while considering and designing a tectonic system. The proposed design for this food hub will not only serve as a growing facility for fresh ground provisions but it will also host aspects of educating surrounding residents on proper waste disposal while introducing aspects of waste production. Food waste may be brought back to this facility to then be converted into biodegradable substances. Throughout this multi level structure, it will host various indoor growing spaces both open to the public and to grocery stores for quick and easy access. Located on the second floor there will be hydroponic growing areas along with a dining area for locals to gather and enjoy the community atmosphere.

KAILEY VIERA, MILDRED ALVARADO, ASHLEY MASSANO, DALE MARTIN, STEVE CARDONAS

Faculty Mentor: Tracie Feldman

“Designing the Ideal Chemical Laboratory”

During the 2023 Fall semester, a team of architectural and interior design interns at campus planning were tasked to provide a functional layout for a chemical laboratory that would be constructed for approximately thirty students. With extensive research, the team was able to calculate the necessary square footage per person; the accurate placement of gas, water, ventilation, and electrical hookups; proper means of egress; acceptable materials; equipment and fixtures; and more. After the research process, each intern created their own floor plan based on their findings, and from there, the team communicated which aspect of each layout did and did not work. Everyone on the team updated parts of their layout that did not work, and they each came out with a unique functioning layout for a chemical laboratory. With the expansion of Kean’s STEM Research, these laboratories meet the standards and requirements of laboratory design while providing students with a space to learn and research effectively.

PENGCHENG YANG*Faculty Mentor: Saarinen Evan***“The Dune”**

After on-the-spot investigation of Wenzhou’s coastal conditions, I witnessed with my own eyes the significant ecological burden caused by the government’s crazy reclamation. Through this project, I hope to use eco-friendly artificial dunes to reshape the ecological status of this area and provide or return a living place to Wenzhou’s wetland birds (tens of thousands of migratory birds and even year-round birds live here every year) live in the coastal areas of Wenzhou, but their numbers are declining significantly every year as reclamation activities begin). Of course, the coastal areas of public activity that the government has wasted should also be recaptured. This project starts from the tidal sand bar abandoned by the government, where people can build small-scale dune basements using simple tools such as coconut shells and wetland plants, and then let the sea breeze complete their construction. The most important thing is that the whole process is Be eco-friendly. Further from the coast we have to use larger tools to build the foundations of larger dunes, but I believe the ecological advantages they bring far

ZIMU ZHOU, MARIA REYES*Faculty Mentor: Camille Sherrod***“A Live-Work Community for Migrants”**

The primary goal of this design-research project is to create a vibrant and inclusive space where individuals from diverse backgrounds can come together to learn, share, and appreciate culture. We believe that by offering a range of classes, workshops, and cultural events, we can foster a sense of community and provide valuable learning opportunities for immigrants. The proposed community space will feature dedicated areas for English language classes, cultural workshops, and a shared kitchen with a cafe. Additionally, there will be comfortable living spaces and amenities available for new immigrants who need some help for a period of time. Our vision is to provide a welcoming environment that promotes cross-cultural understanding and growth while supporting the personal and professional development of individuals from different walks of life. By offering English language classes, we aim to empower attendees with the tools they need to communicate effectively in an increasingly globalized world. The building design considers daylighting, sustainable material, and carbon-neutral design strategies, aiming to develop a low-cost and eco-friendly community. The building has a double-height space and a slope glass facade on the first and second floors, aiming to create welcoming spaces, and allow more natural light to come in to save energy. Additionally, there are loft spaces and small gardens on the third and fourth floor, to present the idea of sharing and co-living, creating communal spaces for more interaction. At the back side of the building, there are plans for setting more windows and skylights, which can improve the ventilation and illumination. We are enthusiastic about the potential impact of this community space and believe it will bring immense value to both the attendees and the wider community.

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MCG | GRAPHIC DESIGN

MYESHA BENNETT

Faculty Mentor: Denise Anderson

“Bravo Bambino - Create activities that foster creative movement, problem solving and collaboration”

Research shows that children are born with the capacity to develop empathy but it must be taught. Empathy assists in the forming and strengthening of our relationships and communities. Without it, people struggle with communication, and exhibit antisocial behaviors. Storytelling has always been an effective measure of transmitting important information and values from one individual or community to the next. In a survey of 840 parents, 68 percent reported that children five through eight years of age were missing the recommended amount of pretend play. Interviews with parents and educators confirmed this finding; expressing that their children’s learning benefited from opportunities to share stories and collaborate with others but they struggled in finding places that catered to the development of these skills outside of traditional education institutions. Bravo Bambino is an educational arts program that encourages children to create their own characters and engage in pretend play with various challenges for their characters to explore and overcome. Bravo Bambino aims to put children in the shoes of their characters and, through storytelling and play, understand their challenges and emotions and develop a deeper sense of empathy towards others.

MCCABE GALLAGHER

Faculty Mentor: Denise Anderson

“Waggin’ Tail Trail”

Waggin’ Tail Trail is a project that will embark on a heartwarming mission to transform the lives of shelter dogs by hitting the road and showcasing their unique skills and personalities from town to town. By bringing these lovable companions directly to communities. It not only helps give them the exposure they need to find forever homes but also dispels myths and misconceptions about shelter pets. Our dedicated team works tirelessly to highlight the beauty and potential of each dog, emphasizing their intelligence, loyalty, and affectionate nature. Moreover, Waggin’ Tail Trail is committed to ending the plight of kill shelters by actively promoting adoption as the best option. Through our outreach efforts and community events, we educate the public about the importance of adopting rescue animals and provide resources to support responsible pet ownership. Every mile traveled represents a step closer to the goal of ensuring that every shelter dog finds a loving family and a place to call home.

GABRIELLA LEDESMA

Faculty Mentor: Denise Anderson

“Keanu’s Lunchbox”

Research shows that 48% of college students report food insecurity and live without regular access to food. At Kean University specifically, more than half of the student body feels food insecure. The lack of food is associated with lower grades, a weak immune system, and increased fatigue. In addition, food insecurity can affect students’ performance in their classes. At Kean University, there is Cougar Pantry where students can receive food, but only a few know about this resource on campus. To help students learn more about services to help them with food insecurity, Cougar Pantry has created Keanu’s Lunchbox, a program that provides food insecure students food items they need. Keanu’s Lunchbox will strategically be located in highly populated places on campus to encourage more students to use the Cougar Pantry. Its purpose is to reduce the stigma around food insecurity on the Kean campus by making the Cougar Pantry a resource in students’ college life.

TYLER MCKLAINE

Faculty Mentor: Denise Anderson

“Blakroom”

To address the lack of cultural representation & neglect faced by black students which hinders their learning. According to Pew Research, 72% of students of African descent have reported that they feel as if their race makes it harder for them to succeed in the classroom. While 51% say they encountered discrimination in school then another 52% who say their intelligence was questioned. In a survey taken by 20 people, all agreed that the lack of cultural representation is a huge contributor to not feeling motivated or even heard within the classroom but having that representation would be a great benefit to feeling engaged in their school experience. To aid this problem, we must provide black students a space that is inclusive & educational for them. Project blakroom is an app that implements the cultural support & resources black students don’t receive in school already. Blakroom’s purpose is to empower these students to take off with what they can achieve!

JOHN SCHMIDT

Faculty Mentor: Denise Anderson

“Soul to Sole”

According to the Healthy Minds Network, nearly 40% of college students suffer from symptoms of anxiety and depression, making it the primary mental health concern amongst the demographic. If left untreated, anxiety and depression can lead to low self-esteem, directly worsen symptoms, and lead to issues such as distraction and mental detachment. In contrast, boosting self-esteem can improve physical and mental health, lead to more satisfying relationships, and improve school and work performance, as found in a 2022 study. Based on

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collected data from interviews and surveys, social media, public perception, and body image are the most relevant factors that negatively affect self-esteem, with some feeling as though their true self is undesirable to others. Survey participants also agreed that positive affirmations received from friends and peers and clothing they felt confident wearing were beneficial in raising their self-esteem. Soul to Sole is a shoe customization event facilitating positive affirmations through social interaction. The event aims to remind students they have a supportive social circle and to recognize their inner strengths.

GABRIELLE THOMPSON

Faculty Mentor: Denise Anderson

“EcoSpark”

Recent studies reveal a critical need for increased awareness regarding the benefits of renewable energy. 72% of Americans believe wind and solar power production should be implemented. Despite its potential to alleviate environmental impacts and reduce energy costs, a significant portion of the population remains uninformed. This lack of understanding hinders the adoption and advancement of sustainable energy methods at large. Studies reveal that a lack of awareness is a factor in the need for more use of renewable energy sources. Approximately 63% of individuals surveyed expressed limited knowledge about the economic advantages and environmental impact of embracing clean energy solutions. The world continues to advance towards sustainable energy, so ensuring our upcoming generations are educated on clean energy is essential. To address this issue, EcoSpark learning kits educate and engage children about the world of clean energy. These kits include manuals, experiments, and activities that teach children about renewable energy sources. For the parents, the kit would include an in-home energy survey assessment to educate them about the benefits of clean energy. EcoSpark seeks to empower children and parents with the knowledge to make informed decisions, fostering a collective shift towards a clean energy future.

DANIEL VALENTE

Faculty Mentor: Denise Anderson

“Pick It Up”

Studies show that beach pollution harms coastal wildlife, threatens human health, and can degrade the quality of life in coastal communities. According to the 2022 Ocean Conservancy report, it was found that there were over 3.3 million items, such as cigarette butts, bottle caps, food wrappers, debris, and fishing gear collected on U.S. beaches. Research also indicates that people are aware of the harm littering does to beaches but are not sure how to help. In a survey of 47 people, 53% said they are willing to participate in beach cleanups, only if it is locally. In the same survey, 63% of them are willing to help with beach cleanups virtually. To combat the problem of beach pollution, the Pick It Up campaign promotes an augmented reality experience of beach clean-ups. Pick It Up aims to inform people about the harms of beach littering, clean-up, and etiquette.

STUDENT POSTER ABSTRACT

REBEKAH GRACE VILLAMOR

Faculty Mentor: Denise Anderson

“Kinnect — Promoting Outdoor Exploration Through Interactive Events”

While the advantages of outdoor exploration are abundant, the current generation of children spends less time in outdoor activities than preceding generations. American children now dedicate 35% less time to outdoor play than their parents did in their youth. Additionally, The proportion of physically active 6-13-year-olds has declined, dropping from 26% from 2016-2017 to 24% from 2020 to 2021. This reduction is attributed to rapid urbanization, which has diminished natural green spaces and biodiversity, limiting children's opportunities for outdoor engagement. The prevalence of screen time is another substantial factor contributing to the decline, as 2-17-year-olds spend over two hours a day on screen-related activities and school-related screen time. Lastly, parental safety concerns, particularly fears of strangers and kidnapping, have increased reluctance to permit children to spend time outdoors. This decline in outdoor exploration has resulted in reduced physical activity among children, contributing to an upswing in childhood obesity and mental health issues, including anxiety and depression. Kinnect is an organization that partners with outdoor venues to create safe spaces, educate, and encourage outdoor exploration. Its purpose is to jumpstart families' healthy habits of outdoor exploration through fun and interactive events that parents and children can enjoy together.

MELANIE ZAMORA

Faculty Mentor: Denise Anderson

“Curly This Curly That”

Research indicates that 60% of the global population has textured hair, with studies revealing that 56% of individuals in the United States share this type of hair. Alarmingly, approximately 20% of this demographic lacks the necessary knowledge for effective hair care, leading to minimal maintenance efforts and a hesitancy to embrace their natural curls. This trend is particularly prominent among teens and young adults of both genders. Consequently, education is a crucial factor in enlightening individuals about appropriate products and optimal methods for textured hair. The foundational step in understanding textured hair lies within the classification of hair types and curl patterns. To bridge the knowledge gap and empower individuals with textured hair, the website “Curly This, Curly That” aims to educate them through a combination of practical tips and relatable stories from others who share similar experiences. Essentially, the effort is the creation of a dedicated website, serving as a comprehensive resource where people with textured hair can collectively learn and grow. Through accessible information and shared insights, this platform seeks to assist a community that embraces and celebrates the diverse beauty of textured hair.

MCG | INTERIOR DESIGN

DAVIDA ALFORD

Faculty Mentor: Jeffery McCullough

“Research Based Design on Liberty Hall”

The scope of the project was to reinterpret a cold storage space at Liberty Hall. The cold storage is located on the lower level of the home and was used and worked in by the enslaved individuals who lived at Liberty Hall. This study's main focus is on the role research plays in interior design. The research was essential as it provided necessary context on the house, the people who lived there, what the spaces were used for, and the design choices. This study included a step-by-step process on how research allowed the cold storage in Liberty Hall to be recreated accurately. Observation, secondary research, and Interviews were used to assess the space. The use of background information resulted in the space being properly interpreted and functional in the context of that time period. The design also considered that the enslaved only had access to certain items and areas of the house.

AMANDA DEMBOWSKI

Faculty Mentor:

“From Survival to Success”

This project was intended to do research about how global pandemic affects small to large businesses. Throughout our research it was provided the understanding of how many businesses fail when hit with global pandemics. We also measured the methods small businesses can survive global pandemics as well as results shown from polls and graphs about small businesses. There was heavy research involving the most recent pandemic, being COVID-19, and how many businesses throughout the world were affected negatively by this tragedy. We did also research how businesses thrived and found ways to be an overall success throughout such hardships, as well as how a global pandemic can be used as an advantage for some companies and their profits. We used many resources and research, along with the charts found throughout our process. There is a good visual representation of how the correlation between global pandemics and business failure and success rates look in reality.

SARAH JOLLY AND RIDA SAJJAD

Faculty Mentor: Mark Yuschak

“Designing a Sustainable Daycare”

To create a sustainable world, we start with the buildings we live and work in. Today's children are not exposed to enough nature with the technology that is around. By creating a sustainable and nature inspired space, children can spend their formative years in an indoor environment with clean air, and an outdoor

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environment that allows them to explore the space around them. Having a rough terrain to explore, allows their imagination to run wild, giving them the interest to explore and learn. Although technology has a huge positive impact on our lives, it has also caused children to have short attention spans and the need to stay glued to their tablets. Additionally, many materials used in the indoor environment are actually very harmful for our health. They have short life cycles, and with every renovation comes a new pile of wasted materials in a landfill. By using sustainably sourced materials, and products that can be recycled into new ones, we can create a space that leaves a positive impact on the end-users, while also leaving a positive impact on the environment.

GIANNA PRINZO

Faculty Mentor: Lydia Kaplan

“Redlining in New Jersey and its Effects on Non-White Communities”

This study explores the history of redlining in the United States and analyzes the effects of the practice on non-White communities living in New Jersey. New Jersey has four major redlined areas: Newark, Atlantic City, Trenton, and Camden. Four local counterparts were found near these major areas: Scotch Plains, Linwood, Hamilton Square, and Cherry Hill, respectively. A study was done comparing crime rates, health issues, education rates, and wealth gaps for all eight of these cities. The study found that in the four major redlined areas in New Jersey, the non-White communities within them experienced significant negative effects compared to their counterparts. This is directly related to the practice of redlining done by the Federal Housing Authority (F.H.A.) and Home Owners Loan Corporation (H.O.L.C.) in the 1930s. Although the practice of redlining was done decades ago, the discrimination created by the Federal Housing Authority and the Home Owners Loan Association is still felt by non-White communities living in New Jersey today.

JULIANA ROSS

Faculty Mentor: Lydia Kaplan

“Impact of Colors on Food Labels and Preferences”

Color is present in food and can significantly influence our food preferences. This study aims to examine how individuals are affected by businesses' use of color in labeling and packaging. Green is commonly perceived as a symbol of health, while blue and green are often associated with healthier food options. Contrarily, red is associated with sweetness and can increase appetite. The study results suggest that packaging with more intense coloring is perceived as tasting sweeter than packaging with low saturation. This finding has important implications for food companies, which can use color to influence the perceived taste of their products. In addition, the study included a questionnaire in which respondents were asked to choose a salad. The results showed that individuals preferred food dishes with more color combinations over those with less color. This finding highlights the importance of presentation in food, as color can influence our perceptions and preferences.

**STUDENT ORAL
ABSTRACTS**

**DANIELLE BRATHWAITE, LEYLA ADEM,
CAROLINA CABALLERO-MAYORAL, KEN CHEN, CLINTON ANTWI**

Faculty Mentor: Dawn Adams-Harmon

“Business Ethics and Social Responsibility”

The research project aims to conduct a thorough examination of the ethical dilemmas and corporate responsibilities surrounding a notable case of faulty airbags in Japan. This case study focuses on a prominent automotive manufacturer's unethical actions, wherein they knowingly distributed vehicles equipped with defective airbags, leading to a significant number of injuries and fatalities. Through an interdisciplinary approach encompassing ethics, corporate governance, and consumer safety, the project seeks to dissect the decision-making processes within the corporation, regulatory oversight failures contributing to the issue, and the multifaceted impacts on stakeholders, including affected consumers and the broader automotive industry. By critically analyzing the complexities of this case, the research endeavors to provide comprehensive insights into corporate accountability, ethical decision-making frameworks, and the imperative of prioritizing consumer safety in product development and distribution. Ultimately, this investigation aims to contribute to the advancement of ethical business practices and regulatory frameworks to prevent similar ethical lapses in the future. The Takata corporation is the main focus of the project research and how what they have done not only affected their customers but their business as well.

**KALVIN KUHN, MATTHEW ORTIZ, NIA OXLEY, CHYNA HOWARD,
AMIYAH MOORE, ANNA PAULOVKIN**

Faculty Mentor: Dawn Adams-Harmon

**“SEC Charges The Kraft Heinz Company and Two Former Executives for
Engaging in Years-Long Accounting Scheme”**

On July 2, 2015, two powerhouse companies of Kraft and Heinz decided to unite and create one corporation called, “Kraft Heinz”. For the first three years of the companies’ merger, the cost to profit ratio was alarmingly cost effective. This led to the start of an investigation conducted by the Securities and Exchange Commissions (SEC) to see if the company was committing financial fraud. After an investigation had been initiated, it was discovered that Kraft was indeed partaking in accounting misconduct. These accounting malpractices included the following: utilizing unearned discounts from suppliers, having false supplier contracts, and misprojected company financial records. Kraft Heinz received a lot of backlash from the economical world and resulted in a major fine as well. This hefty fine cost the company a massive sixty-two million dollars in fees and retributions. This would negatively impact the future of the company in a multitude of ways. Outside companies began to lose trust in Kraft Heinz and investors became cautious of their stocks, causing a 40% drop in 2019. Overall, when Kraft and Heinz linked together, they took an unethical approach on how a corporation should be properly managed. The company decided to utilize illegal actions for profit gains which

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resulted in severe consequences. Reference Press release. SEC Emblem. (2021, September 3). <https://www.sec.gov/news/press-release/2021-174> Reference: Press release. SEC Emblem. (2021, September 3). <https://www.sec.gov/news/press-release/2021-174>

JAMES MOMPOINT, IVORIE MELENDEZ, DIANA ROJAS, ANGELO DE VIRGILIO

Faculty Mentor: Dawn Adams-Harmon

“Simulating the Weighted Cost of Capital for Technology Firms”

This project will focus on the stock price and production correlation between three semiconductor companies (AMD, Nvidia, and Intel) along with Apple. All the companies in our study produce products that can be used in place for one another or can be used to work together depending on the product. Their products can work with one another but as well as can be a competitor to each other in certain products with one example being chips. Since all four of these companies work within technology we can see how much of a difference the stock prices have been in regards to their year to date prices and how their prices have been fluctuating. Also looking at what trends we can see as well as what is similar and what is different. The poster will present and analyze our findings on these topics while giving a little bit of a deeper understanding.

DENNY QUINTEROS, KATHERINE LOPEZ

Faculty Mentor: Chen Meng

“Does Immigration Negatively or Positively Impact the US Economy”

For Keans’ Research Day, both Denny Quinteros and I, Katherine Lopez, will complete a research on the main impacts that immigration has on the economy of The United States. Currently, many states in the country are experiencing a large amount of immigration, and many citizens are worried about how this can and will affect the economy. We will read and analyze different research articles that have been done on the economy during a high-frequency period of immigration and compare them with low-frequency immigration. From there, we will proceed to grasp and explain how they both correlate. Corresponding with the results of that, we will have a clearer understanding and will be able to answer if immigration positively or negatively affects the American economy, more specifically due to the current state of the American economy. We believe this is an important topic because, as citizens, we hope to see the economy of our country improve, benefitting all consumers as well as the firms.

**ABIGAIL WING, JEFFREY CALLAWAY JR., KRISZTINA BALOGH,
DUSTIN HARTENSTEIN, JOSEPH COSTE**

Faculty Mentor: Bo Wang

“Artificial Intelligence in Healthcare”

Artificial Intelligence (AI) is changing healthcare by improving patient care, making operations more efficient, and aiding medical research. With a growing market and diverse applications across diagnostics, personalized medicine, and administrative tasks, companies utilizing AI technologies stand to benefit from increased efficiency, cost savings, and long-term growth potential. AI uses technologies like machine learning, natural language processing, and computer vision in various healthcare areas such as diagnosis, personalized treatment, drug discovery, and patient management. In diagnosis, AI helps doctors interpret medical images and make accurate diagnoses quickly. AI algorithms analyze patient data to predict disease progression and recommend personalized treatments based on individual characteristics and genetics. AI also makes administrative tasks easier, improves patient engagement, and enhances healthcare delivery through tools like virtual assistants, telemedicine, and predictive analytics. Investors can capitalize on the growing demand for AI-enabled healthcare solutions by targeting companies developing innovative AI software platforms, medical devices, and digital health technologies. Overall, AI in healthcare presents an appealing investment opportunity that combines financial potential with beneficial societal outcomes.

CBPM | BUSINESS ADMINISTRATION & ECONOMICS

BRANDON BECHTEL

Faculty Mentor: Min-Chung Han

“Rinse and Repeat”

The “Rinse and Repeat” campaign, which is directed towards young adults between the ages of 18 and 30, seeks to reduce the negative environmental effects of single-use plastic bottles by promoting the use of reusable alternatives. The program, which aims to reduce plastic pollution, emphasizes the negative effects that using plastic bottles has on the environment, human health, and the economy. The program aims to increase awareness and promote sustainable habits through social media, and online collaborations with nearby companies for water refill stations, and the production of visually striking public installations. With an emphasis on the practicality and advantages of reusable bottles, it seeks to encourage a societal movement toward environmental responsibility. The initiative establishes quantifiable targets for cutting back on plastic usage and tracks results using social media analytics and community involvement. “Rinse and Repeat” is an all-encompassing initiative that aims to encourage people and

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communities to make thoughtful decisions, which will help to significantly reduce plastic waste and advance a healthier world.

KEVIN GARCIA CASTRO

Faculty Mentor: Nazif Durmaz

“Canadian Export to the United States”

This study examines the trends and dynamics of corn importation into the United States from Canada spanning the years 1967 to 2022. Utilizing data sourced from the United States Department of Agriculture’s Global Agricultural Trade System (GATS), the research analyzes the volume, value, and patterns of corn imports over the specified timeframe. The study employs quantitative analysis techniques to discern factors influencing importation, including agricultural policies, market demand, and production fluctuations. By scrutinizing historical trade data, this research aims to provide insights into the bilateral corn trade relationship between the United States and Canada, shedding light on its evolution, challenges, and opportunities over the past five decades. The findings contribute to a deeper understanding of transnational agricultural trade dynamics and inform policymakers, researchers, and stakeholders involved in the North American corn market. The coefficient b measures the effect of X on Y (interpreted differently depending on the context, e.g., as elasticity). Based on this data, we can perform regression analysis to understand the relationship between the years and the cost of imports. Let’s assume that the years are our independent variable (X) and the cost of imports in millions is our dependent variable (Y). This study examines the trends and dynamics of corn importation into the United States from Canada spanning the years 1967 to 2022. Utilizing data sourced from the United States Department of Agriculture’s Global Agricultural Trade System (GATS), the research analyzes the volume, value, and patterns of corn imports over the specified timeframe. The study employs quantitative analysis techniques to discern factors influencing importation, including agricultural policies, market demand, and production fluctuations. By scrutinizing historical trade data, this research aims to provide insights into the bilateral corn trade relationship between the United States and Canada, shedding light on its evolution, challenges, and opportunities over the past five decades. The findings contribute to a deeper understanding of transnational agricultural trade dynamics and inform policymakers, researchers, and stakeholders involved in the North American corn market. The coefficient b measures the effect of X on Y (interpreted differently depending on the context, e.g., as elasticity). Based on this data, we can perform regression analysis to understand the relationship between the years and the cost of imports. Let’s assume that the years are our independent variable (X) and the cost of imports in millions is our dependent variable (Y).

JUSTIN MORTON, KEILANI MELENDEZ, EVAN FORMOSO, CARYS MCDOWELL

Faculty Mentor: Min-Chung Han

“Technology Adoption and Employee Adaptation”

In our study, we want to understand how bringing in new stuff like computers or machines to work changes how well employees can work. We'll look at how hard it is for them to learn to use this new stuff, and how much better they get at using it over time. We'll also see how training and help from others affect how good they are with the new stuff, and how happy they are with their job. Our focus will be on a specific example: Siemens. They're a big company that's been making big changes to how they work by using more technology. We'll study how Siemens has been teaching their workers to use this new technology, making sure they have all the help they need. By looking at Siemens, we can see how important it is for companies to give their workers enough support when they're trying to get used to new things at work. We hope our study will show how important it is for companies to help their workers learn and use new technology. This can make the workers better at their jobs and happier with their work. It can also help companies be more efficient and successful.

LESLIE NEIRA, DAPHNE JULES, YAHILYN DURAN, LUCIO TOMAS, JONATHAN PAUTA

Faculty Mentor: Min-Chung Han

“Say NO to Plastic”

Promoting sustainable alternatives to single-use plastic water bottles is the goal of the “Ditch the Plastic Bottle” campaign. In light of the concerning increase in plastic pollution endangering both public health and ecosystems, it is critical to push for a transition to environmentally friendly hydration options. By means of focused educational programs, active participation in the community, and advocacy for policies, the campaign aims to enable people and groups to make knowledgeable decisions and embrace reusable water bottles as a straightforward yet significant measure in decreasing plastic waste. The campaign aims to make the future greener and cleaner for future generations by promoting a culture of mindful consumption and wide adoption of sustainable practices. Come along with us as we work to replace plastic water bottles with more environmentally friendly options for hydration. When we work together, we can change the planet for the better. We plan to target all ages in the market through social media platforms such as Facebook, Instagram, TikTok, LinkedIn, X, etc.

LEANDRO AZCONA, JOSEPH RUSSONIELLO, ELEANOR A CASIMIR, JAMANI LINK-PLEDGER, ANTHONY GUARANDA

Faculty Mentor: Min-Chung Han

“Unlock Your Wanderlust: Exclusive Travel Offers For College Students With United Airlines”

Our goal as a team is to motivate college students to unite with United to gain a long term relationship. We want to help United to connect with college students like students at Kean University. At United Airlines, we recognize that education involves more than just reading textbooks and attending lectures—it also entails traveling, experiencing, and learning about the world. We are therefore excited to provide our exclusive travel packages designed just for college students. Incorporate internships, study abroad, holidays. Market through emails college campuses or college parents professors and students You may make the most of your academic breaks by booking amazing excursions with United Airlines. We can help you plan a well-deserved holiday after finals, a study abroad semester, or a weekend break with friends. It's now simpler than ever to travel to your ideal locations without breaking the budget thanks to our flexible booking choices and affordable student tickets.

CRYSTAL FERREIRO

Faculty Advisor: Jung Ah Yun

“Jewish Renaissance Medical Center Inc.: Financial Statement Analysis”

This study will look at the revenue and expense structure of The Jewish Renaissance Medical Center Inc., through the utilization of various techniques. The Jewish Renaissance Medical Center Inc. is in Perth Amboy, Middlesex County. The JRMC Family Medical and Dental Center provides primary health, dental and preventive services to infants, children, teens, adults, and seniors. Their mission is to provide high-quality, evidence-based healthcare services to all patients regardless of economic circumstances. They make it their obligation to engage in community outreach programs and foster strategic partnerships that support their mission. JRMC is a Federally Qualified Health Center, which makes it possible for them to provide health services to the public despite their economic status. FQHC is a nonprofit or public community health center that fulfills certain health service criteria and receives specific government reimbursements and funding. As an FQHC some of the many services allow them to deliver are comprehensive primary care, a sliding free discount program and service medically underserved populations; despite the inability to pay or insurance status. The Jewish Renaissance Medical Center's vision is to improve the health and quality of life for their patients, by empowering them to make healthy choices.

RANIA GOBJI

Faculty Advisor: Jung Ah Yun

“Understanding Financial Information of Teaneck Public Schools”

As a member of the Teaneck community, reviewing the schools’ financial information is crucial to critique and understand where the money is being allocated, and ensure they are used in the best and most efficient methods. The mission of Teaneck Public Schools is to educate and empower students by providing a high-quality, rigorous educational experience that prepares students for success within a diverse, global society. Their goal is essentially to create the most ideal educational opportunity for its residents as students would be receiving the best educational and social-emotional experience. The sources of revenue include local tax levies, state resources, as well as federal sources, all of which entail several different layers. By evaluating the school budget, as well as looking into the district’s budget, plans can be developed to enhance the finances and budget plans for the upcoming year to create the most ideal financial stability for the community.

STEPHEN HEDBERG

Faculty Advisor: Rojas-Fernandez, Ruthann Russo, Bok Jeong

“How can Alcoholics Anonymous help increase sobriety in adult men in New Jersey?”

The compelling case for my question is due to approximately six percent of adults in the United States have an alcohol use disorder. About one in twelve men are alcoholics compared to one in twenty-five women (USHHS, 2022). I am focusing on adult men in my research question because of the proportionately higher level of male alcoholics within the U.S. population. Furthermore, approximately 68,000 men die from alcohol-related causes annually in the U.S. compared to 27,000 women (USHHS, 2022). Alcohol-related deaths are the third highest preventable deaths in the United States (Mokdad, 2005). This is extremely alarming because American society does not have an increased awareness of this deadly issue. There are approximately 20,000 gun-related murders annually in the United States, but politicians and media push for “gun control” (Gramlich, 2022). Why hasn’t there been more progressive discussion about ways to decrease preventable deaths? The leading causes of death in the United States are predominately preventable! Our legislatures and medical professionals need a more aggressive campaign to find effective methods to decrease preventable deaths, especially alcohol-related ones, significantly. My project will focus on the impact twelve-step programs, such as Alcoholics Anonymous, will have on increasing the health and well-being of program participants. As a result, it will help lower healthcare costs in the United States.

STUDENT ORAL ABSTRACT

DAYNIELLE MCDERMOTT

Faculty Advisor: Jose Rojas Fernandez

“How does the lack of access to healthy food options lead to diet related disparities in the African American Community?”

Food related health issues has been a pressing issue over the past few decades. This has been affecting Americans specifically more than other races but significantly people of the African American Community. There has been a high number of dietary connections stemming from needs and influences from various cultures. This specific type of food is referred to as soul food. Many health issues for many years have been caused from the high amount of fats and deeply fried foods. According to the National Library of Medicine, individuals should be taught the deadly effects in which their diets can impose on them. Much research has shown that a huge number of current disparities faced in the communities in today's society is due to an unhealthy diet, which in turn causes many deadly diseases. With ample amount of information shared, and research given many individuals will be aware of the impact in which their diets impose on their daily lives.

DAAIYAH MUHSIN

Faculty Advisor: Jose Rojas Fernandez

“How can healthy eating help improve the lifespan of African Americans?”

My findings will go into detail of how African Americans can expand their lifespans by eating healthier foods. Minorities tend to eat what is available to them within their own communities and that of which is affordable. African Americans have dietary preferences that are culturally originated and often deemed as necessity. These perceptions as well as family and friends continue to impact the continued health issues African Americans encounter. If African Americans were to incorporate a healthier diet, they will no longer face chronic illnesses that may enable them from living a healthy successful life, in addition to early death rates. The research will highlight the ongoing wellness benefits of a healthy diet versus that of a poor diet in an urban African American community. Eating healthy will bring about a change that is so desperately needed for people of color and the generations to follow.

MICHAEL OLEAGA

Faculty Advisor: Jung Ah Yun

“A Model UN for Intercollegiate Education: SRMUN Inc.’s National Growth Analysis”

After several years with SRMUN Inc., a 501(c)(3) Model United Nations nonprofit organization hosting multiple annual conferences in the United States, this study will examine the financial structure and stability of the nonprofit. SRMUN Inc. is entering its 34th year in providing colleges and universities in the United States the opportunity to both learn, compete, and network with fellow college students about international relations. To sustain the organization, participants pay two

sets of registration fees and these fees serve as the majority of the nonprofit's stability. Expenditures for the nonprofit include hotel venues and conference rooms, audio and visual, staff travel accommodations, select meals, storage, and other conference supplies. The organization, like many others, was heavily impacted by the COVID-19 pandemic and had to be resourceful to sustain itself. With historic financial information and recent numbers, an analysis will see how SRMUN Inc. manages to sustain itself despite what could be viewed as a fragile model.

KISHAN PATEL

Faculty Advisor: Jose Rojas Fernandez

“How does energy medicine help improve females who are affected by cancer in New Jersey?”

The purpose of this study is to see how energy medicine benefits and helps improve females who are affected by cancer. Energy medicine has multiple methods for an individual to use to have strength in their bodies and which it can boost their self-esteem. When energy medicine comes into effect, the individuals tend to feel different where it benefits their body and mind. Individuals who are diagnosed with cancer do feel the pain mentally and physically and they need a deeper sense of purpose in their body. Research has shown that patients with cancer use different methods of energy medicine to reduce the pain they are suffering from and help people reduce the stress they are under which leads to positive effects on their wellbeing. The findings of the use of energy medicines has shown that cancer patients have increased their peace of mind and boost their energy flows where they don't feel helpless.

TYREE THOMAS

Faculty Advisor: Jose Rojas Fernandez

“Ayurveda (Indian Medicine)”

Ayurveda (Indian Medicine) is considered one of the oldest of the traditional systems of medicine (TSMs) accepted worldwide. Despite the known wisdom in this traditional system of medicine, many stones are still left unturned and not fully explored. In my paper, I will examine some of the health benefits and drawbacks. My research will bring attention to Ayurveda's historical and basic principles that focus on the rich knowledge of plants, minerals, and animal-based products used to heal the body. In addition, this type of treatment is cost-effective when compared to current cost of western medication and treatment from health care providers. I will also explore the reduction in side-effect and other health-related issues that holistic based treatments can provide to patients and the overall health benefits. My hope is that my research bring to light the scientific evidence-based medicine and how it should/ can be integrated into western medicine.

STUDENT ORAL ABSTRACT

ZAINAB TIJANI

Faculty Advisor: Ruthann Russo, Jose L Rojas - Fernandez

“African Medicine”

Traditional African medicine plays an imperative role in many African countries. Their accessibility, affordability, environmental, spiritual, sociological values make them the number one option for many people over modern therapy. However, most people are not cognizant of how African medicine has an impact on pregnancy for women. The question is, is the impact positive or negative. In this paper, I will focus on what African medicine can provide for maternity care. I will dive deep into what African medicine is, and the benefits of its use in maternity care for African American women. My paper will explore the various African countries that have the highest and lowest rate of maternal mortality, in comparison with states in America. My method of doing research and collecting data to support my case will include exploring websites that have the articles, reports, or data pertaining to the topic of African medicine and maternity care. Coming from a Nigerian household myself, I would like to arrange interviews with older family members that have experienced African medicine first hand growing up, and their own experiences.

CBPM | FINANCE

JASON BAIRES

Faculty Mentor: Nazif Durmaz

“Brazil’s Import Dynamics: Exploring the Impact of International trade”

This paper investigates import trends, patterns, and significance in the general merchandise sector of Brazil, with consideration for the role of exchange rates and GDP per capita. Brazil has, for many years, been one of the world’s largest economies reliant on imports to meet the diverse demands of consumers and industry. The volume of imports in Brazil has varied over time, often in response to political, economic, and other circumstances attendant on a large country engaged in global trade, but especially in response to the influence of exchange rates. Fluctuations in the exchange rate call into question the competitiveness of imports, by making their cost more or less with regards to its domestically produced goods. In doing so, a country’s GDP per capita reflects the purchasing power and economic well-being of its citizens, impacting import demand. Although fraught with difficulties, imports help to fill the domestic production gap, satisfy consumer demands, spur innovation and fuel economic growth. Cognizance of import dynamics within Brazil’s general merchandise sector, along with the consideration of exchange rates and GDP per capita is therefore crucial in order that policymakers, business and other stakeholders can navigate the complexities of international trade and exploit opportunities for sustainable development.

CHENYIFAN JIANG, HUIYI RUAN

Faculty Mentor: Ahmed Alam

“Does managerial ability enhance banks’ technical efficiency during uncertain periods?”

This paper empirically explores the interlinkage between economic policy uncertainty (EPU), managerial ability, and banks’ technical efficiency. Taking a nonparametric approach, we use a data envelopment analysis (DEA) method to generate the bank-level efficiency scores. Based on a panel of US banks between 2011 and 2019, our results indicate a strong negative association between EPU and banking efficiency. This effect is valid for several components of EPU, such as the Federal, state, and local purchase disagreement, consumer price index, and tax-based EPU. Moreover, small and medium banks are more susceptible to increased uncertainty. Further analysis indicates that banks with better managerial quality remain more efficient during turbulent periods and this mitigation is persistent across the EPU components as well. The results are robust to a set of endogeneity tests based on propensity score matching (PSM) estimation. Our research findings offer important policy implications for bankers, regulators, and investors who are interested in efficient banking corporations during uncertain periods.

JOHN WALKER

Faculty Mentor: Chen Meng

“Economic recovery after Covid-19”

My friends outside of the economics and financial world often complain about the prices of goods and services not recovering after most of the issues surrounding COVID-19 have left us. From their perspective, I understand their questions. Why has one aspect of our society recovered while another hasn’t? The answer makes sense, and I’d like to be able to explain it to people in a way that makes sense to them as well. Most of the times in recent history where inflation has run rampant in the United States, it has been a demand driven inflation. This means producers can’t meet the demand of the consumers so they have to price their goods higher in order to compensate for it while this most recent inflation has been a supply side issue. This means that demand hasn’t changed for better or worse, but the supply that was meeting the demand previously is no longer, it has due to issues in the supply chain. Now we have seen some recovery and prices have reflected that, but it is nowhere near to where it was pre-pandemic. I’d like to do my project explaining the difference between the two types of inflation, and then explaining why we haven’t seen such a swift recovery as it might’ve been expected.

STUDENT ORAL ABSTRACT

HIJIE XU, HAORANWU

Faculty Mentor: Alam Ahmed

“Are ESG-friendly banks more stable during economic crises? Fresh evidence from Sri Lanka”

In recent years of globalization and climate change, there has been a growing public recognition of the importance of corporate environmental, social, and governance (ESG) activities. ESG factors are becoming increasingly important as investors seek to align their investments with ethical principles and sustainability targets. The banking sector, a vital component of the financial system, is in urge to promote sustainable growth and economic stability. Taking up the case of Sri Lanka, we conduct a fresh empirical investigation into the interlinkage between ESG-friendly practices adopted by banks and their impact on banking stability during economic crises. While prior studies examine the causal relationship between ESG performance and bank stability, there is little evidence on the role of ESG in ensuring banks' financial soundness during economic crises. The banking system in Sri Lanka has undergone cycles of heightened vulnerability due to external shocks and domestic economic issues, creating an appropriate context and offering strong motivation for the investigation. Our empirical findings indicate a positive relationship between ESG performance of Sri Lankan banks and their financial stability during the crisis. Furthermore, we discover that this effect is driven by a range of bank-specific characteristics, such as bank size, capital adequacy, and deposits and lending portfolio.

CBPM | GLOBAL BUSINESS AND ECONOMICS

MIA KRUYSMAN, BRIANNA PYSNIAK, LOMBEH BAINDU MUANA, MAKEILA RODRIGUEZ

Faculty Mentor: Min-Chung Han

“To Powerfully Reinforce The Hard Rock Brand”

Explore Expanse, is our innovative marketing agency, with a plan of presenting a strategic partnership proposal to amplify The HardRock Hotels brand. We are focused on expanding brand reach and enhancing customer engagement, Explore Expanse offers a dynamic approach that combines creativity and data-driven insights. The HardRock Hotels have been around for many years and has a very public presence. Our goal is to powerfully reinforce their brand, especially through community engagement. We plan to foster partnerships with local artists, musicians, and cultural institutions to show case regional talent and immerse guest in the local and music art scene, thereby creating authentic connections with the community. Not only that, but we also plan to partner with influencers or celebrities who align with the brand's image by collaborating with travel agencies, event organizers, and other relevant partners to extend the reach. We will utilize social media, influencers, and online platforms to amplify the campaigns and target appealing content that showcases the luxury and unique

experiences offered by HardRock Hotels. We will have exclusive events or pop-ups that bring the HardRock experience to life.

YENDRY MARTINEZ, ALEXANDRA DOMINGUEZ

Faculty Mentor: Mukul Acharya

“Impact of Inflation on Consumer Spending Patterns.”

This research project delves into the effects of inflation on consumer spending behaviors. Inflation, which refers to the widespread increase in prices of goods and services, plays a crucial role in consumer purchasing decisions and overall economic stability. Understanding how inflation affects consumer spending patterns is essential for various stakeholders, ranging from policymakers to businesses and individuals. Through a combination of quantitative analysis and qualitative research methods, such as surveys, interviews, and data analysis, this study aims to examine the relationship between inflation and consumer spending patterns. By analyzing historical data and current trends, the project seeks to identify how changes in inflation rates influence consumer behavior across different demographic groups and economic sectors. Key areas of investigation include the impact of price increases on the allocation of household budgets, consumer preferences for specific products and services, and the level of consumer confidence and purchasing power. Additionally, the research will explore how individuals and households adjust their spending habits in response to inflation, such as seeking out more affordable alternatives, reducing discretionary spending, or increasing savings. The findings of this research are relevant for a variety of stakeholders. For policymakers, understanding how inflation impacts consumer spending can inform the formulation of economic policies aimed at maintaining price stability and promoting growth. For businesses, insights into changes in consumer behavior can influence marketing strategies and pricing decisions. And for individuals, understanding how inflation affects their purchasing power can assist in personal financial planning. In summary, this research project aims to deepen understanding of the complex relationship between inflation and consumer spending patterns. By providing clearer insight into how inflation influences consumer behavior, this study seeks to offer valuable information to inform policies, business strategies, and individual financial decisions in an inflationary economic environment.”

CHEIK OUEDRAGO

Faculty Mentor: Chen Meng

“Impact of Currency Devaluation on Consumer Prices in an Economy”

“The devaluation of currency is common when there is a downward adjustment of currency’s value in a country to balance trade. The devaluation of currency in a country affects the stability of prices depending on the economic factors and the monetary policy responses. The devaluation of a currency decreases the cost of exports and increases the costs of imports, which makes them less attractive. With increased exports and decreased imports due to higher prices, a better balance of payments occurs with shrinking deficits (Mashao & Choga, 2023; Lavallière et al., 2023). This research evaluates the impact of depreciation

STUDENT ORAL ABSTRACT

on consumer prices in an Economy. The research design employed in this study is qualitative research design. The data collection methods included the review and analysis of existing secondary sources of information, including published market research, academic journals, published research, and government records. The analysis method is thematic analysis to identify the effects of currency devaluation on price movements in the economy. The findings of the research show that the devaluation the process affects the stability of prices depending on the economic factors and the monetary policy interventions used. Currency devaluation makes exports cheaper for foreigners while imports become more expensive for the country. The exports, therefore, have increased competitiveness as imports decrease. The high cost of acquiring goods in the affected country is transferred to the consumers, which leads to increased consumer prices and inflation pressure. To conclude, the devaluation of currency in an economy, therefore, increases consumer prices.”

**BERNICE TORRES SANTAMARIA, DALIZA URENA CLIME,
COLASIA WELCH, LIZBETH HERNANDEZ, EMELY MURILLO**

Faculty Mentor: Min-Chung Han

“Thrive Forward: Elevating Digital Success with Hopper”

Our company, Thrive Digital Agency, works to promote brand success in the world of digital media by encouraging interaction, generating conversation, and promoting long-term growth. In a time of digital connectedness and constantly changing consumer behavior, developing a strong marketing plan is essential for businesses hoping to succeed in competitive markets. This report offers a thorough marketing plan designed specifically for “Hopper,” a modern company looking to improve its brand awareness and connect to a target market of female college students ages ranging from 19-25. Acknowledging the enormous impact of social media sites, especially TikTok, our approach places a high priority on utilizing these avenues to significantly raise brand recognition and encourage deep engagement. Hopper wants to create a strong online presence, drive long-term growth, and develop a devoted following of customers through community development, targeted advertising campaigns, and strategic content creation. This report provides practical strategies and insights to help Hopper achieve long-term success in a dynamic market.

BRIANNA ANDERSON, MARIAMA, PRINCESS*Faculty Mentor: Min-chung Han***“Elevating Spirit Airlines, Elevating Your Experience”**

Spirit Airlines, a primary airline competitor is known for its affordable flights, however its brand faces negative perceptions in its company. Spirit Airlines lacks digital presence and has a difficult time promoting their brand to the corporate business audience. The goal of Skyhigh Innovators Marketing Agency is to improve Spirit Airlines pricing transparency, customer engagement on social media platforms and customer communication to improve its reputation as a whole. Skyhigh Innovators plans to elevate Spirit Airlines customer experience by enhancing and clearly communicating promotions and deals on the Spirit Airlines website while continuing to be the preferred budget-friendly airline. For example, registering for Spirit’s Loyalty Benefits program allows for discounts on luggage, complimentary beverages and snacks, as well as rewards to use on future flights. This communication includes text messages, emails, and digital advertising. Our agency plans to showcase the mission and values of Spirit Airlines and seeks to emphasize its positive “spirit.” By implementing services and offerings, Spirit can attract more clientele and diversify their flights. Our mission is to also generate collaborations with Spirit Airlines and charitable foundations where a percentage of proceeds from ticket sales will be donated.

MIRIAM ATLIXQUENO , KEVIN, LANDY*Faculty Mentor: Han, Min-chung Han***“Why would you consider Jetblue the next time you fly?”**

JetBlue’s is one of the best airlines out there. JetBlue offer a variety of different things that other airlines do not unfortunately provide. Due to their marketing team, they are not being talked of as much out there. That could easily be fixed by promoting it on different apps like Instagram, Facebook or TikTok. JetBlue has a lot of benefits such as free Wi-Fi on airlines, excellent seating quality and comfort. Our marketing agency can help improve them to market themselves more on Tik Tok which is the trendiest and most popular app right now. JetBlue can interest the younger generation so make JetBlue their top choice to when they are flying. Our marketing agency will triple their sales if they market themselves more on Tik Tok. This would be done by creating 1 minute videos of what Jetblue offers and even promoting videos with popular people or celebrities. Not only do you have their benefits but other companies that they are affiliated with.

STUDENT ORAL ABSTRACT

JORDON BRADY, JUAN QUIASUA, SETH KRUPA, SHAMS MEHER, MIGUEL LIMA

Faculty Mentor: Han, Min-chung

“Why electric vehicles are not as Eco friendly as we once thought”

Carrying your own reusable hand towel is a great sustainable practice that reduces negative environmental impact by minimizing paper towel consumption. Keeping a reusable hand towel can effectively reduce waste generation and increase natural resources. This reduces deforestation and landfill waste. The production of paper towels requires cutting down trees and they end up filling up landfills and creating unnecessary waste. With the addition of a reusable towel or a handkerchief it can reduce the use of paper towels dramatically and increase sustainability. They may not be cost effective in the beginning, but overtime it will pay off as an environmentally beneficial investment. The benefits of a hand towel is that it is more absorbent and better for personal hygiene. We are going to use social media platforms and target Kean students for this campaign. Our plan to raise awareness would be to carry our own towels and assess how many trees we saved for a week.

MCKENNA CAREY, CATHERINE BENITEZ, KAYLEE COREAS

Faculty Mentor: Han, Min-chung

“Upcycling Art Project”

Turn your trash into treasure by transforming waste materials into stunning works of art. Our Upcycling Art Project works towards reducing waste and turning it into artwork. Anything from old magazines to plastic bottles, the possibilities are endless with what you can use in your art. Gather any waste materials you have lying around, such as cardboard, paper, fabric scraps, glass jars, or old electronics. Repurposing materials challenges artists to think outside the box and find new ways to use everyday items. It encourages creativity and innovation by transforming ordinary objects into extraordinary works of art. This project is cost effective, using recycled materials can be more cost-effective than purchasing new art supplies. Recycling materials for art reduces the amount of waste sent to landfills, helping to conserve natural resources and reduce pollution associated with waste disposal. To help reduce any further harm towards the planet and help save it. Join us in spreading awareness about the importance of upcycling and reducing waste. Follow us on Instagram and Facebook to stay up to date on new ideas and contests! Use #TrashtoTreasure on your post of art work! Let's turn trash into treasures together!

ZIRI CHEN, YUQIAN XIANG, YIAN ZHOU, XUYI WU, YUJIE ZHENG

Faculty Advisor: Han, Min-chung

“Revolutionizing Paper Bags”

“In the current era of consumerism, people buy too many products with repetitive functions and pay more attention to small items that already have value. Therefore, we call on consumers to use the most common paper bags to make

various storage boxes. This project is targeted at women aged 18 to 35. This group of people is the main consumer. At the same time, they are passionate and creative, and are committed to handcrafting to achieve sustainability. Imagine putting those stands in paper bags in your kitchen into cute little boxes that can hold anything from your makeup to unused chargers and headphones. This DIY project is super easy to complete—just some cutting, folding, and a little glue, and you'll have a brand-new storage solution that's not only convenient, but also earth-friendly. We will publish our activities on these five platforms: Instagram, Facebook, Twitter, LinkedIn, and YouTube. These five social networks are by far the most influential and cover our target event demographic. This is hugely inspiring for anyone who enjoys handcrafting and caring about the environment. This idea will also lead to a trend in eco-friendly fashion, which while not necessarily a big deal, offers a great way to personalize your space without spending a lot of money. So, if you want to declutter your life and do your bit for the environment, this project is a great place to start. It's all about making the most of what we have and turning it into something beautiful and functional. Let's start handmade and make our little corner of the world tidier and more environmentally friendly!"

**ELIZABETH DOKU, MONICA ROBINSON, ALEISHA LEWIS,
GABRIELLE CARTWRIGHT, JANETTE VASQUEZ**

Faculty Mentor: Kyung Lee

"Gamestop"

For our Market Research final project, we challenged ourselves to find a solution to how the GameStop corporation was impacted by Digital Disruption, which resulted in lower sales from 2019 to 2023. Therefore, our group wanted to create a marketing strategy focusing on how the company can increase their e-commerce sales. Using a Judgment sampling, we designed an online Qualtrics survey with seventeen questions to conduct exploratory research to find out how GameStop can improve their services to appeal more to the evolving technology-savvy gaming community in 2023. We received 62 responses from teenagers and young adults (ages 18-24 & 25-31) Kean University students at the Union Campus. To analyze our results, we conducted a Difference in Means test and two Association tests. We actually found that there was no significant association between the age groups and having purchased a video game from GameStop in the last four years. Also, at a 0.05 level of significance, the average number of eighteen to twenty-four year-old Union Kean University students who purchased products at GameStop in the last four years does equal the average number of twenty-five to thirty-one-year-olds Union Kean University students who purchased products at GameStop in the last four years. Ultimately, we concluded that GameStop advertise gaming accessories and computer hardware, as well as building a stronger social media presence. Some limitations of our research were non-response bias, selection bias, non-sufficient demographic questions, and time-constraints.

STUDENT ORAL ABSTRACT

ITOROBONG JOSIAH

Faculty Mentor: Meng Chen

“The effect of a cashless economy”

“What is a cashless economy? To understand a cashless system of currency you must know what currency is. The standardization of money in a country as a medium of exchange. We all agree to use paper currency to buy physical objects. Before that we used gold, silver, and bronze and before that we used to trade one thing for another. We replaced the previous methods with lighter objects like the credit card which is an example of cashless currency. Many factors drive a cashless economy; the constant evolution of technology has been the main driver towards a cashless economy. The world as it is in terms of digital currency started in 1958 and has evolved rapidly even the most impoverished regions of the world have started the shift to a cashless economy. But that might not be a good thing. Financial exclusion might be one of the biggest hindrances towards a complete shift to a cashless economy individuals in impoverished nations will have a hard time getting savings accounts and the like they are much more likely to have increased financial insecurity due to bank fees and the like, cash is still used today due to its availability by older people who feel banks are unsafe and unbanked individuals, people with mental health issues especially might have a problem with a cashless society there are already people that believe the government is out to get their money and wish to return to simpler methods a cashless economy can leave these people with no way to interact with the world as it would be if we had a fully cashless economy. These are some of the effects of a cashless economy on the public. The idea of a cashless economy appeared long before the feasibility of cashless instruments (Bátiz-Lazo, Haigh and Stearns, Citation 2016). Works cited <https://www.tandfonline.com/doi/full/10.1080/15140326.2022.2052000>” Works cited <https://www.tandfonline.com/doi/full/10.1080/15140326.2022.2052000>” Works cited: <https://www.tandfonline.com/doi/full/10.1080/15140326.2022.2052000>

ALEISHA LEWIS

Faculty Mentor: Dawn Adams-Harmon

“Creating Resilience for Minority Female Workers and the Role of Flexibility in Work Environments: A Mixed Method Study”

Prior to the Covid 19 global pandemic, women and female minorities in the US were represented at lower organizational levels, however, exhibited dwindling numbers at higher organizational levels (Huang et al., 2019). The burden of home care responsibilities for women are double as compared to men and creates additional stresses to maintaining work-life balance (Medina & Lere, 2020). Gender role disparities continued to burden women during the pandemic and women were forced to take on additional home responsibilities in conjunction with remotely working (Bozkurt, et al., 2020) and it was found that it was more difficult for black and hispanic women to manage remote work due to lack of support and cultural aspects (Beuregard et al., 2020). This research was conducted with undergraduate students in an urban University in Union, New Jersey, to ascertain post-pandemic sentiments of what future female minorities desire for flexible work options. A mixed method study surveys and questionnaires were given to undergraduate

online and on-campus students. The results indicate that female students tend to regard flexible work arrangements such as hybrid work, more importantly than others.

ROBERTO OJEDA TELLO, BRANDON BUENO, THOMAS BJORN, BRYAN DIAZ, REECE GRAY

Faculty Mentor: Min-Chung Han

“Delta Airlines - Fly High and Touch The Sky”

Delta Airlines’ new campaign, “Journeys that Inspire,” invites travelers to rediscover the joy of flying. With a focus on safety, comfort, unparalleled service, and great price, you’ll get exactly what you pay for. Delta aims to make every flight a memorable part of your journey. From eco-friendly practices to cutting-edge entertainment, we’re not just taking you to your destination; we’re crafting an experience that begins the moment you choose Delta and setting memories before your staycation even begins with the best service and treatment. Join us as we explore new horizons together, where every flight is an opportunity for discovery. “Fly High, Touch Sky with Delta” – because your adventure deserves a great start. Our Job is to make sure you choose Delta for your next destination, and as promised you’ll receive everything you deserve. Our competition doesn’t have the same resume as us, we’re very generous with the airline points, mileage, and discounts. Choose Delta!

CAMILLE JOY ROASA, MELANIE RODAS, MICHELLE RESSALIE, NERMALA SEWDAT, NICOLE PETERS, VANESSA PEREZ

Faculty Mentor: Dawn Adams-Harmon

“Sysco Corp. v. Agri Stats, Inc. (In re Pork Antitrust Litig.)”

Public issues can be very challenging to deal with since they involve a diverse group and many ethical implications may be violated if not handled carefully. In this presentation, a litigation case between Sysco Corp and Agri Stats, Inc. will be analyzed using the issue management process and comparisons will be drawn between the actions of the plaintiffs and the defendants of the case. Sysco Corp (plaintiff), an American food distributor, filed an antitrust class action against Agri Stats, Inc., a leading American pork producer (defendant) for unethically modifying prices. Unethical and immoral behaviors displayed by the plaintiff and the defendant will be discussed along with ways in which these behaviors affect the public. Laws violated by the plaintiff and the defendant will be discussed along with how these violations could have been avoided. The final prosecution to the settlement of the case will be discussed along with what led to the settlement.

STUDENT ORAL ABSTRACT

AMBERLEIGH SCHIEL, LAUREN CARDWELL, MACKENSON SAINT SURIN, ALEXA GRANVILLE

Faculty Mentor: Kyungwon Lee

“Social Media’s Role in Volunteer Motivation at Northern Ocean Habitat for Humanity”

“Northern Ocean Habitat for Humanity in Toms River is a nonprofit organization founded in 1999 that builds and repairs homes for low-to-moderate income families, including veterans and disabled individuals. The ReStore, a volunteer-run secondhand shop, sells donated furniture and other gently used household items for a fraction of the price, and 100% of profits from the ReStore go towards build/repair projects. With volunteerism in general at the ReStore on the decline, the need to understand and cultivate motivation for volunteerism is at an all-time high. This research gathers information that assists in determining whether specified social media content aimed at increasing awareness and motivation to volunteer at Northern Ocean Habitat for Humanity is an appropriate solution for the decline of volunteers. It also provides insight specifically as to how social media content can increase volunteer outreach and recruitment. The social media channel will be the ReStore’s Facebook group, where daily furniture arrivals are posted. The main source of data will be a survey questionnaire administered in-person to individuals currently shopping at the ReStore, to find out if/how certain content influences them to take advantage of volunteer opportunities.

SANAA SMITH, BREANA OWENS, YAGNA PATEL, MARCIAL MUKENDI, MIRANDA REYES

Faculty Mentor: Dawn Adams-Harmon

“Business Ethics”

The meteoric rise of the cryptocurrency industry has been accompanied by shadows of controversy and ethical complexities. The recent downfall of Sam Bankman-Fried (SBF), the founder of both FTX, a leading cryptocurrency exchange, and Alameda Research, a crypto trading firm, offers a crucial test case for understanding the ethical and social ramifications of this nascent financial landscape. This research project aims to shed light on these pressing issues through a critical examination of the SBF case, ultimately contributing to a more responsible and sustainable future for the industry. Our investigation will delve into the ethical dilemmas surrounding SBF’s business practices, including potential conflicts of interest between FTX and Alameda Research, the lack of transparency in risk management, and the cascading impact of the FTX collapse on the cryptocurrency market as a whole. Furthermore, we will explore the social consequences for various stakeholders, examining the plight of investors who lost their funds, the wider cryptocurrency community grappling with eroded trust, and the potential for broader societal skepticism towards this rapidly evolving technology. By utilizing a multifaceted approach, our research will incorporate content analysis of news articles, academic publications, and regulatory documents related to the SBF case and the broader cryptocurrency landscape. Additionally, we will engage in critical discourse analysis, examining the framing and narratives surrounding the case in media coverage and public discourse. Finally, we will

utilize ethical frameworks like deontology and utilitarianism to assess the ethical dimensions of SBF's actions and the broader implications of the case. Through this comprehensive investigation, we anticipate gaining valuable insights into the ethical and social complexities that lie at the heart of the Sam Bankman-Fried case. These insights will contribute to a deeper understanding of the ethical challenges inherent in the cryptocurrency industry, the far-reaching social impacts of major events within the space, and the potential role of regulation in mitigating risks and fostering responsible innovation within the industry. As we strive to learn from the fall of FTX, this research project serves as a crucial step towards building a more sustainable and responsible future for the cryptocurrency ecosystem.

CBPM | PUBLIC ADMINISTRATION

JEFFREY BROOKS

Faculty Mentor: Bok Gyo Jeong

“Redefining Policing: Connecting Community and Law Enforcement Through Policy Change”

This study explores the complexities of police-community relations in urban neighborhoods, with an emphasis on changing the narrative surrounding policing. The study aims to understand the historical context and existing challenges that contribute to strained relations between law enforcement and the community. This study applies the co-production or co-governance theory to analyze the case of the police community in the City of Rahway. In addition, this study takes a stakeholder approach to describe the process of public policy decision-making and service-delivery in the chosen topic. For data collection, this study will conduct in-depth interviews with decision-makers in the police departments as well as community partners to understand their perception of police-community relations. Additionally this study will go beyond academic exploration and serves as a call for change and evolution—a proactive invitation to reshape the future of policing in urban neighborhoods. It will also review and analyze official documents and survey to analyze the process and outcome of the interactions between the police and the community.

ALEXANDRE BARBOSA

Faculty Mentor: Jose Rojas Fernandez

“How can Qigong improve the lifestyle of patients who suffer from diseases related to the impairment of joints?”

Qigong has the ability to improve mobility throughout the range of motion for all patients, specially those who suffer from impairments that affect. The goal is to provide accurate data on how to find these improvements affect each patient differently and how age can be a contributor and different lifestyles and ethnic backgrounds bring different variables. My proposal is to breakdown all the information related to it also, target which diseases cause impairment and Qigong

STUDENT ORAL ABSTRACT

affects the broader scope of improvement. I also believe that there is plenty of evidence on how Qigong can be used effectively on candidates that have diseases like arthritis, and what kinda of improvements timelines look like for candidates, again the piece of their age will play a major factor. In conclusion the goal is to provide complex data on how Qigong can improve the patients overall joints and health, also on the long term perspective with different ranges of timelines.

BIANCA DANIELS

Faculty Mentor: Jose Luis Rojas-Fernandez

“The Fourth Trimester: Embracing Diversity in Maternal Health Practices”

This research explores the significance of cultural perspectives in understanding the fourth trimester, focusing on non-westernized approaches to postpartum care. The “fourth-trimester”, refers to the weeks following birth; a critical period for both woman and child that establishes the foundation for long-term health and well-being. Recognizing the pressing need to reduce severe maternal morbidity and mortality, the American College of Obstetricians and Gynecologists’ Committee Opinion has been revised to underscore the significance of the “fourth trimester” and advocate for a new approach to postpartum care. Cultural practices surrounding childbirth and early motherhood offer valuable insights into diverse human experiences. By examining social, psychological, and physiological aspects of the postpartum period, healthcare professionals can better cater to individuals from varied cultural backgrounds. This study identifies common themes and practices across cultures, which may benefit maternal and infant health universally. Incorporating culturally relevant approaches into modern healthcare systems ensures more effective support for postpartum women and their families.

AAYUSHIBEN HIRPARA

Faculty Mentor: Jose L. Rosa-Fernandez

“ENERGY MEDICINE”

There are research that holistic energy healing methods are traditional ways to treat the flow of energy in our body. It describes how multiple energy medicine can help patients heal faster and improve health and well-being. Energy healing therapy is based on the understanding that the body and mind has an invisible energy field, and that when this energy flow is blocked or unbalanced, one can become sick. Mind-body energy healing techniques are based on mantras, meditations, breathing exercises, physical exercises and relaxations, on the belief that human thoughts, feelings and emotions can affect both physical and mental wellbeing. Also there are technical challenges in energy healing modalities and describe how to incorporate the emerging trends in energy medicine with the modern medical system. There is a need for more robust randomized control trials utilizing standardized holistic energy healing protocols to provide further evidence on this subject. In conclusion, energy medicine helps all patients improve daily lifestyles.

MICHAEL OLEAGA*Faculty Mentor: Bok Gyo Jeong***“Intro to Nonprofit: Navigating The Phonathon Pilot Project”**

As a student for the Intro to Nonprofit course, the classmates were surprised to learn we were going to partner with the Kean University Foundation in making phone calls for donations, or the “Phonathon.” I’ve worked in a nonprofit where we heavily relied on event registration fees, and we didn’t have staff that could focus on proper donation outreach, but it was an area we wanted to improve. The phonathon provided me with the experience of what occurs in donation outreach. There were multiple lessons learned, from the knowledge provided from Molly McGarry and Ed Ahart, the guest speakers including Mr. Bill Miller and Gerry Tarantolo, understanding more about the Foundation’s mission, mailers, and how far in advance you should plan ahead when it comes to donation outreach. There were concerns about talking to strangers and asking for money. Some were optimistic about the phonathon. Molly mentioned about having a goal for the class of \$2,500.00 for donations, which I originally felt was very reachable. But once it was showtime, the reality started to appear. Many calls went to voicemail, some people didn’t pick up, changes in life circumstances, and then there were hesitations from classmates. Fellow classmates were worried about potential negative calls, denials, and harsh responses. I felt ready to make the calls but the nerves can still rise, especially when you’re trying not to sound robotic or in efforts of not making it obvious you’re reading a script. In the end, the phone calls were beneficial in breaking through some barriers if you’re timid on the phone and if you feel uncomfortable asking people for money. One of my memorable calls was with an older donor, who told me she was eating dinner but she shared how from her close group of college friends, she is the only one still alive. Taking on that call made me realize, and it may be the case for others who have donated, that they haven’t had someone to just listen to them for quite some time. I’ve also learned from Mr. Miller about how the legal team may step in to review a donation, in cases of how the donation’s funds would be transferred or the reputation of the person making the donation. The phonathon experience was absolutely a fantastic method of having hands-on training on donation outreach. While we didn’t reach the \$2,500 goal, it was nice to see the confidence growing from the class as calls continued to be made. As a trial run, I hope the Kean University Foundation can still be proud of the donation commitments we were able to secure, plus in getting many of us out of our comfort zones, and take part in a reality that exists for nonprofits: and that’s calling for donations.

VANESSA SOUSA*Faculty Mentor: Jose L. Rosa-Fernandez***“Alcoholics Anonymous”**

The impact of family involvement in Al-Anon on the recovery outcomes of individuals in Alcoholics Anonymous (AA) is a complex and versatile area. Research suggests that family support plays a crucial role in an individual’s recovery from alcohol addiction. Al-Anon, a support group for families and friends of alcoholics,

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provides a platform for education, understanding, and emotional support. When family members participate in Al-Anon, it can enhance communication, nurture empathy, and contribute to a more supportive home environment, positively influencing the individual's recovery journey within AA. Studies say that involving family in Al-Anon helps people in AA. Al-Anon, for loved ones of alcoholics, gives support and understanding. This makes families better at communicating and creates a good environment for recovery. Research shows it improves coping and increases the chance of staying alcohol-free. However, the extent of this impact may vary based on individual circumstances, making it important to consider the specific dynamics of each case.

COE | EARLY CHILDHOOD EDUCATION

SAMANTHA KAUFMAN

Faculty Mentor: Eleni Zgourou

“Preschool Teachers’ Perspectives on How to Promote Literacy in Play-Based Learning”

This study examines preschool teachers’ beliefs and practices related to promoting literacy skills through play-based learning in their own classrooms, their challenges integrating literacy into play, and the support they would like to receive to promote literacy through play-based activities. Preschool teachers in the state of New Jersey were asked to complete a 25-30 min survey, which included both quantitative and qualitative questions. Following an inductive iterative process, findings will be discussed by theme identified for each survey question. Findings will also report on teachers’ confidence levels related to supporting children’s literacy skills through play-based experiences as well as their perceptions of the kinds of literacy skills (e.g., oral storytelling, vocabulary, phonological awareness, writing, and reading) they think children can learn through play-based activities. Their scaffolding role as a teacher will also be analyzed. Implications for practice including more training and professional development providing literacy-rich play-based experiences in the classroom will be discussed and suggestions for future research will be addressed.

WILSON RODRIGUES

Faculty Mentor: Eleni Zgourou

“Anecdotal Records: Practices and Methods in Preschool Assessment”

Abstract: This qualitative study explores the practices and challenges of creating and utilizing anecdotal records in preschool assessment, aiming to shed light on the methods developed by teachers and the support systems in place. Employing semi-structured interviews conducted via Zoom with preschool teachers, the study seeks to understand the integration of traditional and digital tools in documenting children’s learning experiences and the administrative requirements influencing

these practices. Expected findings include diverse strategies for managing documentation workflows, the impact of district requirements on teachers' practices, and the potential for policy changes to support effective assessment methods. The study anticipates uncovering teachers' nuanced challenges through thematic data analysis, highlighting the need for enhanced support and innovative tools to streamline the documentation process. The significance of this research lies in its potential to inform educational policy and practice, contributing to the development of more efficient and supportive assessment strategies in early childhood education. Keywords: Anecdotal Records, Preschool Assessment, Qualitative Study, Teacher Practices, Educational Policy

COE | EDUCATIONAL LEADERSHIP

MARINA NEZIUS

Faculty Mentor: Efthemia Christie

"The Perceptions and Attitudes of Board Members Toward Women Superintendent"

Problem Statement: In the U.S., women are underrepresented in the superintendent's position in every state. Males, especially white males are perceived as the ideal Chief Executive Officer, CEO" (Gullo, G. L., & Sperandio, J. (2020). Research concerning the perceptions and attitudes of board members is limited even though they play a vital role in the hiring process. In New Jersey, 36% of women have been appointed for the superintendency position. Nationally, 27% of superintendents are males (Mercer, 2020). Considering the teaching force as the pipeline to the superintendency, the question remains why 75% of women teachers do not equally reflect predominantly female educational leadership force? In addition, women have earned more advanced degree, including the doctorate than men (Kobler, 2019). This study aims to examine the perceptions and attitudes of board members toward women superintendent in finding out if there has been a change from a prior study by Bastas-Christie, 1997.

Methodology: The study adopted a qualitative approach and collected data from eight board members through interviews. This design employed participants in the state of New Jersey generalizing the outcome of the whole population through questions both open-end and closed-end questions and then analyzed using computer software (i.e., MAXQDA). A narrative phenomenology approach was utilized to interpret the lived experiences of the participants (Creswell, 2018). Thematic analysis was used to review data to address the research questions. The study by Bastas-Christie (1997), which informed the present research, involved qualitative research design. Similar to the present study, Bastas-Christie (1997) sought to understand the attitudes and perceptions of board members on female superintendents using a qualitative approach, it was important to retain the same research design. Ten themes and two sub themes emerged from the data analysis that helped answer four research questions designed to examine the lived experiences of school board members.

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Research Questions:

RQ1: What are the perceptions and attitudes of board members toward women superintendents?

RQ2: What factors do school board members consider while hiring women in superintendent positions?

RQ3: What strategies/policies can be adopted by board members to increase women's representation in the superintendent?

RQ4: Are there inequities faced by women superintendents and how are these inequalities perceived as they relate to gender, race and ethnicity?

Findings: This study established that the board members considered female superintendents' academic qualifications and leadership qualities during the search process. Those with advanced degrees have higher chances of being appointed. Therefore, gender only becomes an issue when a male and female superintendent candidates have equal qualifications. The interviews revealed that gender bias still influences the pathway of females to superintendency. Similar to Bastas-Christie study, race or ethnicity also influenced the women's ascendance to superintendency. In contrast, three school districts have had a female superintendent compared to the 1997 study by Bastas-Christie in which there was no prior female superintendent. Participants elaborated on several strategies that may increase women representation in superintendency.

COE | SPECIAL EDUCATION

LINA AGUDELO

Faculty Mentor: Daphna El Roy

"Interventions to Decrease Vocal Stereotype"

Individuals with autism commonly engage in various forms of stereotypy, motor stereotypy, vocal stereotypy, or both. Vocal stereotypy affects the ability to learn and can be viewed as socially unacceptable by others (Liu-Gitz & Banda, 2010). Decreasing vocal stereotypy of individuals with autism has various potential benefits. The benefits may include an increase in focus, stronger interactions, and appropriate language. A literature review was conducted to identify articles featuring interventions to decrease vocal stereotypy. An anonymous Google Forms survey was developed and sent to professionals employed by an agency providing Applied Behavior Analysis (ABA) services in a clinic or home to individuals with autism. Nineteen professionals took the survey. Demographic data showed that 94.7% of the participants had worked with children ages 1-5. Procedural questions focused on whether each evidence-based intervention from the literature had been used by the professionals surveyed, and if so, how effective they rated it to be. Results showed the intervention used by the highest percentage of participants (73.7%) included both using visuals (e.g., green/red cards to signal appropriate/inappropriate to engage in stereotypy) and reprimands. None of the participants who reportedly used this strategy rated it as ineffective.

MEGAN BANACH

Faculty Mentor: James McLaughlin

“The Effect of Applied Behavior Analysis on Decreasing Aggression in Students with Autism”

The research on the ABA methods, that are effective in decreasing aggression, need to be more specific and thorough in regard to the various strategies being used. Research shows that ABA can be used to change behavior but there is not enough information about the effectiveness of the specific ABA strategies being used to reduce aggression in students. There is a lack of research on the specific ABA methodologies that reduce aggressive behaviors in students with autism. This study examines teachers in a local school district to assess their experiences with ABA methodologies. The purpose of this study is to investigate and record teachers' experiences when using ABA methodologies to reduce aggression and procedures used in autism classrooms that are deemed most effective. The teachers who qualify and give consent will participate in a survey. The researcher will analyze the data from the survey and report if their hypothesis was supported.

KARIME CURE

Faculty Mentor: Daphna El Roy

“Interventions for Problem Behavior Including Aggression of Individuals with Autism and Developmental Disabilities”

The study aimed to gather insights from professionals in the field regarding their familiarity and success with interventions aimed at addressing problem behavior, including aggression, of individuals with autism and developmental disabilities. Problem behavior may include aggression, attention-deficit/hyperactivity disorder, oppositional behavior, attention problems, delinquency, risk behavior, or violence (Stormshak, & Garbacz, 2018). Aggression may include hitting, spitting, self injury, throwing, pushing etc. The participants in the survey would have been employees who worked in a clinic setting providing ABA (Applied Behavior Analysis) services to individuals with Autism Spectrum Disorders (ASD). A survey was developed by the author, including four demographic questions, 10 questions about the participants' experience conducting interventions shown to be effective in the literature, to reduce problem behavior, including aggression; and questions regarding the effectiveness of the procedures they used. The study's objective was also to determine how effective the strategies were reported to be by those professionals.

LINDSAY DENIGRIS

Faculty Mentor: James McLaughlin

“Teacher Perspectives on Implementing the Use of AAC”

The primary investigator surveyed Special Education teachers at Roosevelt Elementary School in Rahway, New Jersey. The purpose of this study is to determine teachers' perspectives on training and support while implementing the use of AAC in their classrooms. This study will determine the levels of training

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and preparation teachers of students in this population specific to AAC systems that teachers have had. The benefits of this study in general is that it will provide information on teacher perspectives on AAC systems used in their classroom. It will also highlight whether or not teachers believe they receive the support and training in order to best support their students using AAC systems. If the research supports the hypothesis that teachers do not receive the support and training needed, it is hoped that the research findings will be used to highlight a need for improvement. It is hoped that teacher preparation programs and school administration will seek support for their teachers in this area so that students are getting the most meaningful instruction possible.

BREANNA DENNIS

Faculty Mentor: Daphna El Roy

“Increasing Alternative Responding and Decreasing Problem Behavior Using Functional Communication Training”

This research included an overview of interventions including Functional Communication Training (FCT) in the literature. FCT is an effective intervention for reducing problem behavior and increasing alternative communication of individuals with developmental disabilities, particularly autism. FCT aims to replace challenging behaviors with appropriate communication methods that serve the same function (Tiger et al., 2008). An anonymous online survey was distributed to employees of an organization providing clinic-based and home-based services to individuals aged 2-21 diagnosed with autism spectrum disorder. Participants in the study included Behavior Technicians, Registered Behavior Technicians, and Board-Certified Behavior Analysts (BCBAs). The survey aimed to assess the extent to which professionals utilized FCT-based strategies and their rating of the effectiveness of these interventions. All 16 participants reported reducing problem behavior (e.g., self-injurious and aggressive) dually maintained by escape and tangibles by teaching vocal requests (e.g., “I want [e.g., cookie] please; “I need help please”) using FCT (Functional Communication Training). The effectiveness data of this strategy were: 56.3% of participants rated this intervention as very effective and 43.8% rated it as effective.

KRISTEN GODSEY

Faculty Mentor: Randi Sarokoff

“Effective Procedures to Reduce Inappropriate Behaviors in Students with Autism”

Individuals with autism spectrum disorder exhibit persistent difficulties in social communication and often have restricted and repetitive patterns of sensory behaviors and interests. Behaviors such as stereotypy, or repetitive operant motor movements which are often contextually inappropriate, and self-injury, are a few of the barriers that interfere with the daily lives of individuals with autism spectrum disorder. Research has examined a variety of procedures that have been used to reduce these inappropriate behaviors, ultimately improving the lives of individuals with autism. A literature review was conducted to identify effective procedures

for reducing inappropriate behavior in individuals with autism. A survey was used to investigate if the procedures from this literature review are being used by professionals in the field, and if so, how effective they found those procedures to be. It is hypothesized that the results from the survey will show most of the participants have used the following interventions: functional communication training, sound attenuating headphones, and differential reinforcement of alternative behavior. Moreover, it is hypothesized that these procedures would be found to be the most effective by participants who used them. It is also hypothesized that the least effective interventions will be social stories and response-cost procedures.

JASON KAULFERS

Faculty Mentor: James McLaughlin

“Teacher Perspectives on the Readiness of Students with Disabilities for Postsecondary Educational Programs”

This thesis explores the perspectives of teachers regarding the preparedness of students with disabilities for post-secondary education. With the increasing emphasis on inclusive education, understanding the perceptions and experiences of education is crucial for enhancing the transition process for students with disabilities. Utilizing a qualitative research design, this study investigates the challenges, facilitators, and recommendations provided by teachers through in-depth interviews. Findings could reveal nuanced insights into the educational support systems, accommodations, and instructional strategies deemed essential for fostering the successful transition of students with disabilities to post secondary settings. The study also hopes to shed light on the role of teacher support and collaboration among people invested in the students’ diverse needs and their future. Implications of the findings could show changes needed with promoting students because they are not adequately prepared for post-secondary education. By amplifying the voices of educators, this study contributes valuable insights to enhance the educational experiences and opportunities for students with disabilities in a post-secondary setting.

DANIELLE MAURO

Faculty Mentor: James McLaughlin

“The Effect of Educational Staff Training on Student Use of Augmentative and Alternative Communication Devices”

One of the most challenging aspects for students with Autism Spectrum Disorder is the ability to communicate. Many people who have ASD are non-verbal or have limited verbal language skills. This communication barrier affects a person’s ability to function socially and academically. The purpose of this study is to determine teachers and educational professionals experience with and perspective on the use of AAC devices for students with ASD, their level of training during preservice and inservice, their ability to assess students for AAC devices, their confidence facilitating the use of such devices with students, and their experiences on the effectiveness of AAC in the classroom. It is important because with the data

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collected in this study it is hoped that further information will be gathered related to the effectiveness of AAC usage for students with ASD based on the level or preservice and inservice training of teachers and educational professionals. In addition, the larger educational community may seek to improve preservice and inservice training in order to support the needs of staff who work with Autistic students who use AAC devices. AAC usage for students with ASD based on the level or preservice and inservice training of teachers and educational professionals. In addition, the larger educational community may seek to improve preservice and inservice training in order to support the needs of staff who work with Autistic students who use AAC devices.

CHRISTEN MCNAIR

Faculty Mentor: Randi Sarokoff

“Effects of Video Modeling to Teach Young Children With Autism A Variety of Skills”

A widely used evidence based strategy to teach skills to children with disabilities is video modeling. A literature review revealed that many skills are taught and acquired using this method. Some skills taught using this method include play skills (Boudreau, E., & D’Entremont, B. 2010), academic skills (Morlock, L, et al. 2014), and daily living skills (Drysdale, B. et al. 2014). A survey was created to determine what skills are being taught using video modeling by professionals today and to measure how effective they are perceived by clinicians who use them. A total of 22 participants completed the survey. Results showed that the skills targeted the most by participants using video modeling interventions were as follows: recognize and name social expressions (86%); daily living skills (86%); and pretend play skills (77%). Additionally, participants were asked to rate how effective the use of video modeling was to teach these skills. Results revealed that participants perceived recognizing and naming social expressions using video modeling as 100% very effective or effective, daily living skills as 95% very effective or effective, and pretend play skills as 82.4% very effective or effective. In conclusion, approximately 80% - 86% of the participants are currently using video modeling to effectively teach learners with autism skills. Results also indicated that participants found video modeling as 80%-100% effective in teaching children with autism to recognize and name social expressions, teach daily living skills, and teach pretend play skills. It is concluded that video modeling is a popular and effective intervention to teach different skills to children with autism.

SARA MOYA

Faculty Mentor : Janet Fike

“Teachers’ Perspectives on Implementing Evidence-Based Behavioral Interventions”

The purpose of this study is to determine if teachers feel adequately prepared to implement evidence-based interventions for children with behavioral needs in an inclusion classroom using quantitative data collection. An inclusion classroom being one where both special education students and general education students

learn in the same classroom with modified instruction to the general education curriculum, or individualized instruction, as needed. The evaluation of teachers' responses to the survey will determine what behavioral interventions they know and how confident they are in taking the lead on implementing those strategies with students. Results from this study can help identify deficits in knowledge of interventions and if any professional development will help teachers bridge any gaps in using behavioral intervention strategies. Data will be collected through the usage of an electronic survey via Google Forms. This will help the researcher analyze how teachers feel about implementing behavioral interventions and if there are any deficits in knowledge of specific evidence-based supports. Having an in-depth understanding of how elementary school teachers attending Kean University in Union, NJ feel about implementing behavioral interventions, will help with knowing what deficits or developments meet the need for a call to action. Through this research study, information will be collected to closely learn about how teachers' feel about implementing behavior interventions, what interventions they know and how that may affect their relationship with students who have behavioral needs.

DAIANA MUFFOLINI

Faculty Mentor: Randi Sarokoff

“Effective Procedures To Reduce Maladaptive Behaviors In Learners With Autism”

Maladaptive behaviors in learners with autism can interfere with their learning and development which is why it is crucial in finding ways to reduce these behaviors. A literature review was conducted to investigate what procedures have been effective in reducing maladaptive behaviors in learners with autism. The current study extends the literature by using a survey to investigate which of the procedures found in the literature are being used by professionals in the field of Applied Behavior Analysis (ABA). In addition the survey measured how effective the procedures were perceived by these professionals who used them. The 19 participants in the study were either Registered Behavioral Therapists (RBT), Behavioral Therapists, or Board Certified Behavior Analysts (BCBA) who work for an ABA agency. The ABA agency used procedures based on the science of Applied Behavior Analysis (ABA) to teach skills, and reduce maladaptive behaviors in children with autism. Results of the survey showed that the most used procedure by the participants were Functional Communication Training (FCT) (90%) to teach alternative response to inappropriate behavior; package of FCT and extinction to use maladaptive behavior (90%); differential reinforcement of other behavior (DRO)(90%) to reduce inappropriate behavior. The participants perceived the most effective interventions to be FCT (94%), FCT and extinction (100%), and DRO (76.5%). Results suggest that many of the procedures found effective in the literature to reduce maladaptive behavior in learners with autism are only being used by a small percentage of the participants in the survey such as DRO. These findings are beneficial to professionals in the field of ABA so they can apply it to their learners' treatment plan as a way to facilitate learning and social inclusion and overall improving their quality of life.

STUDENT ORAL ABSTRACT

KERRY O'REILLY

Faculty Mentor: Janet Fike

“Analyzing Teachers’ Perceptions of Professional Development on Teachers’ Writing Instruction for Students with Specific Learning Disabilities”

This study aims to examine teachers’ perceptions of writing-focused professional development programs and whether they improve their knowledge, understanding, and utilization of strategies and interventions for students with Specific Learning Disabilities (SLDs) in the context of writing. This research will evaluate whether such professional development programs provide teachers with effective strategies and interventions to enhance writing instruction for students with SLDs. Evaluating teacher survey responses will determine if teachers are well-equipped with various strategies and interventions, and it will highlight areas where they may need further support. In addition, analyzing the gaps in professional development programs will allow school districts to have a better understanding of specific topics that need to be addressed in the future. The research design will involve distributing a 20-question survey through Google Forms to 41 elementary and middle school general and special education teachers in the Long Hill Township School District in Gillette and Stirling, New Jersey. This survey will be directed at educators who have taken part in a writing-focused professional development program. The survey is designed to be completed in approximately 15 minutes, and it will include a variety of question types, including multiple-choice and Likert-scale questions. The questions will center on teachers’ perspectives regarding professional development opportunities provided by the school district and the perceived effectiveness of these opportunities in providing them with strategies and interventions to enhance instruction for students with SLDs. Confidentiality will be maintained throughout this research study through the use of blind carbon copy emails and the collection of data without any identifiable information.

DECLAN REICHEY

Faculty Mentor: Randi Sarokoff

“Effective Use of Video Modeling to Teach Learners With Autism a Variety of Skills”

The purpose of this study was to identify if the video modeling procedures found effective in a literature review are being used by professionals. Video modeling has been shown to be effective in teaching a number of skills to learners with autism spectrum disorders. Video modeling is a behavior change strategy in which the participant views a video of a person who models performing the target behavior, and then the participant is required to imitate the behavior. Immediately following having viewed the video-based model, the individual is directed to perform the activity or script he or she observed in the video. Video modeling uses visual cues, an effective strategy for instructing students with autism spectrum disorder, who can often be visual learners, and modeling, an evidence-based strategy that is effective across ages and populations. A survey was created to investigate what percentage of the professionals that were surveyed have used and have experience with the various procedures found effective

in the literature. In addition, the professionals surveyed rated the perceived effectiveness of each procedure that they had experience using video modeling to teach daily living skills. The survey contained twenty-two total questions and there were eight total participants. The participants in the survey included BCBA's, RBT's, paraprofessionals, teachers, and job coaches who were contacted through an email invitation. All responses to the survey were anonymous. Findings in this survey showed professionals who have used video modeling to teach a variety of skills to learners with autism have found it effective. Results show that 87.5% of participants have used video modeling to teach daily living skills to adults with autism, 75% of participants have used video modeling to teach adults with autism how to fold clothes, and 62.5% have used video modeling to teach adults with autism cooking skills. Of these skills taught, 100% of participants who used video modeling to teach daily living skills to adults with autism found it effective, 100% of participants who have used video modeling to teach adults with autism how to fold clothes found it effective, and 80% of participants who have used video modeling to teach adults with autism cooking skills have found it effective. Unfortunately, of the 18 skills found in the literature to be effective using video modeling, only a few have been used by a majority of the participants. These findings suggest that clinicians need to become more familiar with the efficacy of using video modeling to teach a variety of skills with adults with autism.

SHANTE ROGERS

Faculty Mentor: Daphna El Roy

“Intervention to Teach Motor Imitation to Children with Autism”

Motor imitation refers to mimicking the movements of another person. People can mimic using an object or some part of their body. Imitation is a crucial aspect of development. Motor imitation allows children to learn things quickly by watching people around them. Children diagnosed with autism have difficulty with imitation, and there are various ways to teach it to them (Cardon & Wilcox, 2010). A literature search was conducted to identify effective interventions used to teach imitation to children with autism. Professionals who work at homes of children with autism providing ABA (Applied Behavior Analysis) services were surveyed to determine which of the interventions from the literature were used by participants, and how effective they were rated to be. The survey results showed that 50% of the participants reported using object imitation with parents, 66.7% reported it was effective, and 16.7% reported it was very effective. 91% of participants reported using modeling the action. It was reported as effective by 66.3% and very effective by 27.3%. The results showed that 58.3 % of participants reported using video modeling with an iPad, 60% reported it was effective, and 20% reported it very effective. 75% of participants reported using video modeling with songs; it was rated effective by 55.6%, and 11.1% reported it as very effective.

STUDENT ORAL ABSTRACT

JUSTYNA ZEMEL

Faculty Mentor: Daphna El Roy

“Strategies to Facilitate Transitions of Students with Autism”

The transitioning process can be challenging for children with autism because they often have difficulty with unexpected changes in their activities, settings or routines. Therefore, implementing successful transitioning techniques is an important and critical endeavor in their lives. Whether it is transitioning from one activity to another within the same environment or moving between different environments, many students with autism can benefit from evidence-based strategies that ease their transitional processes. These transitional techniques can help the students with autism to promote their independence. Interventions applied have included technology, visual supports, music-infused video modeling, picture self-monitoring, peer-mediated procedures, and physical and verbal prompting. A survey was used to investigate to what extent the procedures found effective in the literature were being used by professionals employed by a school district, and how effective they rated the procedures they used to be. Based on the data collected, the interventions used most, as reported by the participants, were visual supports with verbal and physical prompts (used by 100% of participants), photographic cues with a verbal cue (used by 93%), self-management techniques (93%), visual activity schedules (87%), visual supports with function-based intervention at (73%), and picture exchange communication system (73%). Of those professionals surveyed, 86% found the interventions they used to be effective or very effective. Participants may use these strategies because they are easily accessible, flexible, and practical to implement.

CHPHS | HOLOCAUST AND GENOCIDE STUDIES

DEANNE HAMPTON LARUE

Faculty Mentor: Adara Goldberg

The Terrible Things Unit

In this unit students are introduced to the terms “bystander” and “upstander” as an introduction to our unit on the Holocaust. Students will define the terms and explore how the concepts apply to their everyday lives. Through reading and viewing a video read aloud of *The Terrible Things*, we will then apply these terms to antisemitism and racism as we deepen our understanding of the Holocaust, its origin, and its lasting effect. Before beginning our unit on the Holocaust, students are given an exercise to explore their understanding of the themes of bystander and upstander as they relate to characters in *The Terrible Things*. Upon completion of our Holocaust unit, students are given the same exercise to determine if their attitude toward being a bystander vs. upstander has changed. My goal is to show the importance of teaching the Holocaust because I believe that people are more likely to be upstanders after learning about the atrocities of the Holocaust and the importance of being an upstander.

JULIA MITCHELL

Faculty Mentor: Adara Goldberg

“Holocaust Centers on College Campuses: The Evolution of Community and Remembrance”

In 1982, a group of Holocaust survivors that immigrated to Elizabeth, New Jersey from postwar Europe founded the Holocaust Resource Center of Kean University. Committed to the ideals of education and remembrance, the Holocaust Resource Center has served as an impactful member of the New Jersey community. Today, the New Jersey Commission on Holocaust Education lists 30 Holocaust centers throughout the state. This research focuses on the varying ways that Holocaust centers make an impact on college campuses across the state of New Jersey, using Kean’s own as a primary case study. This will be measured by evaluating the evolution of mission statements, community engagement, and direction of programming put on by these Holocaust Centers. This research will serve the purpose of helping Kean’s Holocaust Resource Center best serve its community, and, more broadly, to identify the way in which these centers have committed to refuge, education, and remembrance for the Jewish and non-Jewish students they interact with.

TERI MITCHELL

Faculty Mentor: Adara Goldberg

“Stepping Stones that lead to Milestones”

Many people live in constant fluctuation of having to relocate from one place to another and reestablish their entire life. Whether it is the 814,000 refugees from Somalia that battles the cyclical crisis of drought and famine or the unrest in Myanmar’s Rakhine State that has over one million refugees and the 6.9 million Syrians seeking refuge. Resettling in the United States has always posed several challenges and obstacles that are not easily overcome. Nevertheless European Jews that came to the United States have been able to make some strides of acceptance and success to inaugurate communities that nurture cultural identity, customs and traditions. Establishing communities that thrive can be incredibly challenging and many Jews have been able to succeed in accessing and utilizing tools that allow their communities to thrive in spite of multiple challenges. What are the components that help Jewish communities thrive during hostile environments? Will these same components be applicable and successful in other communities?

REBECCA SNYDER

Faculty Mentor: Adara Goldberg

“Utilizing Survival Stories in Holocaust Education and Building Empathy”

In 2024, there are only approximately 2,000 Holocaust survivors remaining in New Jersey. Many survivors, beginning in the 1980s, began to share their stories of survival with the public, particularly students. They speak to students, adults,

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or are interviewed by Holocaust Resource Centers for documentation purposes. Holocaust survivor speakers advocate for Holocaust education to prevent horrific situations again, to allow future generations to avoid their own accounts of survival—preventing future generations to avoid another Holocaust or horrific event. However, once all Holocaust survivors pass, who will pass on these stories? Is it expected for just their children, grandchildren, and other family members to share these stories? This research explores how non-Jewish people can share the survival stories of the Jewish community to aid the prevention of another genocide against Jewish people. Teachers, parents, leaders, and celebrities who are non-Jewish have the platform to share these stories and educate younger generations, who are not Jewish to create an environment that does not allow for minorities to be targeted. In the classroom setting, teachers have the opportunity to educate future generations on acceptance and kindness. Lessons can allow time to hear the stories of survivors and how we as a society can prevent another Holocaust. Driving questions of this paper are: How can non-Jewish people utilize the survival strategies of Holocaust survivors to break the cycle of antisemitism? What is the role of teachers and education?

CHPHS | HUMAN BEHAVIOR AND ORGANIZATIONAL PSYCHOLOGY

DARIMAR WEERT & DAYANA E. VELASCO MANZANO

Faculty Mentor: Ana Berdecia

“Teachers in the Aftermath of COVID-19”

The 2020 Coronavirus pandemic has impacted classrooms nationwide as teachers continually endure fatigue, resource and administrative shortages, chronic absenteeism, and behavioral changes in students and parents. According to our research and data that we coded for the Center for the Positive Development of Urban Children, the dominant explanation for these effects comes from the lack of transition plans safeguarding teachers and students from stressors during and after the pandemic. This fact has negatively impacted the students’ learning environment, teachers’ well-being, and the stability of classroom practices after COVID-19. Due to learning gaps created during remote learning, teachers are now required to catch students up to their grade level in a short period while simultaneously achieving a healthy work-life balance as well as high test scores and positive results. It is crucial to us that through our study we can humanize the work teachers do and call attention to the issues currently at hand so pathways can be formed focused on the empowerment of teachers and the prosperity of students. As we look toward the future of education, we must reflect on the dedication and determination that it takes for our strong educators to continue to thrive in our classrooms.

KATIE GROGAN*Faculty Mentor: Ibtihal Al Makhzoomy***“The Rise of Veteran Suicides”**

Background: Studies have been led to evaluate and conduct analyses regarding suicide deaths amongst military veterans compared to civilians. Quantitative and qualitative data has been collected and studied to determine evidence-based practice approaches in efforts to mitigate the rising statistical data with military deaths caused by suicide. This research presentation is a comprehensive review of literature from both types of studies and summarizes the data found within research studies on the topic of suicide in the military. Purpose/Aim: To bring more awareness to military suicides and the impact of mental health on service members PICOT: In military veterans experiencing mental health conditions, what is the effect of providing resources to military members compared to civilians, within one year of discharge? Methods: database research through PubMed, EBSCO, JSTOR, CINAHL, PsycINFO. Results/Conclusions: Research studies have been concluded and continue to seek further studies that use methods to provide research on the exploration of veteran suicide. It is imperative that appropriate tools for learning about mental health conditions are at the forefront of research to allow individual researchers to better understand suicidal individuals. The current state of this public health dilemma shows the significant need for efforts to reduce military suicides and veteran transitional difficulties through the implementation of services. Mental and behavioral health screenings are becoming a standard before discharge. The goal of this is for early detection of behavioral health problems and prevention of difficulties as military members transition to veteran status. Studies to better determine physiological pain and reduce connectedness during re-integration from military to civilian life is imperative to reducing the number of suicides from occurring.

Keywords: suicides, military deaths, suicide prevention, civilian suicide, and veteran discharges”

STUDENT ORAL ABSTRACT

CHPHS | SCHOOL AND CLINICAL PSYCHOLOGY

SULAGNA CHAUHAN, JAZZ MOORE, ALEXANDER RUBIN & JENNIFER BLOCK-LERNER

Faculty Mentor: Jennifer Block-Lerner & Don Marks

“Using Mindfulness-Based Resources to Support Healthcare Professionals in Training: Feasibility Acceptability, and Preliminary Outcomes”

Healthcare training can present some unique and challenging circumstances for students in these fields, so it is imperative to find ways to support student competency and well-being during healthcare education and training. The present study seeks to examine the feasibility and acceptability of providing mindfulness-based resources to healthcare professionals in training at a large northeastern university's college of health professions. The study aims to assess the feasibility and acceptability of synchronous and asynchronous modes of mindfulness training, as well as determine preliminary outcomes with regard to psychological flexibility, quality of life, and psychological distress. The synchronous component of the present study will consist of class-based workshops in which participants will be given the opportunity to share their experiences and engage in mindfulness-based and related practices. The asynchronous component of the study will consist of personal practice of mindfulness using a resource manual that will be shared with the participants at the beginning of the study. The study will be conducted over a semester, with three assessment points, including pre-workshop measures, post-workshop measures, and a one-week follow-up. It is predicted that provision of mindfulness-based resources will be both feasible and acceptable to this population. Additionally, we posit that engagement with the workshop, along with practice in-between sessions, will yield increases in quality of life (Quality of Life Scale; Flanagan, 1982), mindfulness (Five Facet Mindfulness Questionnaire-Short Form; Baer et al., 2006) and psychological flexibility (Acceptance and Action Questionnaire-II; Bond et al., 2011), and decreases in stress (stress subscale of the Depression Anxiety Stress Scale-21; Lovibond & Lovibond, 1995). We also predict that the degree of personal practice of mindfulness will predict receptivity and engagement with the intervention. Findings will be discussed with regard to implications for trainees' and healthcare professionals' well-being, limitations, and future directions.

DEBBIE CHUNG

Faculty Mentor: Adrienne Garro

“From Past to Present: The Impact of Adverse Childhood Experiences and Current Psychological Functioning on Parenting Attitudes and Behaviors Across the Lifespan”

To ensure children's well-being and protection, work in the field of psychology requires valid and reliable methods of assessing the potential factors that contribute to child abuse and neglect. Parents and caregivers often provide the most intimate context for the protection and nurturing of children. They are instrumental in supporting children's development in dimensions such as physical

growth, personality identity, and cognitive and emotional functioning. Therefore, it is important to understand the factors contributing to adverse parenting attitudes as they negatively impact children's development. Factors such as adverse childhood experiences (ACEs) are linked to a higher likelihood of negative health and behavioral outcomes later in life. Parents who had ACEs when they were children have been found to have a decreased likelihood of providing a safe and nurturing environment for themselves and their children. When parents become a force impeding children's healthy growth, professionals must use methods to identify parents at high risk of engaging in maladaptive parenting, or worse, child maltreatment and abuse. One of the most popular instruments for assessing parenting attitudes and behaviors is the Adult Adolescent Parenting Inventory, 2nd edition (AAPI-2; Bavolek & Keene, 1999). The AAPI-2 is a tool designed to assess the parenting and child-rearing attitudes of adolescents and adult parent and pre-parent populations. Based on previously studied parenting and child-rearing behaviors of abusive parents, responses to the inventory provide an index of risk for behaviors associated with child abuse and neglect. Due to its ability to capture different dimensions of parenting (e.g., parental empathy, use of corporal punishment, view on child power/independence), the AAPI-2 has been used in different settings to measure the level of risk for parental maltreatment. One example is using the AAPI-2 to assess parenting attitudes and behaviors for parents undergoing custody evaluations. Information regarding the characteristics of parents undergoing custody evaluations is scarce. Such information, including associations between parents' own early childhood experiences and their current attitudes and behaviors, is potentially helpful in preventing and identifying those at risk for carrying out child abuse and neglect. Therefore, the current study, utilizing information from an existing database of parents undergoing custody evaluations, explores parental ACEs, parental psychological functioning, associated demographic factors, and how they might contribute to parenting attitudes and behaviors as measured by the AAPI-2. The study hopes to garner focus and demonstrate the need for support and interventions for this population of parents.

SIMONE COOPER

Faculty Mentor: David Brandwein

“Playing Dirty: Anger, Emotion Regulation and Hegemonic Masculinity as Predictors of Aggression Among Collegiate Athletes”

Research on human aggression points to the contribution of uncontrolled anger and the overall inability to regulate emotions. Additionally, literature on hegemonic masculinity reveals the overemphasis of hegemonic masculine traits such as strength, competitiveness and aggression that have historically dictated what it means to be an athlete, particularly among male athletes. In sport, uncontrolled emotions, and the societal messaging to conform to a masculine ideal for male and female athletes, can lead to aggressive behavior and negative consequential outcomes both on and off the field of play. Despite what is known about the negative societal ramifications of hegemonic masculinity and aggressive behavior in sport, research exploring this relationship is scant and outdated. This present study aims to investigate the predictive value of anger and emotion regulation on aggressive behavior and the role of hegemonic masculinity to identify how anger and emotion regulation can be useful in predicting future aggressive in-game

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behavior among collegiate student-athletes and the implications in the larger context of sport and society. Using The Competitive Aggressiveness and Anger Scale (CAAS; Maxwell & Moores, 2007) and the Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004), it is predicted that aggressive behavior worsens as a result of emotion dysregulation. Because literature has suggested that males display more hegemonic masculine beliefs and that hegemonic masculinity is problematic and can result in aggression, it is predicted that male athletes will display more aggression compared to female athletes and that their aggression will worsen based on their inability to regulate emotions. By synthesizing aspects at the intersection of personality, hegemonic masculinity, aggression, and sport psychology through a critical/feminist framework, it is hoped to be able to better understand, address, and reduce the detrimental effects of aggressive behavior among athletes.

KATHRYN CORNET

Faculty Mentor: Adrienne Garro

“The Impact of a Mindfulness-Based Intervention on Female Adolescents’ Ratings of Self-Compassion and Trait Mindfulness”

Mindfulness-based interventions (MBI) in schools are growing in popularity. Their feasibility and acceptability have been studied, but more research is needed on their effectiveness with adolescents. The present study aims to examine the impact of an eight-week mindfulness-based intervention on ratings of self-compassion and trait mindfulness on adolescent (fifth and sixth grade) females. The intervention provided is a curriculum developed by a non-profit organization called Girls Empowerment through Mindfulness (G.E.M), and it involves a variety of mindfulness-based practices including meditation, journaling, and yoga poses. The intervention also incorporates a physical exercise component. The present study will be conducted as an after-school program within a school that has a student minority enrollment rate of 74%, with the majority of those students identifying as Hispanic/Latinx. The current study will examine the impact of this MBI, including quantitative and qualitative feedback, as well as consider implications and future directions for the G.E.M. program.

GITTIE FREEMAN

Faculty Mentor: Aaron Gubi

“A CABAS Approach to Establishing Observing Responses in Preschool Students with Disabilities: An Exploratory Study”

Observing responses are defined as operant responses that are selected out by consequences. This means that the presence of a stimulus is noted or observed based on its effects on the observer. We choose to attend to stimuli that are reinforcing to us meaning that they produce an effect that strengthens the likelihood that we will attend again (Cooper et. al, 2020). This phenomenon is a prerequisite skill for joint attention which is studied in the broader psychology field. According to the Centers for Disease Control and Prevention (2023), at the age of two months, babies should already be emitting observing responses or

joint attention including tracking parents as they move and gazing at toys for a few seconds at a time. With children who are non-typically developing, observing responses may not develop naturally over time. These responses are important precursors to learning (Keohane et al., 2008). The Comprehensive Application of Behavior Analysis to Schooling (CABAS) model has created a series of protocols that have been shown to effectively condition stimuli that in turn select out observing responses across 2D and 3D stimuli as well as faces and voices in single case study designs. The present study aims to determine if these protocols impact the presence or absence of observing responses. Approximately 100 preschool aged students from a CABAS school will be studied to determine if the protocols are effective in inducing the presence of observing responses as compared to the typical CABAS model which includes the implementation of related services including speech therapy, physical therapy, and occupational therapy. It is anticipated that these protocols will be effective which can lead to a gold standard practice for inducing observing responses for those with autism.

RICHARD LATOURETTE

Faculty Mentor: Keri Giordano

“Text-Message Based Coaching: Supporting Early Childhood Educators’ Implementation of the Pyramid Model”

Social emotional learning has been identified as a key factor in the development of children’s academic and social progress. Exposure to a strong evidence based curriculum structured around fostering social and emotional development is considered helpful throughout the lifespan but is particularly effective when implemented in the preschool classroom. The Pyramid Model (PM) is one such curriculum that is currently in use and backed by empirical research. Teachers are typically provided with training in the model, consisting of a professional development presentation followed by individual or group coaching to ensure adherence and fidelity to the program. While coaching has been proven effective in increasing fidelity to the program, it often requires extensive resources that can become barriers to schools. In order to identify alternatives to in person coaching, this study attempts to offer a technology fueled solution to this issue. Preschool teachers will receive free training in the Pyramid Model. Teachers will then be randomly placed in either a control group who receives no coaching or an experimental group who will receive 6 weeks of text message based coaching. Both groups will be assessed pre and post intervention, and it is hypothesized that the group who received the coaching will adhere closer to the PM framework. This may have implications for preschools, as the proposed intervention will be a cost effective method to ensure fidelity to evidence based practices for preventing and addressing challenging behavior.

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JACOB SCHRIER

Faculty Mentor: Donald Marks

“An Exploratory Analysis of the Outcome of a Booster Session for a Compassion-Focused Acceptance and Commitment Therapy Protocol”

Compassion focused acceptance and commitment therapy (CF-ACT) is a novel intervention synthesizing two previously established evidence based psychological interventions. The current study implemented a 16 session CF-ACT individual therapy manualized treatment followed by a booster session post treatment. Clients’ treatment outcomes were tracked using a pre-intervention baseline period, repeated measures during the treatment, follow up measures at the 1 month mark prior to the booster session, and a set of measures after the booster session. The current study builds on other research findings, highlighting effectiveness and benefits of booster sessions on treatment outcomes. Additionally, the study highlights the importance of transparency and precise definitions of one’s booster intervention, noting that there is a big discrepancy in the lengths of booster interventions being implemented. The current study is a first step towards further utilizing booster sessions for CF-ACT and with other interventions.

Keywords: booster session, compassion-focused therapy, acceptance and commitment therapy, maintenance of treatment gains

CLA | PSYCHOLOGY

AALIYAH VICK, INGRID TREJO, TAHA JOHNSON, JOSELYAN ARCE

Faculty Advisor: Min-chung Han

“Party Rocker: Hilton”

Tru by Hilton Hotel in Miami stands as an optimal haven for college students during the vibrant season of Spring Break, offering a strategic location that caters to both convenience and exploration. Situated in close proximity to the airport and a brisk 15-minute drive from the sun-kissed shores of Miami Beach, Tru Hilton not only promises accessibility to popular destinations but also positions itself as an ideal base for students seeking to immerse themselves in the dynamic pulse of downtown Miami. This highlights the unparalleled advantage of Tru Hilton’s proximity to downtown Miami, renowned for its diverse array of shopping venues and culinary delights, ensuring that college students can seamlessly transition from beachfront revelry to urban exploration. With its contemporary amenities, budget-conscious options, and strategic location near downtown Miami, Tru Hilton Hotel emerges as the quintessential accommodation choice for college students, facilitating an unforgettable Spring Break experience filled with adventure, discovery, and lasting memories. We plan on utilizing social media such as Instagram and TikTok to promote this brand. We also plan on running ads through out those platforms as well since this are mainly used by college students. This’ll help to promote different deals and opportunities at Tru.

CLA | FORENSIC PSYCHOLOGY

ROSEMARY DIAZ*Faculty Mentor: Christine E. Doyle***“The Correlation Between Emotions and Photos”**

This experiment was conducted to see how emotions are affected by photos. There were 55 participants who answered an invitation to 1 of 2 online surveys. The surveys had a dark/foggy photo and sunny photo viewed in the opposite order from each other. A series of statistical analysis was used to analyze the hypothesis that emotions can be affected by photos. Two different pictures were presented to participants with the order of the pictures changing per participant. A Factorial Analysis of Variance (ANOVA) was performed with an alpha level .05. There was a main effect for picture type, $F(1,105)=10.493$, $p < .01$, $n_2 = .091$. There was no main effect for order of presentation, $F(1, 105)=.087$, $p=ns$. There was an interaction between picture type and order of presentation, $F(1,105)=6.314$, p

CLA | COMMUNICATION, MEDIA AND JOURNALISM

JAZMARIE GUTIERREZ, XIAOXUE HAN, YIYAO CHEN, XUAN LI, GABRIELLA SCOTTO*Faculty Advisor: Min-chung Han***“Style Does Not have to Cost the Earth”**

Our team’s goal is to promote both style and sustainability through thrifting. The mass production of fast fashion through common retail stores like Forever 21, Zara, and more are responsible for a large portion of our landfills. The average American consumer of fast fashion is responsible for around 11.3 million tons of textile waste each year. However, this can be resolved through the up-cycling of second-hand clothing items to prevent the overconsumption of mass produced clothing items. By creating a social media and online campaign targeting teens and young adults, we believe that we can encourage people to limit their retail consumption and focus on creating a sustainable style. Through Instagram reels and Youtube shorts, we will provide short form video clips showing easy-to-achieve outfits while challenging viewers to do the same on a budget. It will emphasize the environmental, economic and social advantages of choosing second-hand clothing over new purchases. Additionally, it will discuss strategies for increasing participation in second-hand shopping and fostering a culture of frugality, including the promotions of sustainable fashion practices and the debunking of stigmas associated with thrifting.

JEREMIAH GARCIA

Faculty Advisor: Marvin Andujar

"Video Games: Assisting College Students with ADHD in Improving Attention"

This study will focus on how video games can help college students with Attention-Deficit Hyperactivity Disorder (ADHD). Various research studies focus on ADHD in its entirety, but we will be specifically concentrating on the attention aspect of ADHD. Inattention refers to the lack of focus, concentration and/or attention which leads to a lack of task completion, losing track of one's thoughts, and the inability to filter out irrelevant stimuli. The game that was used in the experiment for this research project was an original game called "Stack Racer". This was created through the game engine Unity and the objective is to drive a racecar around a track and collect as many falling blocks as the player can. The experiment consisted of participants with and without ADHD who participated in a pre and post questionnaire and played through an original game called "Stack Racer." The results showed that participants found "Stack Racer" to help with their attention regardless of stress with all participants saying they would play again to improve their attention. Future research will investigate adding more levels that increase in difficulty and rewards throughout the playthrough to better reward the player for playing.

RANA HANNA

Faculty Advisor: Adara Goldberg, Sarah Coykendall

"The Significance of Interfaith Collaboration in Fostering Harmony and Resolving Religious Conflicts"

In the frequently stormy waters of religious strife, interfaith cooperation shines like a ray of light. The need to encourage interfaith cooperation cannot be emphasized in a society where Religious differences regularly cause conflict and division. It fosters an atmosphere where empathy, compassion, and respect for one another may grow by uniting people from various faith backgrounds. Interfaith cooperation acts as a potent counterbalance to the misunderstandings and misconceptions that breed religious disputes by promoting open communication and joint endeavors. Reminding us that despite our many spiritual pathways, we are ultimately unified in our pursuit of peace and harmony, it highlights the underlying humanity that underpins all religious traditions. Interfaith cooperation creates a sense of connectivity that cuts beyond religious borders by weaving threads of tolerance and acceptance into the fabric of human existence. People of various religions may create links of solidarity that resist the dividing narratives typically perpetuated by radicals by working together to address social challenges, advance humanitarian causes, and advocate for justice. Furthermore, interfaith cooperation is a powerful driver for resolving conflicts since it provides a forum for complaints to be spoken and common ground to be found. It highlights the universal ideals

that bind us all in our shared humanity while celebrating the rich tapestry of religious difference via shared rituals, festivals, and acts of service.

ANGELO PEREZ

Faculty Advisor: Yulia Kumar, Jenny Li

“Adaptive Bias Mitigation in Large Language Models (LLMs)”

This study explores adaptive strategies for mitigating bias in Large Language Models (LLMs), with an emphasis on AI framework designs to dynamically minimize discriminatory biases. Given the expanding role of LLMs in decision-making and information dissemination, the objective is to ensure their outputs remain unbiased. The proposed approach encompasses dynamic data filtering, iterative model retraining, and targeted post-processing corrections aimed at reducing biases in LLM outputs. Preliminary findings indicate a reduction in bias across various dimensions, such as gender, race, and socio-economic status, while maintaining model performance. This research contributes to the field of ethical AI by presenting actionable strategies for developers and users to improve fairness in LLM deployments. LLMs will be investigated and tested on their current effectiveness on withholding discrimination or biases based on client input. If LLMs identify discrimination or biases, identification leads to further analysis on LLM's algorithms/methods for detection for future prevention. LLMs sampled will be listed.

GURDEEP SINGH, HENI PATEL

Faculty Advisor: Stanley Mierzwa

“Creation of a Non-Profit and Non-Governmental Organization Cybersecurity Incident Reporting and Dataset Repository”

Organizations of all types are prone to cybersecurity and information security attacks. Non-Profit Organizations (NPOs) and Non-Governmental Organizations (NGOs) are not exempt from using information technology solutions and, thus, have been the recipient victims of cyber attackers. There exist many areas and venues where data are collected to report back annually on the status and numbers of cybersecurity attacks against many sectors of our society. This effort and write-up will focus on the NPO and NGO community and provide the process followed to research and create the data repository, created categorization of attacks or taxonomy, fields captured, outlets and areas where data that is relevant to historical cybersecurity incidents in these types of agencies is available. In addition, the beginning of a running log and dataset for the NPO and NGO community will emerge. A dataset will be made available that can be referenced by researchers, students, and leaders investigating risk management and analysis of the NPO and NGO sectors.

STUDENT ORAL ABSTRACT

PETER SORIAL

Faculty Advisor: Yulia Kumar

“AI Test Fails”

In the burgeoning realm of multimodal AI, which encompasses an array of data types including text, images, speech, and beyond, there is a compelling need to re-evaluate the existing Testing Framework for AI Linguistic Systems (testFAILS). This necessity arises as researchers engage with advanced AI models such as Gemini, ERNIE, and ChatGPT-4-Vision, fueling their ambition to develop a novel Proactive Multimodal Framework (PMF). Initially conceived for assessing multimodal AI systems, the PMF endeavors to not only retain but also delve deeper into the core components of testFAILS. These elements include Simulated Turing Test Performance, User Productivity and Satisfaction, and Integration into Computer Science Education, along with Multilingual Text Generation and Pair Programming Capabilities. In addition to these existing criteria, the researchers are incorporating new testing parameters such as Multimodality, Fine-Tuning Capacity, Customization and Specialization, along with considerations for Pricing and Reliability. Furthermore, the team is vigilantly observing emerging modalities, including Tactile Data, which encompasses sensory information derived from body movements and gestures, Gestural Data, Physiological Data (encompassing biometrics and brain activity), and Environmental Data (such as temperature, humidity, and light conditions).

CSMT | ENVIRONMENT AND SUSTAINABILITY SCIENCES

JULIANNA COFINAS

Faculty Advisor: Rebecca Laboy

“A Comparative Assessment of the Characteristics of Manasquan Reservoir’s Wetland Soils and Trail Soils”

The Manasquan Reservoir is a man-made reservoir that was constructed in 1990 which consists of multiple pedestrian trails around the pine-oak forest and six major freshwater wetlands that were created after construction. This project analyzed the soil surrounding three of these wetlands along with points along the five mile perimeter trail in order to compare various characteristics of wetland soil and trail soil. Three soil samples from each of the selected wetlands and three from the pedestrian trail were collected and pH tested, sieved for a textural analysis, and assessed for plant-available nutrients including nitrogen, phosphorus, and potassium. The pH levels of the wetland and trail soils did not show much diversity and overall indicated an average value of 6 which is more basic than the average pH of 4.5-5.5 for the coastal plain of New Jersey. The wetland soils displayed a variety of soil textures including sandy clay loam, loamy sand, and sandy loam while all trail samples were sandy loam. While nitrogen was not present in any soil sample, the trail soil samples indicated a higher level of phosphorus than the wetland soil

and implies a source of nutrients from neighboring homes or another human source. A surplus of potassium was revealed in all wetland samples and requires more testing to determine the cause of these excess nutrients. Further research of the reservoir's construction history and continued nutrient testing of the wetland soil will help ensure the wetlands of the Manasquan Reservoir remain protected and unaffected by human influence so the ecosystem can continue to develop and thrive.

CSMT | HEALTH INFORMATION MANAGEMENT

RALIAT AMINU

Faculty Advisor: Sharmistha Das Iyer

"The Effects of Sleep on College Students Satisfaction Levels"

The purpose of this study aimed to investigate the relationship between sleep habits and college students' satisfaction levels to their academic performance, social life, and mental and physical well-being. A total of 50 freshmen undergraduate students from the East Coast completed self-reported measures assessing the variables of interest in this study. The questionnaire taken by the 50 participants was distributed via email and in-person interactions over the course of two weeks, collecting information on multiple-choice and open-ended questions. The study gathered both quantitative and qualitative data through a mixed methods approach. Results revealed a considerable proportion of freshmen college students commonly reported low satisfaction levels and exhibited symptoms of poor sleep, affecting different areas of their daily lives. The results have important implications emphasizing the significance of adequate sleep and good sleep habits amongst the college student population, highlighting sleep's crucial role in academic success, social life, and overall health.

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CSMT | SCHOOL OF INTEGRATIVE SCIENCE AND TECHNOLOGY (IST)

CLEVELAND MORINVIL

Faculty Advisor: Samip Bhattarai, Dr. Marshall Hayes

“COVID-19 Trends & SGTF”

Abstract: The purpose of this investigation is to track and identify trends in COVID-19, the respiratory illness caused by the SARS-Cov-2 virus including variants from dates November 18, 2021 into February 25, 2022. There will be an introduction of its history, its outbreak and impact on human health via diagnostic surveillance by RT-PCR and whole genome sequencing. From there, this investigation will go into the background of the disease. Essentially, what genes are unique to the virus such as its N-Gene, ORF1AB Gene and the cornerstone of this investigation is its S-Gene. These primary genes help identify if a patient is positive. However, emerging variants of COVID-19 have been missing the S-Gene which is known as SGTF (S-Gene Target Failure). Failure of the S-Gene can be used to track new variants (Alpha and Omicron), it has now become a reliable marker for identification with the hope of making future predictions for the next outbreak. What makes this important to society? It will improve our overall public health response which includes preventative care, faster laboratory diagnostic methods and stronger vaccines.

MCG | SCHOOL AND CLINICAL PSYCHOLOGY

ANASTASIJA KILINA

Faculty Advisor: Efe Kutuk

“Reducing the idea of waste”

Recycling is one of the most fundamental industrial practices as it attenuates negative environmental effects. However, most companies are unable to cost-effectively recycle their by-products owing to a lack of appropriate technological solutions. This aspect prompts numerous companies to shy away from recycling their by-products and wastes and developing alternative procedures for discarding them. Indeed, the recycling industry faces numerous challenges that limit its ability to cost-effectively make waste a useful product despite the huge potential in this industry. Therefore, it is essential for one to review the recycling process and some of the companies that invested in this sector. The company that I choose to analyze is Terra Cycle organization. The company focused on developing technological solutions for recycling various products. Some of the products recycled by the company include plastic wrappers, tobacco waste, packs of coffee pods, and deodorants and other personal care products. Besides, the company develops unique solutions for recycling bulk products. The primary target of the company entails collecting waste from various households. The products are sorted, washed, and clouded into pellets. The pellets are molded to

form various items such as benches, chairs, and fences. Besides, the organizations created a platform where individuals can submit a product to assess whether it is recyclable. The organizations liaise with numerous various industrial organizations to develop scalable recycling solutions. Numerous organizations seek their services with the aim of integrating effective waste management. Reviewing the Terra Cycle company provides in-depth insight into some of the critical solutions used to reduce waste. Recycling is essential as it can help organizations reduce environmental degradation and bio-diversity disruptions.

KAYLA SERGIO GOMEZ

Faculty Advisor: Efe Kutuk

“Carpal Tunnel Syndrome in Design”

Carpal Tunnel Syndrome (CTS) is a common illness with over six million cases every year. Despite it’s relatively easy solutions to treat it, many cases are often prolonged and become severe, leading to surgery or even permanent disability in the worst cases. While there is a multitude of causes that contribute to the development of Carpal Tunnel syndrome, treatment often includes lifestyle changes in order to reduce stress on the carpal tunnel syndrome and on the wrist. These lifestyle changes are to maintain an ergonomic posture for the wrist. As industrial designers, ergonomics should be a very important factor to include in design, especially in cases of products made for long-term use. Ergonomic disorders related to work have been the fastest growing injury, and over 56% of injuries reported to OSHA. As designers, we should have more diligence and design for the consumer in mind, especially for the extreme users of any product.

MCG | PUBLIC ARCHITECTURE

NICHOLAS CHATZOPOULAS, GREGORY STEPHANO, CAMERON CLARK

Faculty Mentor: Camille Sherrod

“Roots to Grow”

Our research addresses three different, yet prominent, issues that cities across the United States are plagued with. Underutilized spaces, lackluster child care, and food insecurity. On average, more than 20% of land, in cities with populations of over 1 million people, is used for parking. Parking lots are some of the most underutilized spaces in our country, building above them revitalizes a large usable space that was previously wasted. Nationwide an estimated 70,000 childcare programs faced closure in September 2023 after the expiration of the federal Child Care Stabilization Grant affecting almost 3.2 million children. In response, our proposal for the New Brunswick Public School System in New Brunswick, New Jersey, offers a replicable model for schools across the country. We are proposing affordable housing for teachers as a sustainable solution for staffing affordable childcare facilities also on site. Our childcare pods employ a series of modular

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units that offer nutrition-based programming and space planning that creates new interactions between students and their education as well as students and right-minded role models.

KAMILA DIAZ CALDERON

Faculty Mentor: Stephanie Sang Delgado

“Raiz Community Center”

This transformative community project, strategically positioned just two blocks away from the heart of Kean University’s main campus, emerges as a beacon of hope for the Elizabeth and Union communities in New Jersey. The project focuses on the crucial issue of food scarcity in this area, which has long been identified as a food desert. At its core, this community center is a testament to its commitment to enhancing the overall well-being of its residents. The comprehensive design of the space is crafted to foster an ecosystem that meets immediate food needs and empowers the community through education, recreation, and vital services. Rooted in the principles of sustainability and community engagement, the project aims to create a hub where residents can access food and engage in food-making activities year-round. The programming of the community center encompasses various facets, including recreational and educational spaces, offices for community-specific services, a food bank, a food pantry, community commercial kitchens, and accommodations for visitors. These community-specific spaces are inspired by the work of Kula Urban Farms and Interfaith Neighbors who work in and for communities across the state of New Jersey providing food insecurity relief as well as health and legal counseling services. However, the centerpiece of the project lies in the innovative approach to food production. The design incorporates cylindrical masses of indoor hydroponics, strategically positioned at the intersection of various programmatic elements. Additionally, the rooftop spaces are dedicated to cultivating larger crops, contributing to a multifaceted solution for the food scarcity issue. The main tectonic feature of the design is the implementation of a mass timber waffle roof structure, both in the interior and exterior spaces, which was developed through extensive research and parametric design. This architectural choice is not merely aesthetic but serves a functional purpose by indicating the diverse activities taking place within, providing shade in exterior spaces, and rotating to indicate interior spaces. The orientation and height differences of the waffle roof design act as physical and purposeful elements, seamlessly uniting different areas of the community center and, by extension, the communities it serves.”

KAMILA DIAZ CALDERON

Faculty Advisor: Camille Sherrod

“Shattering the glass box: unraveling the role of the undergraduate architecture curriculum in the exclusion of women architects of color”

One of the most effective approaches toward the goal of equity and inclusion in our society is increasing diversity and representation. Research from the University of North Carolina at Chapel Hill (Staton, 2019), shows that representation does

matter, especially when it comes to academia where we see a direct correlation between the representation of people of color (POC) as professors, faculty, and in curricula, positively influencing the academic success of students of color. This research sought to analyze the demographics of architecture in education and the profession specifically when it comes to the exclusion of women of color. In particular, 58 undergraduate architecture programs accredited by the National Architecture Accreditation Board (NAAB) were researched, finding that 44.8% of the schools do not explicitly mention non-Western architecture in any history or theory courses. The lack of representation in the first step of the career of women architects of color, being their education in which they make up over 50% of the undergraduate architecture student body (NAAB, 2022), can be directly affecting their personal and professional achievements and aiding in their exclusion not only when it comes to the classroom, but to a larger concern, in their workplace. Based on existing research combined with our own we suggest NAAB require all accredited schools of architecture to include history and theory courses about architects of color in their curricula, specifically Black and Latinx architects, where students learn about other professionals that look like them and who have succeeded in the same path that they are headed towards.

DANIELA LEON

Faculty Mentor: Camille Sherrod

“Using biophilic design principles to improve mental health on college campuses: a campus-based wellness center design-research project”

The amount of time college students on urban college campuses spend removed from nature can negatively impact their mental health, contributing to increased stress and anxiety and a decrease in their overall well-being. Biophilic design acknowledges the need for humans to be embedded in nature and advocates for designing spaces with natural elements to improve human well-being (Kellert and Wilson 1993). By implementing said concept where human beings are both connected to nature and offered multiple meaningful sensory experiences, designers can positively contribute to human well-being. This project proposes to reduce college student stress through the design of a campus-based wellness center. Through the effective implementation of biophilia strategies for the use of water, light, and sound, the project aims to serve as a model for positively impacting college students' mental health through architectural design.

LAURYN REPOLLET

Faculty Mentor: Tracie Feldman

“A New Purpose for the Kean Trolley Buses”

Kean University is becoming a more sustainable campus with many efforts to incorporate eco-friendly projects and sustainability into the campus. The trolley buses used to transport people around the Kean University Union/Hillside campuses will soon be placed out of commission with the transition to eco-friendly buses. For my project, I looked into different ways to repurpose the iconic Kean trolley buses. We are proposing to redefine the use of the bus frame and chassis

STUDENT ORAL ABSTRACT

and convert them for an alternative use. The reclamation of shipping containers, out-of-service train cars, moving vans, and school buses inspired me. I saw a multitude of ways these side-lined vehicles were incorporated into a campus as a unique feature. Through my research, I found various inspiring ideas that could be integrated into Kean's campus and enhance the student experience while still incorporating the ideas of sustainability and reuse rather than sidelining and disposing. I am proposing four different uses. We can repurpose the trolley buses into structures that would be greatly appreciated by the Kean University community: a food and dining area, a school store, a library/study space, and turning it into a pedestrian bridge over Trotters Creek on campus. These ideas can create iconic landmarks unique to the Union/Hillside campus and a way to continue the life and legacy of the trolley buses. The project demonstrates the potential for the trolley buses to create additional public spaces on Kean's campus. The trolley buses are a part of Kean's history. Finding a way to incorporate the four trolley buses into the campus landscape will continue the history and purpose of the Kean trolley buses.

ABEDNEGO MILLER

Faculty Mentor: Shalander Samuels

"Black Boys Trauma"

The definition of foster, as a verb, is to care for a child who is sworn into one's home after experiencing abuse or neglect from their biological parents which can cause trauma (OED Online, 2023). Black kids in foster care lack resources. However, there are plenty of studies that talk about kids in foster care that deal with trauma (Morton, 2018; Tomlinson, 2008). The trauma they experience causes them to have emotional and mental trauma that can impact them in a negative way. For example, running away during foster care placement despite the child's background. Throughout this research paper, I'll discuss the importance of breakdown in the lives of traumatized and abused kids in foster care. I'll draw attention to the experiences of black children, specifically black boys who experience trauma, and share possible ways they can be supported. Being patient with foster children's needs and showing love and affection can help prevent the negative impacts of trauma.

KAILEY VIERA, MILDRED ALVARADO, ASHLEY MASSANO, DALE MARTIN, STEVE CARDONAS

Faculty Mentor: Tracie Feldman

"Designing the Ideal Chemical Laboratory"

During the 2023 Fall semester, a team of architectural and interior design interns at campus planning were tasked to provide a functional layout for a chemical laboratory that would be constructed for approximately thirty students. With extensive research, the team was able to calculate the necessary square footage per person; the accurate placement of gas, water, ventilation, and electrical hookups; proper means of egress; acceptable materials; equipment and fixtures; and more. After the research process, each intern created their own floor plan

based on their findings, and from there, the team communicated which aspect of each layout did and did not work. Everyone on the team updated parts of their layout that did not work, and they each came out with a unique functioning layout for a chemical laboratory. With the expansion of Kean's STEM Research, these laboratories meet the standards and requirements of laboratory design while providing students with a space to learn and research effectively.

**SPECIAL PANEL
PRESENTATIONS**

“A creative play: How Five Women Make Meaning of Their Temporal Environments While Experiencing Homelessness”

LAURIE KNIS-MATTHEWS, DEPARTMENT OF OCCUPATIONAL THERAPY

KAREN HART, THEATRE CONSERVATORY

HOLLY LOGUE, THEATRE CONSERVATORY

Format – Live Play

This study explored how five women perceived time while experiencing homelessness. By using in-depth interviewing, three main themes emerged from the data; Theme 1: Homelessness is a complex, chaotic experience that changes within blended moments of time as I move from place to place. Theme 2: Outside events influenced how I perceived and structured my time while homeless. Theme 3: Now that I have a permanent place to live, I am taking the time to participate in new occupations and learn how to live a better life. These findings support a more nuanced understanding of this multifaceted construct to inform work with people experiencing homelessness.

Faculty members from the Theatre Conservatory and the Department of Occupational Therapy collaborated to create a play illustrating the three themes that emerged from this qualitative research study.

“Designing the Ideal Chemistry Laboratory”

**ASHLEY MASSANO '26, MILDRED ALVARADO '26, DALE MARTIN'25,
STEVE CARDONA'26, AND KAILEY VIERA '23 BA OF ARCHITECTURE,
MA '25**

Campus Planning and Facilities

During the 2023 Fall semester, a team of architectural and interior design interns at Campus Planning were tasked to provide a functional layout for a chemistry laboratory that would be constructed for approximately thirty students. With extensive research, the team was able to calculate the necessary square footage per person; the accurate placement of gas, water, ventilation, and electrical hookups; proper means of egress; acceptable materials; equipment and fixtures; and more. After the research process, each intern created their own floor plan based on their findings, and from there, the team communicated which aspect of each layout did and did not work. Everyone on the team updated parts of their layout that did not work, and they each came out with a unique functioning layout for a chemistry laboratory. With the expansion of Kean's Research Programs, these laboratories would meet the standards and requirements of laboratory design while providing students with a space to learn and research effectively.

SPECIAL PANEL PRESENTATIONS

JOHN S. WATSON INSTITUTE FOR URBAN POLICY AND RESEARCH - RESEARCH PRESENTATION

Presentation Title: "Cumulative Impacts and an Environmental Justice Climate Change Mitigation Policy"

Presenters: Nicky Sheats, Ph.D., Esq., Director, Center for the Urban Environment
Thomas Ikeda, M.A., Research and Policy Development Fellow, Center for the Urban Environment

Abstract: This presentation will discuss an environmental justice (EJ) issue and EJ policy recommendation the Center for the Urban Environment has worked on for years and been linked to on both a state and national level. The issue is cumulative impacts, and it focuses on how to address multiple pollutants emitted by multiple sources of pollution in a community. EJ communities, i.e., communities Of Color and communities with low-income, are disproportionately affected by this issue. The policy recommendation, which the Center for the Urban Environment has been instrumental in developing, has come to be called "mandatory emissions reductions". It is a climate change mitigation policy developed from an EJ perspective and would mandate that a power plant must reduce its air pollution emissions if it is subject to an existing governmental climate change mitigation policy and is located in an EJ community, or detrimentally affects one. The essential elements of both the issue and policy recommendation will be examined during the presentation.

Presentation Title: "Connecting to the Cultural Wealth of Students"

Presenter: Ana I. Berdecia, M.Ed. & Certified Coach, Director, Center for the Positive Development of Urban Children John S. Watson Institute for Urban Policy and Research

Abstract: The demographics in schools are changing and becoming increasingly more diverse. This fact makes it necessary for teachers to shift from solely academics to an infusion of culturally responsive practices that honor the cultural wealth that students bring to the learning table and use it as a springboard for curricula. This presentation will share the program model and findings from a 16-year evidence-based approach in New Jersey managed by the Center for the Positive Development of Urban Children of the John S. Watson Institute for Urban Policy and Research.

Presentation Title: "Black Entrepreneurship Research Project - Implications for Entrepreneurship Policy and Education"

Presenters: • Alex Rivera, Director, Center for Economic and Workforce Development, Innovation, and Social Entrepreneurship • Dr. Saran Nurse, Assistant Professor, College of Business and Public Management

Abstract: This research project seeks to understand the factors supporting and inhibiting Black entrepreneurs' resilience to chronic and episodic shocks. We will discuss some of our research findings, the implications for entrepreneurship policy and education, and the next stages of our research.

ACKNOWLEDGEMENTS

Research Days has grown into one of the most coveted academic events on campus. On behalf of the Center for Undergraduate Research and Fellowships (CURF), I would like to recognize the support and hard work of those who made the 2024 Research Days possible.

I want to express my sincere gratitude to President Lamont Repollet for his generous support for Research Days. I am grateful for his leadership and advocacy in championing student research initiatives. The event began in 2009 with 90 students taking part and this year more than 1,200 students will present their research and creative work.

I would also like to thank Dr. David Birdsell, Provost and Senior Vice President for Academic Affairs and Dr. Sue Porterfield, Vice President for Research, for their unwavering support of all forms of student research and their relentless encouragement.

The success of our Research Days has made me overwhelmed with gratitude for the incredible dedication and support of our faculty research mentors and student researchers in creating a thriving research culture at Kean University.

Lastly, I am thankful to all members of the CURF staff who were involved in all aspects of Research Days.

Together, we have established an environment where curiosity thrives and ideas flourish. Our shared enthusiasm for research and creativity has made Research Days a platform where groundbreaking discoveries are celebrated and meaningful connections are forged.

Respectfully,

Reenat Munshi

Director of Student Research & Innovation

Center for Undergraduate Research and Fellowships (CURF)

