

HONORS RESEARCH SYMPOSIUM

POSTER PRESENTATION

ABSTRACTS



COLLEGE HALL

Honors College
Office of the Dean
Honors Advising
Carolyn A. Barros Reading Room
Honors Academy

Department of Military Science

Recruiting
Administration
Hall of Honor - Sponsored by the Corps of Cadets Alumni Chapter

APRIL 11, 2025

UNIVERSITY OF TEXAS AT ARLINGTON

Sarker Abrar, Civil Engineering

Title: *Dynamic Structural Analysis*

Faculty Mentor: Dr. J. Antonio Balderrama

This research aims to explore the ways in which dynamic structural analysis in building construction can be used to predict worker's safety during the construction phase of the project. Dynamic structural analysis is the continuous monitoring of the structure's behavior under dynamic loads to predict the responses. The plan was to address key challenges, including optimizing material selection, adapting to the local codes, and ensuring stability of the structure in different weather conditions. Here, the team obtained the architectural and structural drawings of the building and identified the key load-bearing elements. Furthermore, wind, seismic, and soil conditions were analyzed using the ASCE Hazard tool. Specific tools like GIS-based mapping software and local building code resources (e.g., ASCE 7-22) were used to collect and interpret site condition data. Using real-time dynamic analysis, it was possible to predict potential critical areas where reinforcement is needed allowing modifications.

Anthony Aiyedun, Mechanical Engineering

Title: *Computational Modeling of Torque Arm and Load Cell Interactions in UTA Racing Brake Dynamometer*

Faculty Mentor: Dr. Robert L. Woods

The UTA Racing Team is developing a brake dynamometer to measure the coefficient of friction of various brake pads and calipers under controlled conditions. The dynamometer simulates on-track braking scenarios, testing brake pads at temperatures up to 1300°F and pressures similar to racing environments. Its primary goal is to generate accurate friction vs. temperature graphs for various brake pad and rotor combinations, addressing the need for dedicated testing equipment. This project creates an ANSYS simulation of the torque arm and load cell interaction. The computational model accurately represents the relationship between applied torque and measured load cell force, incorporating precise geometry, material properties, and boundary conditions. By validating simulated load cell readings against experimental data, the project offers a reliable tool for predicting force measurements across operating conditions. This modeling approach enhances UTA Racing's interpretation of dynamometer results, improving confidence in brake system performance data.

Adrin Alias, Mechanical Engineering

Title: *Development of a Cost Effective DAQ For Measuring Brake Performance in Race Cars*

Faculty Mentor: Dr. Robert Woods

This project explores the feasibility of creating a cost-effective data acquisition (DAQ) system for high-speed, real-time brake performance testing of Formula SAE racecars. The research addresses the limitations of the MoTeC DAQ currently employed by the team, which is costly and time-consuming to set up for on-car testing. The team is using a brake dynamometer for steady-state comparisons of different brake pad compounds, but evaluating real-world performance requires on-car testing. By systematically comparing various hardware platforms, sensors, communication protocols, and storage solutions, this project aims to balance cost-efficiency with reliability and performance. The research evaluates multiple processing platforms, ultimately selecting the Raspberry Pi 4 (RPi) due to its proven capability as a racecar DAQ, its high processing capability, and robust community support. This significantly benefits the UTA Racing team through reduced costs and increased testing flexibility, provided sensor outputs are properly conditioned and validated against established systems.

William Anoka, Nursing

Title: *A New Approach: Evaluating The Effectiveness of Artificial Intelligence Developments for Trauma Triage in The Emergency Department*

Faculty Mentor: Paula Wyman

Triage in emergent situations occurs when patients are assigned to areas of the hospital with different levels of care according to the perceived risks determined by their signs and symptoms. The variability of current triage protocols substantially increases the proportion of lower acuity patients who die unexpectedly due to improper risk stratification. However, recent developments in artificial intelligence (AI) have been applied to trauma triage situations to improve accuracy and the patients' outcomes. To further evaluate the effectiveness of this new tool, this study used various AI models to assess the severity of multiple patient scenarios and determine the appropriate level of care required. These models were compared based on accuracy, mortality rates, disposition after discharge, applicability to the dynamic of care, integration in diagnostic tools, and efficiency. The results show that AI-integrated triage protocols improve accurate risk stratification and may be used as adjuncts to interpretation by healthcare professionals.

Ifedolapo Awonuga, Political Science

Title: *Examining the Relationship Between Legal Frameworks, and Cultural Norms in Domestic Violence Cases in the United States*

Faculty Mentor: Kimberly Caraway

Domestic violence is a widespread issue with severe consequences for individuals, families, and society. This research examines how legal systems, societal norms, and cultural values shape the prevalence and resolution of domestic violence. It explores how institutional biases, social stigma, and legal policies hinder victim support, prevention, and intervention. Using a mixed-methods approach, the study combines quantitative data analysis with qualitative assessments of legal frameworks and scholarly literature. It highlights how race, gender, and socioeconomic status influence legal outcomes, often increasing victims' vulnerability. Despite legal reforms, systemic gaps persist, particularly the reliance on punitive measures that may overlook survivors' needs. The study advocates for restorative justice frameworks and survivor-led models that prioritize healing and accountability. Ultimately, it calls for coordinated systemic changes in both legal structures and societal attitudes to effectively address domestic violence and provide meaningful protection and support to victims.

Shreya Bandi, Architecture

Title: *The Golden Ratio in Classical and Contemporary Design Merges: Transition in User Experience Through Architectural Styles*

Faculty Mentor: Steven Quevedo

The Golden Ratio, often called the "divine proportion," is a mathematical phenomenon found in nature that has significantly influenced artistic and architectural aesthetics. It notably altered the Greek Classical Period, where it advanced the idea of structural harmony. This research examines how the ratio evolves through Contemporary and Post-Modern Architecture as it merges classical style design elements with user-centric adaptations. By analyzing Cullinan Hall and Sainsbury Wing, which represent the convergence of old and modern styles, this study explores the Golden Ratio through golden rectangle identification and proportional sectioning techniques. The results indicate that the ratio evolves through user function and cultural influence shaping the social construction of a community. This research highlights how classical principles and modern functionality blend seamlessly, demonstrating the continued relevance of the proportion. As a unifying element, it intentionally shapes ideal user function while intersecting stylistic reforms and bridging historical styles with contemporary architectural practices.

Mads Barajas, Music Education

Title: *Great Commercial Bassoon Reeds*

Faculty Mentor: Dr. Graham Hunt

Among bassoonists, it is understood that store-bought bassoon reeds are not manufactured to meet the needs of bassoonists, especially school-aged bassoonists. This study identifies commercial reed brands which permit school age bassoonists to play without unnecessary resistance and response issues, thus increasing awareness of reed selection to reduce formation of bad habits such as biting, improve tone, and reduce reed costs. Three reeds from four of the most common commercial bassoon reed brands were tested, accounting for variability in agricultural goods and handmade products across brands. Crowing, stability and intonation, high note responses, and low note responses were tested on each reed. These tests determined resistance, pitch, articulation response, and range limits. Jones and Eastman bassoon reed brands were found to perform sufficiently. Stability and pitch were the most frequent issue in commercial reeds; however, pitch improvement was observed at the conclusion of the tests.

Amanda Berney, Nursing

Title: *Maternal Depression and COVID-19: A Secondary Analysis Comparing Postnatal Depression Rates During and Before the COVID-19 Pandemic*

Faculty Mentor: Dr. Cheryl Anderson

The COVID-19 pandemic increased psychological vulnerability through isolation, fear of infection, and various other factors. Pregnancy also increases a woman's psychological vulnerability through hormonal effects, an increased risk of abuse, and psychological changes throughout their labor and delivery. Thus, the objective of this secondary analysis was to explore the correlation of Edinburg Postnatal Depression Scale (EPDS) scores and the COVID-19 birth experience. This research analyzed a previously IRB-approved study consisting of 148 mothers aged 19-40. The investigational cohort consisted of women who gave birth during 2020-2021 (per World Health Organization designation); the comparison cohort consisted of women who gave birth before this time period. Statistical analysis using ANOVA and a 2-tailed t-test surprisingly found no correlation between EPDS scores and COVID-19 birth experiences, warranting further research attention on this subject and directing future research to explore other aspects of obstetric psychological vulnerability.

Aindrila Bhattacharya, Computer Science

Title: *Design and Implementation of a Notification System for the Purpose of Improving Communication between Nurses and Patients*

Faculty Mentor: Dr. Chenxi Wang

Communication is an important part of how nurses administer treatment to their patients. Without proper communication, it is difficult for the nurses to connect with their patients and vice versa. This paper will be discussing the methodology and implementation of a notification system method for a medical app. The medical app is meant to facilitate communication from the side of the patient to the nurse, while the notification system allows the nurse to communicate back with the patient, thus transforming it into a two-way real-time communication system. This is meant to be implemented in JavaScript, the app written in React.js and Node.js and the notification system implemented using modules like react-toastify. This project will improve communication between nurses, patients and patients' families, therefore allowing for nurses to be able to take better care of the patients.

Uijin Chang, Organizational Communication Studies

Title: *The Portrayal of Acculturation of the Korean Diaspora in Texas.*

Faculty Mentor: Dr. Karishma Chatterjee

This project examined the acculturation of the Korean diaspora in Texas, focusing on how the diasporic group shapes intercultural interactions. Drawing from mainstream and non-mainstream histories, particularly diasporic histories, the study explored how Korean immigrants navigate identity, cultural adaptation, and social belonging in Texas. Employing a visual analysis methodology, a coding framework identified recurring themes and symbolic representations of acculturation of the Korean diaspora. Ninety-nine images were collected based on three groups: business group, church group, and women's group. By categorizing denotative and connotative themes, this study searched for implicit and explicit meanings embedded within portrayals of Korean immigrants and populations. The results showed that the acculturation of the Korean diaspora in Texas relied on an integration strategy of acculturation; a dynamic negotiation influenced by both intra and intercultural factors. This study contributes to broader discussions on diaspora, identity, and generational differences in shaping intercultural experiences.

Prakhyat Chaube, Computer Science

Title: *Improving User Retention and Learning through Interactive Tutorial Systems*

Faculty Mentor: Dr. Chris Conly

The onboarding experience in software applications is crucial for user engagement and retention. Traditional static tutorials often fail to provide adaptive, role-specific learning, leading to user frustration and drop-off. This project introduces an interactive tutorial system tailored for students and tutors using the CSE Student Success Center App at the University of Texas at Arlington. Designed to enhance usability and accessibility, the system personalizes onboarding experiences through guided, role-based learning paths and real-time feedback. By streamlining the learning curve, the tutorial system fosters greater user confidence and engagement, ensuring a more intuitive transition into the application. User evaluations indicate a significantly improved onboarding experience, with smoother task completion and higher sustained interaction. This research underscores the importance of dynamic, context-aware tutorials in software applications and proposes future enhancements, such as AI-driven adaptive learning and gamification, to further optimize user engagement and long-term retention.

James Davis, Physics

Title: *Examining the Accuracy of The OMNI Data in Representing Geomagnetic Storm Observations Near Earth and the Effect on Global Modeling*

Faculty Mentor: Dr. Ramon Lopez

The accuracy of OMNI—a dataset collected by satellites between sun and Earth—being propagated to bow shock nose and used to represent geomagnetic storms is a known issue. Inaccuracies of this data bring erroneous results in scientific endeavors therefore establishing the importance of accuracy and consistency. This case study examines the accuracy of the OMNI data and data near-Earth in representing geomagnetic storms with different drivers on global simulations. This research will include examples of global magnetosphere simulations, such as SWMF, driven with two storms driven by coronal mass ejections, and one driven by a high-speed stream using OMNI data and data near-Earth to illustrate potential variations in global simulation output during geomagnetic storms. Expected results from this study are that well correlated OMNI leads to well simulated geomagnetic storms and likewise poor correlated OMNI leads to chaotic random simulated geomagnetic storms.

Jennifer Diaz-Miranda, Nursing

Title: *Postpartum Depression and Anxiety Between First-Time and Multiparous Mothers of Infants in NICU*

Faculty Mentor: Dr. Cheryl Anderson

Postpartum depression (PPD) and anxiety are significant concerns for mothers with infants in neonatal intensive care units (NICUs); yet the role of parity in shaping these experiences remains underexplored. This cross-sectional secondary analysis examined data from 82 NICU mothers (62 adults, 20 adolescents) using the Edinburgh Postnatal Depression Scale and anxiety subscale. Findings revealed that primiparas and adolescents exhibited higher depression scores and multiparas and adolescents were more likely to experience anxiety symptoms. Parity, however, was not found to be a significant factor capable of predicting PPD or anxiety but results highlight the importance of early screening, personalized mental health support, and postpartum care tailored to parity and age differences. Further research should explore additional risk factors, such as socioeconomic status, social support, and access to mental health care, to enhance maternal and neonatal outcomes among large, more diverse samples.

Sejal Dulal, Biology

Title: *RNAi pathway homeostasis is essential for longevity in *Caenorhabditis elegans**.

Faculty Mentor: Dr. Alicia K. Rogers

Many studies focus on the mechanism of sRNA gene regulation, such as RNA interference, but there is little understanding of how the sRNA themselves are regulated. Phillips and Rogers identified a Sensor of siRNAs-1 (*sosi-1*) feedback loop where the loss of ERI-6/7 mRNA expression increases the siRNA production via other sRNA pathways. *Sosi-1* is now understood to be involved in autoregulating the ERGO-1 26G RNAs. This research project aims to explore the *sosi-1* mutant and its effects on fertility in *C. elegans* via a lifespan assay with the condition of heat stress at 25°C. Furthermore, the wild-type (N2) strand and the standard physiological temperature of 20°C were applied to compare the genotypic and phenotypic effects of *sosi-1*. It is expected that wild-type *C. elegans* have more progeny in their lineage than *sosi-1* mutants because the proper regulation of the 22G-RNA is lost in the mutant and is likely to result in the disruption of gene expression and hemostasis.

Amira Elliby, English

Title: *Why You're Gayhee for Jaehee: How Dating Sims Promote Queer Self-Discovery*

Faculty Mentor: Dr. Sarah Shelton

Dating simulators are a video game sub-genre in which the player's primary goal is to romantically pursue their favorite love interest through in-game interactions. While some dating sims present situations that encourage heterosexual female players to question, explore, and even accept possible queer identities for themselves, there is little research on what specific game elements foster this exploratory behavior. This project examines player responses and in-game content from two dating sims, Chrono Days Sim Date and Mystic Messenger, to determine which game aspects women found most helpful in encouraging them to question their own sexualities. Out of five key elements emphasized throughout the literature on romance games, this study determined that art, characterization, narration, and authorship are the foremost significant factors that allow Chrono Days and Mystic Messenger—and perhaps similar dating sims—to foster queer exploration among straight-identifying female players.

Ronda Finney, Interdisciplinary Studies

Title: *Identifying Healthcare Access Barriers for Hispanic/Latina mothers in Texas*

Faculty Mentors: Dr. Cristina Salinas and Dr. Christopher Conway

Hispanic/Latina mothers in the U.S. face layered barriers to healthcare access, shaped by cultural, economic, and historical factors such as economic instability, infrastructural issues, education access, social/community support, and healthcare quality. This study investigates the most significant barriers to healthcare access among Hispanic/Latina mothers in Texas through a mixed-methods survey. Participants (ages 18+, Hispanic/Latina mothers, Texas residents) responded to 24 ranked barrier questions and provided optional written responses. Findings reveal that economic instability is the most impactful social determinant of Hispanic/Latina health on access to healthcare. The most prevalent barriers include unaffordable care, cultural disconnects with providers, and prioritizing children's health over personal health. The study emphasizes the need for culturally sensitive interventions and policies that address the most prevalent barriers to healthcare access. Improving healthcare trust and accessibility for Hispanic/Latina mothers is vital to eliminating health disparities and improving maternal and community health.

Mariam Hantouli, Biology

Title: *The Cold Truth: How Brassica rapa Responds to a Chill*

Faculty Mentor: Dr. Heather Arterburn

This experiment aims to investigate the effects of cold exposure on the growth of *Brassica rapa*. A total of 40 plants were divided into four groups: one control group with no cold exposure and three experimental groups subjected to 1 hour, 6 hours, and 24 hours of cold exposure, respectively. Each plant received a single cold shock in a -4°C freezer. Following the exposure, the plants were returned to standard growing conditions to assess the impact of cold stress on their growth. The growth of *Brassica rapa* was significantly affected by cold exposure, with variations observed among the different experimental groups. There was no statistically significant difference for the 1 hour and the 24-hour experimental groups. But there was a statistically significant difference for 6-hour group. The 1 hour and 24 hours displayed a consistent growth rate, whereas, the 6 hours displayed a significant difference within the data.

Garrett Henderson, Architecture

Title: *Investigations of Musical Constructs: An Analysis of Graphic Scores and Their Spatial Relationships*

Faculty Mentor: John P. Maruszczak

This project seeks to understand, through creative production, how graphic scores and their purpose as a medium can be applied to architectural design. Graphic scores are an abstract representation of musical notation; they utilize unfamiliar concepts and shapes to illustrate musical ideas through unconventional means. Discovering how one can reverse-engineer these works of notation can allow architectural designers to rethink the representation of spaces and the underlying inspirations that form them. Research into broader artistic overlap, historical context, and precedent analysis culminated into a set of drawings that illustrate such concepts through an architectural lens. The production of these drawings showcases the function of artistic, emotional, and interpretive expression in the design process, encouraging works more in tune with the human condition.

Axel Hoge, Cinematic Arts

Title: *Origami Hearts: An Investigation into the Importance of Art via Feature Screenplay*

Faculty Mentor: Changhee Chun

Art has been present for all of history. Even in ancient times, humans took precious time away from gathering food to produce objects that had no practical value. What is the point of making art? Why is it important? These questions will be explored via feature-length screenplay. For structure, the screenplay will be broken down into 15 beats and 18 sequences. 'Origami Gods' is set in a parallel dystopian world, where social status is determined not by wealth, but by one's position on Maslow's Hierarchy of Needs, with only the fortunate upper class being permitted to pursue Self-Actualization. Dante Lipofsky, the glassblowing protagonist, applies to be promoted to Level 5; a process that requires intense competition against other artists. This screenplay explores and emphasizes the importance of art.

Rachel Hollins, Interactive Media

Title: *How Conceptual Artists Create Immersive Fictional Worlds*

Faculty Mentor: Joshua Wilson

When creating media for entertainment, such as animated shows, movies, video games, etc., conceptual artists utilize a process called worldbuilding. Worldbuilding is defined as the integration of fictional environments, species, props, and civilizations that create an immersive world. However, research about real world elements is often not addressed enough when creating conceptual worlds. Therefore, this creative project aims to define how conceptual artists create believable fictional worlds while showcasing the research behind the process. First, research is conducted about the real world. This includes choosing and studying the environmental, cultural, social, architectural, and biological aspects, which will act as a foundation for the project. Next, these aspects are integrated and utilized for brainstorming ideas and sketching. After the sketching phase comes the rendering process, which involves polishing not only the sketches, but the ideas gathered from the brainstorming process. The resulting images show a fictional immersive world.

Megan Hui, Public Health

Title: *Health Care Delivery of Asthma in Health Care Systems Across the World: A Comparison of Three Health Systems*

Faculty Mentor: Dr. Erin Carlson

Asthma remains a significant health concern globally, with healthcare delivery varying across different systems. This study aims to compare asthma care within three healthcare systems: the Beveridge model (United Kingdom), the Bismarck model (Switzerland), and the National Health Insurance model (Canada) focusing on cost, quality, and accessibility. This study used a systematic review, gathering published evidence from The Organization for Economic Cooperation and Development (OECD) data explorers that explicitly met eligibility criteria for asthma treatment and outcomes. Evidence from government reports, public health databases, and peer-reviewed literature was analyzed to examine key factors including costs, physician fees, healthcare infrastructure, and patient outcomes. This study hypothesizes differences in healthcare system models significantly impact the price, quality, and accessibility of asthma care. These findings contribute to broader understanding of providing high-quality care while controlling costs, expanding access, and improving outcomes in addressing asthma.

Varun Anil Jadhav, Mathematics

Title: *Estimating Destructive Cure rate models for EWP risks using SQH method*

Faculty Mentor: Dr. Suvra Pal

Cure rate models, calculated for various types of cancers, play a crucial role in analyzing time-to-event data, especially when a significant portion of the population achieves long-term remission or cure and does not experience the event of interest over an extended period. Traditional survival analysis techniques assume that all individuals are susceptible to the event, which may lead to biased results due to the presence of a cured fraction in the population. Inspired by its successful application in optimal control problems, we apply the Sequential Quadratic Hamiltonian method to estimate destructive cure rate models for exponentially weighted Poisson risks. We compare the performance of our proposed algorithm with that of existing methods, including the EM algorithm. Our findings demonstrate that the new algorithm not only provides more accurate estimates but also enhances computational efficiency.

Gunnika Kapoor, Computer Science

Title: *CueGen: Customizing Sensor Captions for Neon Bending Tutorials*

Faculty Mentor: Dr. Cesar Torres

Methods of knowledge transfer that rely primarily on visual and/or auditory formats do not effectively convey context-specific or implicit skills, called tacit skills. This limits knowledge transfer. This work proposes using customizable pitch and spatial audio vibration captions to convey tacit knowledge for neon bending video tutorials. Such a system provides users with greater control and support, potentially improving knowledge transfer, autonomy, and experience. This study examines how these cues can be designed by analyzing natural language queries users might ask when watching expert bending tutorials and translating them into audio cues using If-This-Then-That (IFTTT) rules. GPT-3.5 was used to translate three natural language questions about a fictional user's and two expert benders' performance into IFTTT rules, generating spatial audio vibration cues. Results indicate LLMs can effectively transform natural language prompts into IFTTT rules, which may allow for integration of automated cues generated from natural language prompts into video tutorials.

Jaspreet Kaur, Nursing

Title: *Stress and Burnout Among ICU Nurses*

Faculty Mentor: Dr. Thomas Dombrowsky

Burnout is a significant occupational hazard for Intensive Care Unit (ICU) nurses. High patient acuity, staffing shortages, and long shift hours increase stress and diminish well-being among nurses, affecting patient care outcomes. This study examined the prevalence of stress and burnout among ICU nurses to identify contributing factors and potential interventions. An anonymous online survey was conducted among 110 ICU nurses, utilizing the Maslach Burnout Inventory (MBI) and the Perceived Stress Scale (PSS). Findings revealed that 42.5% of nurses reported high emotional exhaustion, while 37.5% felt they had little to no control at work. The most frequently cited workplace stressors were the emotional toll of patient care (29.2%), high patient acuity (26.55%), and staffing shortages (10.62%). Correlation analysis indicated a significant relationship between emotional exhaustion and perceived workplace control. These findings emphasize the need for improved staffing policies, leadership support, and workplace wellness programs to mitigate burnout.

Areeb Khan, Computer ScienceTitle: *Generative art in In/e motion*

Faculty Mentor: Dr. Shawn Gieser

The In/e project explores different ways to use technology to make stage performances more interactive. By utilizing Intel RealSense cameras and NuiTrack software, the system captures motion data and transforms it into dynamic animations that interact with performers in real-time. This research focuses on implementation and explores whether generative art can be used to enhance the performance experience. The project involves training AI models, such as GANs or NST, to generate real-time visuals based on performers' movements while ensuring diverse artistic styles and addressing ethical concerns. Motion capture integration utilizes Intel RealSense cameras, with middleware processing and refined gesture tracking. The system will undergo iterative testing with performers and choreographers to refine regular and AI-generated visuals, ensuring responsiveness and maintaining artistic coherence with the performance narrative. This research contributes to the evolving intersection of artificial intelligence and live performance, offering ways to enhance audience engagement and artistic expression.

Araohat Kokate, Computer ScienceTitle: *A Data Driven Approach to Student Success: Visualizing Engagement and Performance Metrics*

Faculty Mentor: Dr. Christopher Conly

Many tutoring centers lack tools to analyze and visualize key performance metrics, limiting data driven decision making. This study develops a data visualization feature for the CSE Student Success Center App at the University of Texas at Arlington, enabling administrators to track student engagement, tutor performance and session trends. Using the data of students and tutors, the feature provides interactive dashboards for real-time insights. Administrators can monitor attendance patterns, tutor workloads and booking trends, optimizing resource allocation. Findings indicate that real-time data visualization enhances decision-making, reducing manual effort while improving operational efficiency. This can further help improve student support services. This study underscores the importance of integrating real-time data visualization to support data-driven decision making in tutoring services, offering a model to integrate into tutoring platforms.

Mary Kumah, BiologyTitle: *Transition from XX/XO to neo-XX/XY: Amblyophallus exaltatus*

Faculty Mentor: Dr. Daniela Palmer

This research aims to explore the evolution of the neo-XX/XY sex chromosome system of *Amblyophallus exaltatus*; a treehopper species with a previously XX/XO sex chromosome system. Neo-XX/XY sex systems typically evolve due to a fusion event between an X chromosome and an autosome. Although cytological work has indicated neo-XX/XY system within *A.exaltatus*, the molecular drivers behind this chromosomal fusion remain poorly understood. By performing a whole genome coverage analysis, the parts of the *A.exaltatus* genome that fused with the X chromosome will be better understood on a molecular level. Male and female *A.exaltatus* DNA sequencing reads were mapped onto the *A.exaltatus* reference genome as well as onto the reference genomes of other treehopper species: *Umbonia crassicornis* and *Tylopelta gibbera*. The result from the chromosomal fusion analysis performed on *A.exaltatus* will be compared to another neo-XX/XY treehopper, *Callocophora calliginosa*, to determine if the same chromosomal fusion events are occurring between species.

Raphaella Malicay, Architecture

Title: *Affordable Architecture: Promoting Mental Health Through Cost-Effective Design in Underfunded High Schools in Dallas-Fort Worth*

Faculty Mentor: Crystal Maria Portillo

Mental health awareness has increased over the years as well as numerous strategies to mitigate it. Some of these strategies include addressing the built environment. This paper explores the intersection between mental health and the built environment through the lens of affordable architectural methods that would be effective in underfunded secondary schools. This study examines how architecture influences students' well-being and how certain design strategies can be implemented even in schools that lack the financial resources for adequate infrastructure. Here the focus is on investigating affordable solutions such as improving ventilation, optimizing natural light, having flexible learning spaces, and incorporating biophilic design. By analyzing examples of successful mental health design strategies that are cost-effective and surveying the needs of marginalized communities, this research highlights how thoughtful, budget-friendly design strategies can have a profound impact on students' mental health and academic performance. Ultimately, the results demonstrate the need for mental health-aware design in school architecture regardless of financial ability.

Jonas Manalo, Nursing

Title: *Analyzing the Moderating Effect of Self-Efficacy on the Interaction Between the Patient-Provider Relationship and Medication Adherence*

Faculty Mentor: Dr. Yan Xiao

Older adults taking multiple medications are at high risk for experiencing adverse drug events that result in hospitalization. Nurses are one of the first points of contact for patients and serve as patient educators. This study aims to assess the impact of patient self-efficacy on the interaction between the patient-provider relationship and medication adherence. The sample comprises adults aged 50 or older taking five or more medications. Pearson correlation tests and linear regression with a moderator were performed to analyze relationships among variables. The regression analysis failed to yield significant results while the correlation tests reinforced established literature which suggests that self-efficacy improves with patient-provider relationship. The lack of significant results could be explained by several reasons. Nurses must understand the factors that influence medication adherence. Continued research should be focused on these factors to better understand how to facilitate effective patient interactions.

Kaisy Martinez, Biology

Title: *A Functional Study of DPLG3, a Transposable Element Derived Protein, in Drosophila melanogaster*

Faculty Mentor: Dr. Esther Betrán

A big fraction of most eukaryotic genomes is comprised of transposable elements (TEs). TEs are mobile genetic sequences often causing deleterious effects as they increase in copy number. On rare occasions, TEs can undergo molecular domestication, where the TE proteins are co-opted by the host to serve cellular functions. In *Drosophila melanogaster*, domestication from PIF TEs has resulted in five *Drosophila PIF-Like Genes* (*DPLG1-4* and *8*). This study focuses on investigating *DPLG3*. In *DPLG3* loss of function lines, a fraction of the progeny shows an abnormal gonad phenotype. We hypothesize that *DPLG3* might be a regulatory protein. Preliminary data supports that its absence leads to ectopic male-specific gene expression in early oogenesis. This was investigated using qRT-PCR. Additionally, the abnormal gonads were fluorescently stained to visualize cellular abnormalities. This work helps elucidate the role of *DPLG3* in the *D. melanogaster* genome and gives insight into the reasons for TE domestication.

Aryan Mediratta, Computer Science

Title: *Controlling Mobile Inverted Pendulums and Optimizing Leaning Angle to Apply Force using Reinforcement Learning.*

Faculty Mentor: Dr. Manfred Huber

Reinforcement Learning is a Machine Learning paradigm that involves simulating learning through rewards and penalties in intelligent systems. This technique is often employed in robotics when traditional control methods are insufficient or when human intuition does not provide a good solution on how to control robot systems. This project involves training a Segway-style Mobile Inverted Pendulum (MIP) robot to balance and push a box forward. The BeagleBone Blue board that includes a built-in Inertial Measurement Unit (IMU) and encoder ports is used. These sensors enable the system to measure its current state. The goal is to find the optimal leaning angle needed to push a box forward while balancing on two wheels. The findings from this study can contribute to the development of self-balancing robots that can fit through tighter spaces, which can potentially improve operational efficiency in environments where space is a valuable resource, such as industrial warehouses.

Yannet Mercado, Architecture

Title: *Lack of Infrastructure: Addressing Water Scarcity and Housing Needs in Sand Branch*

Faculty Mentor: Dr. Ariadna Reyes-Sanchez

In the outskirts of the Dallas-Fort Worth Metroplex (DFW), unincorporated communities like Sand Branch offer low-cost housing opportunities but unstable living conditions. Sand Branch struggles to access clean water and often relies on donations from nonprofit organizations. This research investigates how implementing a Rainwater Harvesting System (RWH) could increase their independence and resilience. Sullivan's work on sustainable housing policies for low-income, self-built communities was examined and the possibility of RWH as a solution for Sand Branch was evaluated. By analyzing similar case studies, along with regional rainfall patterns in DFW, this study estimates the potential benefits of RWH in Sand Branch. Adapting a Tlaloque system, like those in Isla Urbana, to Sand Branch's mobile homes could provide a viable water source. With RWH, about 36% of rainwater can be reused annually. By adopting RWH, residents could reduce dependence on external aid and improve long-term water security.

Inshaad Merchant, Computer Science

Title: *Integration of Notes Section with Access Management into the CSE Student Success Center Mobile Application*

Faculty Mentor: Dr. Chris Conly

This research explores the development of a notes section with access management, specifically designed to assist Computer Science and Engineering students to revisit and revise all the notes and key points highlighted in their tutoring sessions. While the senior design project focuses on the CSE Student Success Center application that allows students to schedule tutoring sessions, manage appointments, and manage their profiles within this application, the honors capstone project adds on a specific section for students to save all their notes and important video links and attachments to continue their learning outside of the tutoring sessions. A centralized platform for note sharing within the application would streamline access to high-quality academic resources, improving collaboration and long-term retention. Implementing access control in this section ensures academic integrity so that only students who have or who have already taken that course can access the notes of that course only, thereby preventing unauthorized access within the application. This project aims to enhance student success by providing an organized, secure, and collaborative environment for continuous learning.

Aadee Mitee, Mechanical Engineering

Title: *Design of a Helical-type Rotor for Enhanced Energy Harvesting in Small-scale Vertical Axis Wind Turbines*

Dr. Michael Bozlar

With the growing focus on renewable energy, wind turbines have gained attention. However, an increase in wind turbines poses environmental concerns due to the difficulty of recycling their composite materials. This research explores a helical rotor blade design for a small-scale Vertical Axis Wind Turbine (VAWT) made from graphene-reinforced PET. Existing research often targets high-wind rural areas or uses lightweight materials that compromise recyclability. Small-scale VAWTs require unique design solutions, especially since they are often closer to people. Key design parameters such as tip speed ratio, helix angle, and blade length were identified. Optimal values were determined by evaluating the coefficient of performance across various tip speed ratios. Structural and aerodynamic loads were assessed by comparing different design configurations. This study optimized the blade geometry and found that prioritizing higher starting torque improved efficiency, making the turbine more practical and better suited for small-scale applications.

Hannah Nagib, Exercise Science, Clinical and Applied Physiology

Title: *The Impact of Goode Health Beverage on Peripheral Vascular Function*

Faculty Mentor: Dr. R. Matthew Brothers

Cardiovascular disease remains the leading cause of mortality in the United States and worldwide. Mechanisms are multifactorial but are related to elevated oxidative stress and inflammation. Goode Health provides a beverage that is high in polyphenols which reduce oxidative stress and inflammation. This study will explore if the consumption of the Goode Health beverage improves vascular function as indexed by lipid profiles, and peripheral vascular function as indexed by % Flow Mediated Dilation (FMD). Baseline visit included measurements for peripheral vascular function through FMD of the brachial artery and routine blood draw. These measures were repeated two weeks later, during which participants were asked to consume the Goode Health Beverage twice a day. Two weeks of drinking Goode Health improved peripheral vascular health, and total cholesterol. The Goode Health beverage improves cholesterol levels without the need for drugs that may cause side effects.

Calvin Nguyen, Biology

Title: *The impact of maternal age on the expression of transgenerational plasticity in *Daphnia pulicaria**

Faculty Mentor: Dr. Matthew Walsh

Transgenerational plasticity refers to persistent, non-genetic changes in phenotype that enhance offspring survivability in variable environments. In *Daphnia*, increasing maternal age is correlated with maladaptive plasticity. To explore this, six clones were collected from two Wisconsin lakes, acclimated to laboratory conditions, and ten replicates were generated per clone—five assigned to young and five to old maternal age groups. Offspring were raised under three dietary treatments: one receiving only green algae, one receiving only cyanobacteria (a nutritionally limiting food source), and a third receiving cyanobacteria only during the first experimental generation, followed by green algae in subsequent generations. Body size and eye size were measured as proxies for fitness and plasticity and analyzed using linear mixed models. As expected, offspring from younger mothers generally exhibited greater fitness. However, in the mixed treatment, offspring of older mothers unexpectedly outperformed those of younger mothers in later generations, suggesting a potential compensatory transgenerational response to initial environmental stress.

Nhi Nguyen, Biology

Title: *A Comparative Analysis of Small Nuclear RNA Sequences in Spinacia oleracea, Arabidopsis thaliana, and Homo sapiens*

Faculty Mentor: Dr. Byung Ran So

In eukaryotes, the structure and function of the Sm core and its associated small nuclear ribonucleoproteins (snRNPs) play a major role in pre-mRNA splicing. The multiple human Sm proteins exhibit a high degree of conservation. While plants also utilize alternative splicing, the conservation of plant snRNAs and other non-coding RNA such as snoRNA and scaRNA, which assemble the Sm core, remains largely unexplored. In this study, plant sequences were compared with human sequences using the multiple sequence alignment program Jalview to determine the conservation of snRNPs and other non-coding RNA. Sequences analysis showed that the Sm site in *Spinacia oleracea* and *Arabidopsis thaliana* was not well conserved compared to humans. However, strong conservation was observed between *Spinacia oleracea* and *Arabidopsis thaliana*. These findings suggest that snRNA interactions and Sm core formation may differ considerably in plants compared to mammals.

Alexis O'Neal, Nursing

Title: *Wild West Healthcare: Addressing Healthcare Access Disparities in Rural Texas*

Faculty Mentor: Dr. Crystal M. Rahman

Rural communities in Texas face significant barriers to healthcare access, including geographic isolation, limited healthcare facilities, and shortages of healthcare providers, which exacerbate health disparities and contribute to poorer health outcomes. This study examines healthcare access disparities between rural and urban areas in Texas, focusing on the role of telehealth and its impact on vulnerable populations, such as older adults and cardiovascular patients. Regions of Texas were categorized into rural, metropolitan, and metroplex areas to analyze variations in healthcare outcomes and access. Rural areas, defined as those with populations under 200,000, struggle with limited resources, impacting both healthcare availability and mortality rates. Additionally, this study explores how telehealth has the potential to bridge access gaps but faces challenges like inadequate broadband infrastructure and low adoption rates. The statistically significant relationships between healthcare access and mortality underscore the need for targeted interventions to improve healthcare equity.

Sheryne Onyango, Biology

Title: *Assessment of Trabecular and Cortical Bone and Vascular Parameters in Tibiae of Sick Cell Disease Mice*

Faculty Mentor: Dr. Rhonda Prisby

Sickle cell disease (SCD) is a group of inherited autosomal recessive blood disorders affecting red blood cells, blood vessels, and other tissues. We examined the effects of SCD on bone and blood vessel parameters in tibiae of transgenic mice. Four-to-five-month-old SCD homozygous for $Hbb^{tm2(HBG,HBB^*)TOW}$, homozygous for $Hba^{tm1(HBA)TOW}$ (SICKLING; n=6) and control homozygous for $Hbb^{TM3(HBG1,HBB)TOW}$, homozygous for $Hba^{tm1(HBA)TOW}$ (CON; n=6) mice were examined. Right tibial trabecular bone microarchitecture, cortical bone parameters, and ossified vessels (i.e., calcified and bone-like blood vessels) were analyzed. Bone volume-to-total volume ratio ($0.7\pm 0.5\%$ vs. $5.7\pm 2.5\%$, respectively) in the proximal metaphysis and cortical thickness ($155\pm 5\mu m$ vs. $183\pm 6\mu m$, respectively) at the midshaft were lower ($p<0.05$) in SICKLING vs. CON. However, ossified vessel thickness ($16\pm 10\mu m$ vs. $6\pm 5\mu m$, respectively) in the marrow diaphysis was greater ($p<0.05$) in CON vs. SICKLING. Sickle cell disease, among other pathologies, diminishes trabecular and cortical bone.

Modupe Orekoya, Nursing

Title: *Enhancing engagement in Student and Professional Nursing Organizations among Nursing Students*
Faculty Mentor: Dr. Thomas Dombrowsky

This research investigates the current level of engagement and barriers to participation among nursing students in student and professional organizations. Despite the critical role of nursing in healthcare, only a small percentage of nurses actively engage in professional organizations, with similar trends observed among nursing students, who often show low involvement and reluctance to take on leadership roles. This study aims to assess the factors contributing to this lack of engagement and identify the challenges nursing students face in participating in student organizations and assuming leadership positions. A quantitative survey will be conducted among upper-division nursing students at the University of Texas at Arlington to gather data on their current engagement levels and the barriers they encounter. The findings will provide insights into the underlying causes of low engagement and offer recommendations for fostering a more active and leadership-oriented nursing student population, ultimately contributing to the advancement of the nursing profession.

Mariam Oyeyemi, Accounting

Title: *Renewable Energy Premiums vs. Investor Valuation Proposal*
Faculty Mentor: Dr. Richard Berard

This study examines whether investors assign valuation premiums to energy companies based on their level of renewable energy (RE) adoption and how a company's RE composition influences investment decisions. Twenty-five energy companies from the S&P 500 were categorized based on their renewable energy percentage. Financial data was used to identify correlations and assess investor valuation using key metrics, such as price-to-earnings (P/E) ratio, price-to-book (P/B) ratio, enterprise value-to-EBITDA (EV/EBITDA), and stock return performance. The study aims to determine whether investors assign premium valuations to companies with significant RE investments. By examining this relationship, the research provides valuable insights that help investors make informed decisions, optimize their investment strategies, and assess whether the potential returns of investing in renewable energy companies justify the risks.

Jack Pankaj, Computer Science

Title: *Generating motivational messages for behavioral change*
Faculty Mentor: Dr. Chengkai Li

High levels of sedentary lifestyles have prompted researchers to analyze ways to increase physical activity, including using Language Models (LMs). While research has found LMs to be feasible, the findings are limited in availability and scope, given that the research focuses on a short timeframe or on the user's physical health. This research assesses OpenAI's gpt-4o-mini's (one of several models powering ChatGPT) ability to tailor messages towards the user. This will be done by analyzing messages that a LM generates given a set of features describing the user's physical activity. These messages will be derived from two behavioral change frameworks: the Behavior Change Techniques Taxonomy and Motivational Interviewing. The expected conclusion is that LMs can easily cater towards users and generate motivational messages. These results will help further the understanding of utilizing LMs to motivate individuals towards being active.

Smarika Pathak, Computer Science

Title: *TutorTech: Student Success Center Tutoring Web Application*

Faculty Mentor: Dr. Christopher Conly

The Computer Science and Engineering (CSE) department faces challenges in managing its tutoring services, particularly in attendance tracking, session booking, and overall system efficiency, which hinders smooth engagement between tutors and students. To address these issues, TutorTech, a web-based application was developed to streamline management of the tutoring system and ensure smooth engagement between students and tutors. This project focuses on optimizing TutorTech's search functionality to ensure students can efficiently find tutors based on listed skills, while also examining how user interface design impacts engagement and usability. The system was developed using database structuring, algorithm optimization, and UI/UX testing to enhance efficiency. Preliminary findings suggest that an intuitive interface and optimized search significantly improve user experience and accessibility. By integrating a responsive tutor-matching system, TutorTech aims to create a more effective, user-friendly, and scalable tutoring platform, fostering a more personalized and accessible learning experience.

Joseph Pavlik, Computer Science

Title: *Identification of Unmanned Ground Vehicle Using Computer Vision in Raytheon Drone Competition*

Faculty Mentor: Dr. Chenxi Wang

A major problem with using GPS to navigate an unmanned aerial vehicle is that GPS signals do not accurately work while inside a building. This work presents the usage of the Simultaneous Localization and Mapping algorithm, ORB SLAM, in Python to solve this issue. By using the camera attached to the unmanned aerial vehicle, a map of the area covered by the drone will be created, and landmarks in area will be utilized to navigate throughout the interior of the building without the GPS. Based on previous studies, this navigation method should be viable. Preliminary tests show that this method will efficiently map out the area traversed by an unmanned aerial vehicle and allows for accurate navigation of an environment when GPS is not able to be utilized.

Allison Pham, Construction Management

Title: *Beyond the Hardhat: Examining Barriers of Women in Construction*

Faculty Mentor: Dr. Hanbo Shim

The construction industry is falling behind in female representation, with women only making up 11.2% of the industry. The existing labor shortage in this industry is further exacerbated by the limited interest among women to pursue a career in construction. The purpose of this research is to investigate the factors that contribute to the lack of women in the construction industry and explore how HR strategies can attract and retain women in construction careers. Environmental, Social, and Governance (ESG) reports from three different industries were used to analyze the percentage of men and women employees. A regression analysis was conducted to examine whether the predictive factors, DEI programs and work-life balance initiatives, had a significant effect on the gender proportion. The results showed that DEI programs had no significant effect on the gender ratio. However, work-life balance initiatives had a marginally significant effect on the gender proportion in the construction industry.

Shruthi Ranjithkumar, Public Health

Title: *A Review of Studies Assessing Modifiable Risk Factors for Dementia Among Family Caregivers in The United States Based on Behavioral Risk Factor Surveillance System (BRFSS)*

Faculty Mentor: Dr. Tiffany Kindratt

Caregivers of individuals with Alzheimer's Disease and Related Dementia (ADRD) face an increased risk of developing dementia due to advanced age and modifiable risk factors. The 2024 Lancet Commission identified 14 such risk factors, whose mitigation could reduce dementia cases by 40%. Despite this, research on modifiable dementia risk factors among ADRD caregivers remains limited. This study investigates whether peer-reviewed studies utilizing Behavioral Risk Factor Surveillance System (BRFSS) data assess modifiable dementia risk factors among ADRD caregivers. A PubMed search retrieved 27 relevant articles, which were analyzed for risk factors identified by the Lancet Commission, including traumatic brain injury, hearing loss, hypertension, smoking, and social isolation. Findings revealed a limited focus on modifiable risk factors, with depression and physical health most frequently studied. This study highlights gaps in caregiver health research and emphasizes the need for public health efforts addressing dementia prevention among caregivers.

Rohit Raut, Physics

Title: *Bismuth-207 as Purity Monitoring System for Liquid Argon Time Projection Chamber: ProtoDUNE and DUNE*

Faculty Mentor: Dr. Jaehoon Yu

The Deep Underground Neutrino Experiment (DUNE) relies on high-purity liquid argon (LAr) for optimal detector performance. Ensuring and monitoring LAr purity is crucial, as electronegative impurities can degrade signal quality in detectors. As part of Proto-DUNE, a prototype detector at CERN for DUNE, this study explores the use of Bismuth-207 (Bi-207) as a novel tool for real-time LAr purity monitoring and calibration. Bi-207 emits monochromatic internal conversion electrons, allowing precise impurity assessment without interfering with standard detector operations. By simulating the behavior of radioactive Bi-207 and analyzing data from the Proto-DUNE Vertical Drift detector, this research evaluates the gain factor, a critical parameter influencing charge signal attenuation and measurement precision. The goal of this research is to refine the Bi-207-based purity monitoring system, enhancing impurity detection techniques for future LArTPC experiments, including DUNE. These improvements will contribute to the long-term stability and performance of next-generation neutrino detectors.

Aniv Surana, Computer Science

Title: *Biometric Authentication for University Applications: Enhancing Security and User Experience*

Faculty Mentor: Dr. Christopher Conly

University applications often rely on password-based logins, which can be inconvenient and prone to security risks like phishing and weak password practices resulting from credential fatigue. This project investigates the integration of biometric authentication—fingerprint and facial recognition—into the CSE Student Success Center Mobile Application to enhance both security and user experience. The system was developed using Android's BiometricPrompt API, implementing an opt-in biometric login that processes data locally to ensure user privacy. Testing with students, tutors, and administrators demonstrated a 35% reduction in login time and a 42% decrease in failed login attempts compared to traditional password-based logins. Additionally, user retention increased to 89%, indicating higher engagement. Security audits confirmed that biometric authentication effectively mitigates password-related vulnerabilities, making it a scalable and practical solution for university applications. Potential future enhancements include AI-driven authentication, cross-platform compatibility, and multimodal biometric support.

Deborah Tachiri, Criminal Justice and Criminology

Title: *Perspectives of Medical Professions on Abortion Laws Post-Dobbs: Rapid Systematic Literature Review*

Faculty Mentor: Dr. Kaitlyn Pederson

Many states have added restrictions on abortion after the Dobbs decision. Despite varying laws, all of them contain some medical exception for the life of the mother. Among the medical community, particularly because of the possible legal ramifications for not abiding by these laws, there have been calls to create clearer medical exceptions and more guidance during severe pregnancy complications. In this study, the perceptions of medical professionals regarding different aspects of abortion laws are examined. This rapid systematic review utilizes the PRISMA system on guidance of which sources are eligible for the study. This study seeks to understand the experiences of medical professionals, their understanding of and response to the abortion laws, and their guidance on how to construct comprehensive medical exception laws. The aim is that with clearer and fully encompassing medical exceptions, there would be less confusion among the public and more confidence among professionals.

Paulene Cayla Tongol, Accounting

Title: *Strengthening Governance in ESG Reporting: Enhancing Transparency and Accountability*

Faculty Mentor: Terra McGhee

As corporate sustainability becomes a growing priority, Environmental, Social, and Governance (ESG) reporting has gained significant importance in the ability to assess the impact and accountability of a company. However, governance-related challenges such as conflicts of interest, transparency gaps, and weak accountability structures continue to undermine the reliability of ESG disclosures, which are intended to provide stakeholders and investors with a clear, standardized view of a company's sustainability practices. This study explores how governance failures impact ESG reporting effectiveness and examine strategies for improvement. Through conducting a systematic literature review, this research synthesizes findings from academic studies and industry articles to identify any key governance risks and strategies for strengthening ESG oversight and accountability. Findings show that regulatory inconsistencies, absence of standardized metrics, and insufficient oversight contribute to unreliable reporting. Enhancing governance through regulatory reforms, improved oversight mechanisms and universally adopted frameworks can improve disclosure credibility.

Taylor Vera, Nursing

Title: *The Effects of Preeclampsia on Perception of the Birth Experience and Subsequent Postpartum Depression Among Women with Infants Admitted Into the Neonatal Intensive Care Unit*

Faculty Mentor: Dr. Cheryl Anderson

The purpose of this secondary research analysis was to explore the effects of preeclampsia (PE) upon perception of the birth experience and postpartum depression (PPD) among women with infants admitted into a neonatal intensive care unit (NICU). Data were collected from preeclamptic mothers (N=82) at a large county hospital using the Edinburg Postnatal Depression Scale (EPDS). Of total participants, 51.9% reported PE, 6 adolescents (30%) and 36 adults (58%). Of these 42 women reporting PE, 56.1% (n=23) reported a negative childbirth and 19% (n=8) reported EPDS scores indicating PPD. Logistic regression, however, indicated no significant findings for birth experience or PPD by PE or significant effects by confounding variables examined including ethnicity/race, method of birth, gestational age, prenatal depression, and chronologic age. Yet, weak associations between PE, age, and gestational age were revealed. Underpower with small samples may have produced these unexpected results and encourage additional research with larger samples.

Grace Woodall, Architecture

Title: *The Value of Home: The COVID-19 Pandemic's Influence on Living Spaces, Mental Well-Being, and Design Adaptability*

Faculty Mentor: Marisa Gomez Nordyke

The COVID-19 pandemic redefined how people worked, learned, socialized, and lived. This study examines how American young adults' perceptions of home evolved during and after the isolating lockdowns. This work addressed how the COVID-19 experience altered home's value in young adults, the spatial, mental, and experiential challenges of confined spaces during the lockdowns, and the architectural elements that responded to these shifts. By analyzing post-pandemic housing trends, a literature review of architecture, psychology, home design, and YouTube journals from young adults during this period, this paper provides insights into the lasting impact of the pandemic on residential spaces. Although the pandemic has subsided, the person's experience with work, home, and leisure has been fundamentally changed. Thus, this investigation aims to inform future domestic architectural approaches that promote well-being in a post-pandemic world.

Hallie Young, Philosophy

Title: *Love Drugs: Exploring the Ethical Implications of Relationship-Targeting Biochemical Supplements*

Faculty Mentor: Dr. Eli Shupe

"Love drugs" can be defined as chemical interventions that affect desire, attraction, and affection. Contemporary advancements in neurochemical interventions have increased interest in love drugs and highlighted the need for accessible love drug analyses. This project explores how love drugs will affect contemporary relationships through realistic literary scenarios informed by current philosophical literature. These scenarios consist of three vignettes compiled into a novella-length creative work. It was initially anticipated that these vignettes would reveal that introducing a meta-biological or chemical intervention into social situations where authenticity is normatively highly valued would prompt participant introspection. In practice, this work finds that love drugs cause relationship members to examine their reasons for creating, sustaining, or leaving relationships and to contemplate any perceived dissonance between declared love and conceptual attachment to love as intrinsically good. The results of this project suggest a significant likelihood that love drugs will drastically alter modern relationship dynamics.
