Undergraduate Research and Creative Work

13 December 2024 – 9:30am to 12:30pm

Virtual Showcase

University of Hawai‘i at Mānoa

Honolulu, Hawai‘i

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EVENT SCHEDULE

TIME	ACTIVITY	LOCATION
9:30-9:40a	Welcome	Main Room
9:45-10:30a	**Oral Session I**	Breakout Rooms
10:30-10:40a	*Break*	
10:40-11:25a	**Oral Session II**	Breakout Rooms
Please join us for the release reception of volume IX of the Horizons *undergraduate journal*		
11:30a-12:25p	**Horizons Release Reception & Student Panel**	Main Room
12:25-12:30p	Closing	Main Room

PRESENTATION ROOM SCHEDULE

(By Room & Topic(s))

****See Zoom Log-In Details on Next Page****

WELCOME *in Main Room - 9:30-9:40a*		
ORAL PRESENTATIONS* - *9:45-11:25a		
ZOOM ROOM	**SESSION I 9:45-10:30a**	**SESSION II 10:40-11:25a**
Lehua	Arts & Humanities	Arts & Humanities
Kauna'oa	History, Economics, Business	[No Presentations Scheduled]
'Ilima	Social Sciences	Kinesiology & Rehabilitation Science
Kukui	Molecular Biology & Microbiology	Biomedical & Population Health
Lokelani	Marine Biology	Marine Biology
Mokihana	Environmental Science	Natural Sciences
Pupu	Medical Engineering	Bioengineering
Hinahina	Computer Science	Computer Science
Horizons *RELEASE RECEPTION & STUDENT PANEL* *in Main Room - 11:30a-12:25p*		
CLOSING *in Main Room - 12:25-12:30p*		

ZOOM LOG-IN DETAILS

****Note: URLs are case-sensitive.****

ZOOM ROOM	ZOOM LINK	MEETING ID
Main	go.hawaii.edu/M4x	910 2258 7603
Lehua	go.hawaii.edu/qPF	980 7385 3987
Kauna'oa	go.hawaii.edu/E4x	917 5418 2568
'Ilima	go.hawaii.edu/tPF	967 9295 2152
Kukui	go.hawaii.edu/q4x	941 3481 1836
Lokelani	go.hawaii.edu/Fam	938 8172 9185
Mokihana	go.hawaii.edu/Y4x	931 3610 7100
Pupu	go.hawaii.edu/DaF	925 5894 1284
Hinahina	go.hawaii.edu/C4x	998 1963 8583

Meeting passcode for all Zoom rooms*:* **fall24**

Oral Session I

9:45 - 10:30a

Lehua	**Arts & Humanities**
Maikalewa Keamoai-Koka, Hunter Procter	Investigating Pitch in 'Ōlelo Hawai'i
Lila Libby, Lawson Makaneole	Deep End: A Film Exploring How COVID-19 Affected the Confidence of College Students
Angel Sanchez	An Exploration And Analysis of Cultural Narratives: A Comparison of European Cinema and International Cinema Showcased In The Venice International Film Festival

Kauna‘oa	**History, Economics, Business**
Sarah Fusato	Japan’s Postwar Recovery: Path to the 1964 Olympics
Eleanor Masinton	Movements of the Immovable: A Discussion of the Devotional and Non-Devotional Images of Fudō Myōō in Japan
Komaki Kakinuma, Rie Tsuchida	Regenerative Tourism: Japanese Tourists’ Awareness and Perception of “Mālama”

Oral Session I

9:45 - 10:30a

‘Ilima	Social Sciences
Kaitlynn Weiss	Mindfulness Meditation and Perceptual Load in Performance on a Visual Capture Task
Jhennai Felipe	Playfully Proficient: Enhancing Social Skill Acquisition in Young Children with Autism Through Play-Based Intervention
Riku Omata	Analyzing Evasion of Financial Regulations using Cryptocurrencies

Kukui	Molecular Biology & Microbiology
Abigail H Ana	Effects of Arginine on Protein Synthesis Rates of Ovine Satellite Cells
Bianca Espejo	Negative Effect of a Glycolysis Inhibitor and Artificial Sweetener on the Social Affinity of the Mexican Cave Tetra
Ives Rdialul	Leveraging Synthetic Bacterial Communities to Understand their Influence on Mosquito Development

Oral Session I

9:45 - 10:30a

Lokelani	**Marine Biology**
Cameron Nemeth	The Secret of Bubble-Net Feeding: How Humpback Whale Morphology Distinguishes Them from Other Baleen Whales
Jenny Joy Macatumbas	Assessing Spring Bloom Timing in the Southern Ocean Using Biogeochemical Float Observations in Comparison to Satellite Derived Estimates
Chloé Houy	Studying Tuberculosis Treatments with a *Mycobacterium marinum*-Zebrafish Infection Model

Mokihana	**Environmental Science**
Gabrielle Justine Tapat	Investigating Impacts of Maui Wildfires on Groundwater Flow and Quality in Lahaina Beach Environments
Greta Gardner, Sarah Uyeda	Bioswales: Water Conservation Through Landscape Techniques

Oral Session I

9:45 - 10:30a

Pupu	**Medical Engineering**
Jing Ting Zheng	Identifying Stress-Related Topics in Speech Recordings Using an Automatic Speech Recognition System and a Deep Learning Topic Model
Matthew Fujikami	Validation of Multi-Frequency Oscillation - Shear Wave Elastography (MFO-SWE) - Derived Tissue Mechanical Properties with Mechanical Testing
Rachel Haynes	Developing an Additive Manufacturing Process for the Fabricating Wearable Biochemical Sensors

Hinahina	**Computer Science**
Samantha Limon	Exploring the Impact of Digital Design on Problem-Based Learning
Kyla Lee	Exploring Project Management and Team Dynamics in Operational Settings: A Case Study on Leadership and Event Management as President of Association for Computing Machinery at the University of Hawai‘i at Mānoa
Jenny Brown	Copilot's Code Generation and Licensing Analysis: A Comprehensive Evaluation of Using Artificial Intelligence within Programing

Oral Session II

10:40 - 11:25a

Lehua	**Arts & Humanities**
Melissa Shields	*The Fair American*
Julia Jael de Oliveira	I Am That I Am

ʻIlima	**Kinesiology & Rehabilitation Science**
Helaina Hard, Emiko Nakada	Attitude and Knowledge Change in Japanese College Athletes After Concussion Education
Mika Toor	Assessing the Validity of Sway Mobile Application in Neurocognitive Testing: A Comparative Study with Traditional Neuropsychological Tests
Robert Helmuth	Dual-Task Effect on Balance Performance in Adolescent Athletes

Kukui	**Biomedical & Population Health**
Malcolm Mackey	Antibiotic Resistance Profile of *Burkholderia cepacia complex* (*Bcc*) Bacteria Isolated from Patients at King Chulalongkorn Memorial Hospital
Talofa J Feʻa	Ia Uluulu Matāfolau: Exploring the Risk of Ciguatera Poisoning in American Samoa
Katherine Lang	The Unseen Injustice: Kunia Village Water Contamination

Oral Session II

10:40 - 11:25a

Lokelani	**Marine Biology**
Zoe Hill	Temporal Dynamics of Environmental DNA Signatures in Shallow Coral Reef Communities
Liualevaiosina Chloe' - Marie Le'iato	Effects of Sunscreen Chemical Octocrylene on Coral Fertilization and Settlement
Tyra Arends	Assessing the Population Genetics of Leptastrea purpurea, Clusters of Thermally Resilient Coral in Kāneʻohe Bay, Hawaiʻi

Mokihana	**Natural Sciences**
Alyssa Poynter	Evaluating Nitrogen Pollution in Kāneʻohe Bay Using *Gracilaria salicornia* as a Biogeochemical Indicator
Michael Johns, Jordan Yu	Small Gamma Ray Detector for Earth and Planetary Exploration
Gabrielle Tessier	Screening of Hawaiian Marine Extracts for Antiviral Activity against Dengue Virus

Oral Session II

10:40 - 11:25a

Pupu	**Bioengineering**
Spencer Dang, Jordan Okumura	A Novel Technique for High-Throughput DNA Separation and Capture
Jenna Matsuyama, Keilah Wilkes	Optimizing Maize Protoplast Transfection using Electroporation
Vaillante Bandini, Maria Quadri	Understanding Human Genetic Mechanisms Underlying Bacterial Infections

Hinahina	**Computer Science**
Briana Lee	Investigating the Challenges in K-12 Computer Science Education in Hawaiʻi
Roma Amor Malasarte, Jaira B Pader	How Hawaiʻi K-12 Students Perceive Computer Programmers: A Drawing Study
Brandon Tabios	Personalized Language Learning in the Era of Generative AI: Potentials, Challenges, and Strategies

ABSTRACTS

Abstracts of oral and poster presentations are listed in alphabetical order of presenter's last name. Information below the name includes the student's major, the category of their presentation, and time/location of presentation. The faculty mentor, if appropriate, is listed below the abstract.

Group abstracts are listed alphabetically by the Last Name of the group member in whose name occurs in this list:

Vaillante Bandini, Maria Quadri
Spencer Dang, Jordan Okumura
Greta Gardner, Sarah Uyeda
Helaina Hard, Emiko Nakada
Michael Johns, Jordan Yu
Komaki Kakinuma, Rie Tsuchida
Maikalewa Keamoai-Koka, Hunter Procter
Lila Libby, Lawson Makaneole
Roma Amor Malasarte, Jaira B Pader
Jenna Matsuyama, Keilah Wilkes

Abigail H Ana
Animal Science
Natural Sciences
UROP
Oral Presentation Room:Session 1 (9:45-10:30) in Zoom Room Kukui

Effects of Arginine on Protein Synthesis Rates of Ovine Satellite Cells

Proteins are essential macronutrients in animal diets, but inefficient utilization can affect livestock sustainability. Arginine, a key amino acid in the mTOR pathway, stimulates protein synthesis and satellite cell differentiation. Thus, we aimed to determine the optimal arginine concentration in fused primary ovine satellite cells (OSC) for increasing protein synthesis, skeletal muscle mass, and reducing nitrogen excretion. OSC were isolated from the hind leg muscles (Semitendinosus, Semimembranosus, and biceps femoris) of three 9-month-old hair sheep wethers (IACUC Protocol #22-3937). The OSCs were cultured and fused with differentiation medium. Following fusion, OSC were treated with increasing concentrations (0 µM, 160 µM, 178 µM, or 196 µM) of L-arginine in serum-free media. Protein synthesis rates will be evaluated using commercial kits, and RNA will be isolated at 0.5, 6, and 12 hours post-treatment to assess myogenesis-related gene expression. Preliminary results suggest that increasing concentrations of L-arginine do not linearly (p=0.17) or quadratically (p=0.84) increase protein synthesis rates of primary OSC. This study highlights the need for further research to optimize amino acid supplementation, as the lack of significant increase in protein synthesis with L-arginine suggests that improving livestock sustainability and reducing nitrogen excretion requires different strategies.

Mentors: Dr. Caleb Reichhardt, Dr. Jenee Odani
Co-Author: Taya J Blad

Tyra Arends
Global Environmental Science
Natural Sciences
UROP
Oral Presentation Room: Session 2 (10:40-11:25) in Zoom Room Lokelani

Assessing the Population Genetics of *Leptastrea purpurea*, Clusters of Thermally Resilient Coral in Kāneʻohe Bay, Hawaiʻi

Leptastrea purpurea is an encrusting coral shown to be resilient to increased ocean temperatures and acidification that is widely distributed across the Indo-Pacific, yet understudied. *Leptastrea purpurea* is often found in clusters with multiple small colonies grouped closely. This grouping could be explained by the reproductive nature of *L. purpurea* as it is a brooding coral, and larvae are known to settle close to the parent colony. Alternatively, the formation of clusters of *L. purpurea* could be a result of selective larvae settlement due to environmental constraints. As global sea temperatures continue to rise, the need to study resilient corals such as *L. purpurea* increases. In this study we used Whole Genome Low Coverage sequencing to investigate the genetic relationship between individual colonies, and colonies within clusters of *L. purpurea* in Kāneʻohe Bay, Oʻahu, Hawaiʻi. We hypothesize that low distance dispersals relate to highly structured populations on a reef-by-reef scale, as well as across a ~2 km distance. This study offers valuable insights into the biology of this understudied species, and enhances our capacity to utilize *L. purpurea* in restoration and conservation.

Mentor: Dr. Toonen

Vaillante Bandini, Microbiology (B.S.)
Maria Quadri, Molecular Cell Biology (B.S.)
Natural Sciences
UROP
Oral Presentation Room: Session 2 (10:40-11:25) in Zoom Room Pupu

Understanding Human Genetic Mechanisms Underlying Bacterial Infections

Hawaiian and Pacific Island communities face a growing health challenge due to increasing rates of diabetes and antimicrobial resistance. These predisposing factors allow bacteria to utilize novel host-pathogen pathways to perpetuate infections. This project expanded upon the Pathogen Analysis and Translational Health (PATH) examination of six host-factor knockouts in human small airway epithelial cells (hSAEC) in relation to *Burkholderia thailandensis* infections. hSAE cells and *B. thailandensis* were chosen to best model the interaction between human respiratory systems and diseases such as melioidosis whose severity increases with predisposing factors. Here we utilized plaque assays to demonstrate the effect of CRISPR knockout of three immunosuppressive regulators (IRF2BP2, SOCS-1, and SIGIRR) and three cellular kinesis genes (TJAP, MYO-18A, and STX-18) in relation to bacterial infection efficiency.

The combination of reduced plaques and decreased protein levels, validated by Western blots, indicated a strong link between infection rate and the target gene knockouts. The status of each immunosuppressive regulator was assessed with real time PCR and emphasized decreased activity of the associated knockouts. Through fluorescence-microscopy, cell structural elements were visualized and confirmed changes in cell morphology. The study's results functionally characterized how CRISPR induced knockout of target immunosuppressive and cell structural regulators interact with pathogens and thwart bacterial infection.

Mentor: Dr. Michael Norris
Co-Authors: Brad Borlee, Ian McMillan, Abderrahmane Tagmount, Christopher Vulpe

Jenny Brown
Electrical Engineering
Engineering & Computer Sciences - Research
UROP
Oral Presentation Room: Session 1 (9:45-10:30) in Zoom Room Hinahina

Copilot's Code Generation and Licensing Analysis: A Comprehensive Evaluation of Using Artificial Intelligence within Programing

GitHub and OpenAI have recently introduced Copilot, an "AI pair programmer" that harnesses the capabilities of Natural Language Processing, Static Analysis, Code Synthesis, and Artificial Intelligence. Deep Learning (DL) solution called Copilot, jointly developed by OpenAI and Microsoft, has emerged as an industrial product. Despite studies scrutinizing the correctness of Copilot solutions and highlighting potential issues, there is a need for more empirical evaluations to comprehend the nature of the code generated by such tools.

As software engineers engage in their work, they may be unaware or indifferent to licensing risks associated with code obtained from AI tools or internet sources, thereby exposing their company or organization to potential risks. The objective of the project is to investigate the prevalence of such situations. The study aims to use generated code snippets to identify any associated licenses that might apply to the snippet.

The project consists of two key components: 1) using written code prompts to have Copilot generate snippets for common programming languages and tasks, and 2) verifying the Copilot-generated code against publicly available open-source repositories to ensure compliance with applicable licenses. This includes comparing the generated code with repositories that have clearly defined licensing terms.

Mentor: Paul Schmitt

Spencer Dang, Biological Engineering
Jordan Okumura, Electrical Engineering
Engineering & Computer Sciences - Product Design/Development
UROP
Oral Presentation Room: Session 2 (10:40-11:25) in Zoom Room Pupu

A Novel Technique for High-Throughput DNA Separation and Capture

After traditional agarose gel electrophoresis is completed, separated deoxyribonucleic acid (DNA) fragments in gel can be extracted for purification. This is a tedious process involved with the production of amplicon sequencing libraries, important for genetic variant discovery and other applications. To save time, as producing an amplicon library is time consuming and repetitive, a new electrophoresis system was designed and tested. The project worked towards running electrophoresis in pipette tips to support high throughput DNA fragment extraction using multi-channel pipettes.

To accomplish this, after a thorough literature review, multiple variations of electrophoresis systems were assembled and tested. This included horizontal and vertical systems along with varying pipette volumes and lengths. The final version was developed to work with a 96-count, 1200 microliter tip box. Individual nichrome wires fed into each tip filled with agarose gel and a platinum wire ran below. Current flows through the electrodes, resulting in the separation of negatively charged DNA molecules which were viewed using ultraviolet (UV) light and blue light transillumination.

Our findings indicate that gel electrophoresis can be run in pipette tips and enables the precise capture of target bands up to eight at a time, though the latter still needs refinement. Although the current prototype is not suitable for large scale production, the product is a proof of concept that would reduce the time involved in producing amplicon libraries along with reducing cost.

Mentor: Dr. Allexa Burger

Julia Jael de Oliveira
English
Arts & Humanities - Creative
Honors
Oral Presentation Room: Session 2 (10:40-11:25) in Zoom Room Lehua

I Am That I Am

This project examines the intertwined themes of wildfire, queerness, and witchcraft, focusing on fire as both a cultural symbol and a weapon against marginalized communities. Historically, fire held sacred meaning in Indigenous practices, but Western perceptions transformed it into an oppressive tool used against "deviant" identities, including queer individuals and practitioners of alternative spirituality.

By exploring events like witch burnings and faggot burnings, we reveal fire's dual role as a force of both control and resistance. Literary and mythological references, such as *Belladonna of Sadness* and *Autobiography of Red*, along with biblical figures like Deborah and Jael, further illustrate fire's symbolism in queerness, defiance, and resilience. These narratives underscore the reclamation of fire by marginalized communities as a way to resist oppression and affirm identity.

In connecting feminine violence, matriarchal traditions, and queer autonomy, this project demonstrates how reclaiming symbols like fire and witchcraft empowers marginalized groups to challenge patriarchal norms. Ultimately, we argue that subverting these symbols is essential to the ongoing struggle for liberation, highlighting fire as both a literal and figurative beacon of resistance.

Mentors: Hannah Manshel, Kristiana Kahakauwila

Bianca Espejo
Biochemistry
Natural Sciences
UROP
Oral Presentation Room: Session 1 (9:45-10:30) in Zoom Room Kukui

Negative Effect of a Glycolysis Inhibitor and Artificial Sweetener on the Social Affinity of the Mexican Cave Tetra

The breakdown of glucose (glycolysis) and fat (ketosis) are essential metabolic pathways for the body's homeostasis, physiology, and neural activities. Studies involving a ketosis-inducing ketogenic diet have yielded positive results in diseases such as diabetes and cancer and in developmental disorders such as autism spectrum disorder (ASD). The ketogenic diet increased the sociality among patients with ASD, and also the social-attenuated Mexican cave tetra, *Astyanax mexicanus*, which shares dysregulated patterns of gene expression with patients with ASD. However, the mechanism and relationship between ketosis and sociality is still unknown. Here, we determined if the inhibition of glycolysis can induce ketosis and replicate the increased social-like nearby interactions among the Mexican cave tetra. Glycolysis was pharmacologically inhibited by supplementing 2-deoxy-D-glucose (2-DG) for two *Astyanax mexicanus* morphs—ASD-like cavefish and typical surface fish. The diet was administered for five weeks as in the previous ketogenic diet study. Our results revealed that 2-DG did not recapture the effects of the ketogenic diet: it rather failed to induce ketosis, and attenuated sociality in cavefish. To investigate this surprising result further, the brain, gut, and blood serum of these fish were recovered and applied for transcriptomic, microbiome, and metabolome studies, respectively, to identify the mechanism between glycolysis, ketosis, and sociality. In addition, since 2-DG is a sweet molecule, we also supplemented the artificial sweetener, sucralose (Splenda), which does not affect glycolysis, to determine whether sweetness is the source of the decreased sociality. Further analysis will reveal the sucralose and gut microbiota results.

Mentor: Dr. Masato Yoshizawa

Talofa J Fe'a
Natural Resources & Environmental Management
Natural Sciences
Honors
Oral Presentation Room: Session 2 (10:40-11:25) in Zoom Room Kukui

Ia Uluulu Matāfolau: Exploring the Risk of Ciguatera Poisoning in American Samoa

Ciguatera poisoning (CP) is a food-borne illness caused by the consumption of seafood that has bioaccumulated ciguatoxin, a type of toxin produced by dinoflagellates (*Gambierdiscus* spp). This type of seafood poisoning significantly impacts the health, socio-economic stability, and cultural practices of Oceania, where communities heavily depend on ocean resources. While there is well-documented knowledge of ciguatera in parts of the Pacific (e.g., French Polynesia), CP remains understudied in other Pacific Island Countries and Territories. In American Samoa, CP was last studied in 1997, leaving uncertainty about its current extent and impacts on fishing communities. This research aims to address data gaps on the prevalence and impacts of CP in American Samoa. The study recognizes the value of traditional knowledge and community experiences in understanding local CP risks and uses anonymous surveys and targeted interviews. Using an exploratory sequential research design, suspected fishing sites from responses were directly sampled for the presence of the responsible dinoflagellate. Survey results indicated a general lack of awareness, with interests (>80% of respondents) in using a reliable, affordable test kit to test seafood for CP if made available. Interview data revealed common themes among knowledgeable individuals, including a desire for increased education and awareness. This research offers essential insights for managers to ascertain the impacts and mitigate the risk of CP in American Samoa. Findings can be used to inform policy, outreach materials, future studies, and management actions in American Samoa and throughout the region.

Mentors: Dr. Eileen Nalley; Dr. Yinphan Tsang
Co-Author: Val Brown

Jhennai Felipe
Psychology
Social Sciences
UROP
Oral Presentation Room: Session 1 (9:45-10:30) in Zoom Room ‘Ilima

Playfully Proficient: Enhancing Social Skill Acquisition in Young Children with Autism Through Play-Based Intervention

This project examines the effectiveness of play-based intervention in improving essential social skills among children with autism spectrum disorder (ASD). Children with ASD often struggle with initiating interaction, sharing, and turn-taking, which can lead to feelings of isolation, peer rejection, and emotional challenges like anxiety and depression (Ke et al., 2017; Williams White et al., 2007). These social difficulties impact not only the individual but also their families, who may face stigma and reduced quality of life (Kinnear et al., 2016). To address these challenges, a targeted intervention was developed based on a social skills assessment and existing literature. The intervention, which included a series of structured play activities, was implemented over 11 weeks with a sample of three children diagnosed with ASD. Sessions were held weekly for 90 minutes, during which participants engaged in games, role-playing, and peer activities. Pre- and post-intervention assessments measured changes in social skills and peer interactions. The results displayed gains in social skills and increased social engagement with peers, suggesting that play-based interventions can be an effective approach to improving social skills in children with ASD.

Mentor: Dr. Marija Čolić

Matthew Fujikami
Electrical Engineering
Engineering & Computer Sciences - Research
UROP
Oral Presentation Room: Session 1 (9:45-10:30) in Zoom Room Pupu

Validation of Multi-Frequency Oscillation - Shear Wave Elastography (MFO-SWE) - Derived Tissue Mechanical Properties with Mechanical Testing

Mechanical properties like viscosity and elasticity are diagnostically vital as they depend on the structure and composition of tissue. Shear wave elastography (SWE), an ultrasound-based method, non-invasively assesses the mechanical properties of tissue. Recently, multi-frequency Oscillation (MFO)-SWE has been proposed to determine the viscoelastic properties of tissue by oscillating at 100-1000 Hz. This project aims to improve the image quality of phase velocity images by varying the order and power of the Butterworth filter, which is used to extract 100-1000 Hz components. We analyzed data from a chicken breast and inclusion in a phantom. We found no significant change in image quality within the chicken breast while varying order or power of the filter. In the elastic phantom data, the CNR was the highest at order 2 and power 6. Future work involves manufacturing custom viscoelastic phantoms and test MFO-SWE performance in the viscoelastic phantom.

Mentor: Dr. Murad Hossain

Sarah Fusato
Accounting and International Business
Social Sciences
Honors
Oral Presentation Room: Session 1 (9:45-10:30) in Zoom Room Kauna‘oa

Japan’s Postwar Recovery: Path to the 1964 Olympics

By the later half of the 1940s, Japan was struggling from the loss of World War II, but was able to completely turn around and host the 1964 Olympics just under twenty years later. The purpose of this research is to gain an understanding of the key factors that made Japan economically stable enough to host the 1964 Olympics. This study reviewed policies, documents, and other significant events during the postwar period leading up to 1964 as well as GDP per capita levels in Japan. In addition, this study looked at the economic recovery of West Germany in order to see if certain factors of Japan’s recovery were found elsewhere. Both Japan and West Germany were able to rebuild after the war and experienced high economic growth in the postwar period.

Findings of this study focused on four factors that helped change Japan’s economy during the U.S. occupation period (1945-1952): land reform, reorganization of the zaibatsu, labor movement, and financial support from the U.S. In addition, the fight against communism and the implementation of new technologies helped the Japanese economy grow after the end of occupation. After winning the Olympics bid in 1959, Japan worked to strengthen its infrastructure and transportation as well as construct new sports facilities. Existing research studies Japan's economic growth during a specific decade or period, but does not frame these economic events as related to the period leading up to the Olympics.

Mentor: Jenny Teruya

Greta Gardner, Tropical Agriculture & the Environment
Sarah Uyeda, Environmental Design
Natural Sciences
UROP
Oral Presentation Room: Session 1 (9:45-10:30) in Zoom Room Mokihana

Bioswales: Water Conservation Through Landscape Techniques

Hawai'i struggles with water scarcity from factors like increasing household consumption, climate change, and low water retention in urban areas. Our research explores the potential for bioswales to ease this crisis by enhancing water retention and filtration in urban areas. Our goals for this project was to identify how bad Hawaii's water consumption is and to design and install our own bioswale on campus.

During our research we compiled data on aquifers levels in Hawaii through the Board of Water Supply, observed the results of previous water conservation projects on Oahu, and consulted a landscape professional on the benefits of urban bioswales. In our research we found that in 2023 Oahu consumed 145 million gallons daily (mgd) but only retained 134 mgd which is an overconsumption rate of 7%. "Hawaii's Fresh Water Initiative" is a state funded program that increases the capacity of treated wastewater by 100 million gallons per day by 2030 however bioswales are often overlooked as a sustainable asset to this initiative. Therefore, we installed a bioswale in the Bachman Hall parking lot. The design integrates principles of xeriscaping, utilizing non-invasive ornamentals and native Hawaiian plants to absorb and filter stormwater runoff from the parking lot. So far it does well in absorbing the excess water from the parking lot.

Incorporating bioswales into urban landscapes presents a multifaceted approach to addressing Hawaii's water crisis. Implementation of bioswales not only safeguards water resources but also fosters resilience and sustainability in the face of escalating water loss.

Mentor: Dr. Andrew Kaufman

Helaina Hard, Kinesiology & Rehabilitation Science
Emiko Nakada, Kinesiology & Rehabilitation Science
Social Sciences
UROP
Oral Presentation Room: Session 2 (10:40-11:25) in Zoom Room ‘Ilima

Attitude and Knowledge Change in Japanese College Athletes After Concussion Education

Introduction: The United States is the only country where concussion education in sports is legally enforced. Studies have shown that athletes in other countries like Japan tend to have lower knowledge of concussions, which leads to a disparity in reporting suspected concussions. Therefore, this study aims to assess whether concussion education improves the knowledge and attitude among Japanese college athletes.

Methods: Concussion knowledge and attitude were assessed using a previously validated survey translated into Japanese using the double-translation method. Participants completed the electronic survey twice: immediately before and after the concussion education. The in-person education provided includes signs and symptoms, red flags, and management of concussions. The concussion knowledge and attitude scores were calculated. The changes in knowledge and attitude scores were analyzed using a paired sample t-test.

Results: Twenty-six Japanese-speaking college student-athletes from various sports affiliations were recruited to participate in this study. Of these, 7 were female (26%), and 19 were male (73%). The subjects’ ages ranged from 19 to 22 (mean = 20 ± 0.86). The attitude score improved significantly ($t^{25} = -2.73$, $p = 0.01$) from a pretest (mean = 38.04 ± 4.21) to a posttest (mean = 40.50 ± 5.2). However, the knowledge did not increase ($t^{25} = -0.87$, $p = 0.40$) from 18.31 ± 2.35 to 18.77 ± 1.88 after the intervention.

Conclusion: Education improved perceptions toward a concussion in Japanese college athletes; however, it did not increase their knowledge. Continuing efforts to increase educational opportunities in Japan is important.

Mentor: Dr. Kyoko Shirahata-Maximo

Rachel Haynes
Mechanical Engineering
Engineering & Computer Sciences - Research
Honors, MARC
Oral Presentation Room: Session 1 (9:45-10:30) in Zoom Room Pupu

Developing an Additive Manufacturing Process for Fabricating Wearable Biochemical Sensors

Additive manufacturing, commonly known as 3D printing, has paved the way for precise, customizable, and straightforward fabrication of material which can contribute toward technological advancements in patient healthcare. The development of electrochemical sensors through the process of additive manufacturing can enable local manufacturing of point-of-need testing, promoting cost-effectiveness, accessibility, and environmentally sustainable manufacturing methods. Utilizing the VolteraNova, an additive manufacturing machine capable of printing flexible electronic components using carbon and silver inks, the production of electrochemical sensors is readily achievable and can be deployed as needed. Carbon ink-based sensors have demonstrated beneficial conductive properties and biocompatibility that can play a pivotal role in enhancing the sensor's response characteristics and sensitivity. To study the conductive properties of carbon ink, a variety of sensors were created using three different carbon inks: carbon filled flexible conductive trace ink (FE3203), single-walled carbon nanotube solvent-based conductive ink (SWCNT) and Intexar™ stretchable, washable carbon ink (PE672). Sensors were produced using each of the inks and tested using a potentiostat. The test results from the cyclic voltammetry analysis showed that carbon ink alone is not conductive enough to produce a sufficient response. To combat this issue, graphite was mixed into the different carbon inks which were then printed and tested. Graphite possesses highly electrocatalytic characteristics, and the addition to the carbon ink helped to significantly improve the electrochemical properties of the mixture. The sensors were then used to test different levels of pH, ranging from pH 3.6 - pH 5.6. The data gathered from the pH sensing tests will be used to understand how incorporating electrochemical sensors into wearable devices can facilitate real-time monitoring and evaluation of a wide variety of health parameters.

Mentors: Dr. Tyler Ray, Kaylee Clark

Robert Helmuth
Kinesiology & Rehabilitation Sciences
Social Sciences
UROP
Oral Presentation Room: Session 2 (10:40-11:25) in Zoom Room ‘Ilima

Dual-Task Effect on Balance Performance in Adolescent Athletes

Introduction: Dual-Task (DT) testing, simultaneous performance of motor and cognitive tasks, has shown to be a more sensitive approach to detect post-concussion deficits as it assesses executive-function. Performing multiple tasks simultaneously requires dividing attention which leads to decreases in each performance. Previous research has shown decreased DT gait performance in healthy adolescents relative to Single-Task (ST), known as DT-Effect. However, DT-Effect on balance has not been explored. Therefore, the purpose of this study was to compare balance performance between DT and ST in healthy adolescent athletes. We hypothesized that balance performance would decrease during DT compared to ST.

Methods: Cross-Sectional Study. Forty-four healthy male adolescent athletes (age:14.3±1.47 y/o) participated in the study. Participants performed 2 STs followed by 2 DTs. The cognitive test used was Auditory-Pure-Switch-Task which involved the athlete dictating between odd or even numbers. Balance test with 5 different stances was assessed using a mobile app (Sway Medical, Tulsa, OK). A Wilcoxon signed-rank test was used to compare ST and DT balance scores with alpha level of $p<0.05$.

Results: Participants performed significantly better during DT than ST in Double-Foot ($p=0.029$), Tandem-Left ($p=0.003$), and Tandem-Right ($p=0.004$) stances. No other significant relationships were observed.

Conclusion: Contrary to our hypothesis**,** DT did not influence balance negatively. Furthermore, this finding could indicate that engaging in simple cognitive tasks while performing balance may positively influence balance in healthy athletes. Further study in concussed populations is needed to explore DT-Effect on balance.

Mentor: Dr. Kaori Tamura
Co-Authors: Kumiko Hashida, Diamond Miller

Zoe Hill
Marine Biology
Natural Sciences
Honors
Oral Presentation Room: Session 2 (10:40-11:25) in Zoom Room Lokelani

Temporal Dynamics of Environmental DNA Signatures in Shallow Coral Reef Communities

Coral reefs are highly diverse communities that play a vital role in providing essential ecosystem services. However, human activity poses threats to reefs, leading to declines in coral reef cover. Active monitoring is essential for understanding the current state of reef health. eDNA assessments are a newer approach for monitoring reefs and use DNA released into the environment to measure diversity. However, there are uncertainties in the use of eDNA such as the temporal variation on tropical reefs, along with primer taxonomic sensitivity. This study aimed to evaluate the temporal dynamics of eDNA assessments to characterize and monitor coral reef communities in Oʻahu. It was expected that in the relatively stable oligotrophic water column in Hawaiʻi, the abundance profiles of coral eDNA would remain consistent over time and that temporal variation would not obscure spatial differences among reefs. 128 water samples were collected across four locations on Oʻahu from 2019-2021. DNA was extracted then underwent PCR metabarcoding and sequencing. 532 MOTU scleractinian sequences were produced using three common coral primers: 16S, 12S, and ITS2. Reads were statistically analyzed using a linear mixed effects model, PERMANOVAS, Bray-Curtis distance matrix, and NMDS plots. The relative abundance and temporal trends of coral eDNA reads varied among sites and primers. This study demonstrated the use of eDNA to monitor coral reefs and concluded effective eDNA assessments require multiple primers, long-term monitoring, and sufficient amounts of samples.

Mentors: Dr. Peter Marko, Patrick Nichols, Dr. Andy Rominger

Chloé Houy
Marine Biology (B.S.)
Natural Sciences
UROP
Oral Presentation Room: Session 1 (9:45-10:30) in Zoom Room Lokelani

Studying Tuberculosis Treatments with a *Mycobacterium marinum*-Zebrafish Infection Model

Tuberculosis, one of the most lethal diseases that affect humans, is caused by a *Mycobacterium tuberculosis* (*Mtb*) infection. The treatments used to cure this illness, which currently include long and complex antibiotic regimens, could benefit significantly from improvements based on in-depth research on its pathogenesis. *Mtb* contains specific defenses against host immunity; more specifically, zinc ion (Zn^{2+}) limitation triggers the formation of unique characteristics that may affect immune system or antibiotic clearance. The virulent nature and inadequate animal models of *Mtb* render experimentation difficult. Instead, its genetically similar counterpart, the bona fide fish pathogen *Mycobacterium marinum* (*Mmar*), was used alongside a zebrafish model to lower biosafety risk and increase relevance. This project aimed to investigate the effects of Zn^{2+} availability on both the formation and clearance of *Mmar* bacterial loads in infected zebrafish. *Mmar* infection stocks were prepared from green fluorescent protein (GFP) reporter gene-containing cell cultures that were grown in Zn^{2+}-replete and Zn^{2+}-limited conditions. Zebrafish embryos and larvae were exposed to the GFP *Mmar* using a bath application method. Antibiotic treatment tests followed these infection assays. Throughout the experiment, bacterial burden was monitored using fluorescent microscopy imaging. The findings obtained from observing these host-pathogen interactions and the creation of necrotizing granulomas characterized the implications of host nutritional immunity while also analyzing the efficacy of available antibiotic therapies. Investigating the virulent adaptations of *Mmar*, and thus *Mtb*, allows for greater knowledge of tuberculosis pathogenesis and how it may be treated.

Mentor: Dr. Sladjana Prišić

Michael Johns, Astronomy
Jordan Yu, Astrophysics
Natural Sciences
UROP
Oral Presentation Room: Session 2 (10:40-11:25) in Zoom Room Mokihana

Small Gamma Ray Detector for Earth and Planetary Exploration

The GESE project builds on the knowledge gained from the Earth and Planetary Exploration (EPET) course. This project aims to manufacture two miniature gamma ray detectors optimized for gamma ray energies ranging from 150 keV to 3 MeV, utilizing two different scintillators: CLLB ([$Cs_2LiLaBr_6$(Ce)] and Lanthanum Bromide (LaBr3). Aside from the type of scintillation crystal, the detectors share the same appearance and functionality. Mounted on photomultiplier tubes (PMTs), the scintillators will emit photons to the PMTs, converting the signal from photons into pulses to create spectra on software installed on the team's laptop. Both detectors have been fully assembled and tested with laboratory radiation sources and are capable of producing spectra that aid in their identification. Utilizing gamma ray spectroscopy, we can look for the presence of key elements such as Uranium (U), Thorium (Th), and Potassium (K), thereby enhancing our understanding of the geological processes of planetary bodies.

Mentor: Dr. Peter Englert

Komaki Kakinuma, Marketing
Rie Tsuchida, Travel Industry Management
Social Sciences
Honors, UROP
Oral Presentation Room: Session 1 (9:45-10:30) in Zoom Room Kauna‘oa

Regenerative Tourism: Japanese Tourists’ Awareness and Perception of “Mālama”

Hawai‘i’s rapid growth in tourism has increased the stress on the islands’ natural and cultural resources. To address these challenges, the Hawai‘i Tourism Authority introduced the Mālama Hawai‘i initiative, emphasizing the preservation of Hawai‘i’s environment, culture, and communities through sustainable tourism practices. This study investigates the awareness and perception of Mālama Hawai‘i among Japanese tourists, a vital segment of Hawai‘i’s international visitors. Results revealed that only 8.6% (21 of 181 respondents) recognized the term “mālama.” However, 72.5% of respondents showed positive attitudes toward strongly encouraged mālama activities, while 34% expressed willingness to engage in recommended actions that are more optional. Further analysis identified three key clusters among respondents receptive to the mālama activities. The first group, nature conservation enthusiasts, demonstrated the highest intent to participate in environmentally focused activities. This cluster can act as early adopters, driving behavioral changes through targeted programs such as conservation-oriented tours. The second and third clusters—those valuing both nature and culture, and those prioritizing cultural and community contributions—are potential secondary and tertiary adopters. They could be engaged through integrative experiences combining cultural events with ecological preservation initiatives. By addressing the interests of these clusters, Hawai‘i can foster broader acceptance and implementation of Mālama. This research underscores the potential for strategic tourism programs to bridge the gap between awareness and actionable impact, ensuring Hawai‘i’s natural and cultural legacy endures for future generations.

Mentor: Dr. Yang Xu
Co-Authors: Mutsumi Kikuchi, Ayano Oya

Maikalewa Keamoai-Koka, Hawaiian Studies
Hunter Procter, Interdisciplinary Studies
Arts & Humanities - Research
UROP
Oral Presentation Room: Session 1 (9:45-10:30) in Zoom Room Lehua

Investigating Pitch in 'Ōlelo Hawai'i

As language revitalization efforts continue for ʻōlelo Hawaiʻi, the Indigenous language of the Hawaiian islands for which there is still little known about the language and its features. We were given the opportunity to take part in a linguistics research project that studies pitch among *new fluent speakers of* ʻōlelo Hawaiʻi. We had various responsibilities such as planning how to recruit participants, creating advertising materials for the project, running the experiment, and preparing annotations of our collected data. Our project was accepted to be presented at New Ways of Analyzing Variation 52, a world renowned linguistics conference, which took place in Miami in November of this year. While this project is still ongoing, we will discuss the previously mentioned tasks in more detail as well as our personal experience as research assistants on this project throughout our presentation.

Mentors: Dr. Andrew Cheng and Dr. N. Ha'alilio Solomon

Katherine Lang
Political Science and Women's & Gender Sexual Studies
Social Sciences
Honors
Oral Presentation Room: Session 2 (10:40-11:25) in Zoom Room Kukui

The Unseen Injustice: Kunia Village Water Contamination

In this thesis, the research aimed to uncover the causes of water contamination in Kunia Village and to illuminate the complexities surrounding the associated Superfund site. By delving into the historical context of the land and its people, as well as the processes leading to its designation as a Superfund site by the Environmental Protection Agency (EPA), the research was able to identify the sources of contamination with clarity. A central theme of the research was the role of militarism in Hawaii, alongside efforts to decode the scientific terminology used to describe the harmful chemicals affecting the water supply for the vulnerable Kunia Village community. The research methodology incorporated both interviews and archival research, relying heavily on primary and secondary sources. The research also analyzes various solutions that had been proposed, both those that were implemented and those that were overlooked. This included the EPA and other governmental bodies tasked with remediation, as well as the organizations that remained passive observers during the crisis. In contrast, the Kunia Water Association emerged as a proactive entity, allocating funds to cover the additional costs that the federal government had failed to address.

Ultimately, this project yielded a wealth of information that brought visibility to an often-overlooked and vulnerable community, allowing for a deeper understanding of their struggles and resilience.

Mentor: Kathy Ferguson
Co-Author: Debbie Samaniego

Briana Lee
Computer Science
Engineering & Computer Sciences - Research
UROP
Oral Presentation Room: Session 2 (10:40-11:25) in Zoom Room Hinahina

Investigating the Challenges in K-12 Computer Science Education in Hawai‘i

Computer Science (CS) education prepares students for the digital page. This research project examines the challenges of Hawai‘i’s CS educators and mentors when teaching and mentoring K-12th grade computer science education. This project will explore and report on the need to decrease barriers such as gender gaps through survey research in partnership with the Learning Technologies, Curriculum Research & Development Group in the College of Education (COE) at the University of Hawai’i at Mānoa (UHM). The study employs quantitative surveys and qualitative interviews to gather insights from K-12 educators and mentors in Hawai‘i. Overall, this research emphasizes the importance of early and inclusive computer science education in preparing a diverse and skilled workforce for the future.

This research surveyed 152 Hawai‘i teachers for their experience and views regarding computer science education. Our findings revealed that a top barrier preventing students from CS learning opportunities stems from a lack of knowledge and understanding of CS education. We noted that an essential area of support needed in expanding the CS education program in schools is professional development and trained CS teachers. Still, when asked their opinion on top priority, most responded to trained CS teachers following professional development. Our results contribute to the DOE and potentially benefit educators and policymakers with data-driven insights into the CS education challenges.

Mentor: Dr. Anthony Peruma

Kyla Lee
Computer Science (B.S.)
Engineering & Computer Sciences - Research
Honors
Oral Presentation Room: Session 1 (9:45-10:30) in Zoom Room Hinahina

Exploring Project Management and Team Dynamics in Operational Settings: A Case Study on Leadership and Event Management as President of Association for Computing Machinery at the University of Hawai‘i at Mānoa

This honors project investigates project management and leadership dynamics within a student-led organization, specifically focusing on the role of President in the Association for Computing Machinery (ACM) at the University of Hawai‘i at Mānoa. The research emphasizes strategies and challenges encountered in organizing complex events, such as career fairs and mentorship programs, aimed at supporting student engagement within tech and intelligence sectors. Drawing inspiration from early leadership roles as a robotics team captain and program manager for the Kalani Robotics Academy, this study brings a perspective rooted in educational outreach and organizational leadership.

The primary objective is to analyze how project management methodologies, such as agile practices, combined with leadership theories like transformational and servant leadership, contribute to creating impactful and sustainable programs. By documenting these processes and aligning them with established frameworks, this research offers a structured approach to managing team-driven initiatives in academic environments. This project not only reflects on leadership growth but also provides a strategic model for cultivating inclusive, professionally focused student organizations.

Mentor: Kenny Ka'aiakamanu-Quibilan

Liualevaiosina Chloe' -Marie Le'iato
Marine Biology (B.S.) and Pacific Island Studies (B.A.)
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UROP
Oral Presentation Room: Session 2 (10:40-11:25) in Zoom Room Lokelani

Effects of Sunscreen Chemical Octocrylene on Coral Fertilization and Settlement

Reefs provide economic, cultural, and ecological value, essential for coastal protection and recreation. However, anthropogenic stressors threaten their livelihood. Sunscreens, while protecting against UV rays, harm marine habitats and organisms due to its chemical content. Octocrylene is an organic filter compound like active ingredients such as oxybenzone (BP-3) or octinoxate (OMC), which were banned in Hawai'i (2018). However, OC effects on coral fertilization have not been studied. This study is to determine the consequences of Octocrylene exposure to coral planula and gametes in fertilization and settlement experiments. The coral fertilization experiment tested *Montipora capitat*a gametes with 6 treatments (Control, DMSO control, OC 50 µg/L, OC 200 µg/L, OC 300 µg/L, and OC 1000 µg/L) with 4 replicates per treatment. The settlement experiment tested *Harbor porites* planula in the 6 same treatments (5 replicates per treatment). Findings show that octocrylene presence in seawater can reduce fertilization and settlement potential of gametes and planula. Implications of this study are steppingstones to determine the consequences of exposure and address the population death risk corals face due to these new anthropogenic stressors, while also contributing to reef resilience in the future.

Mentors: Keiko Wilkins, Dr. Bob Richmond

Lila Libby, Cinematic Arts
Lawson Makaneole, Digital Cinema
Arts & Humanities - Creative
UROP
Oral Presentation Room: Session 1 (9:45-10:30) in Zoom Room Lehua

Deep End: A Film Exploring How COVID-19 Affected the Confidence of College Students

This film was created by applying our knowledge of the filmmaking process to adapt a scripted dramatic comedy to screen. Through team collaboration, the use of production equipment such as cameras and lighting, and software like Adobe Premiere Pro, we produced this film. The industry standardized procedure of pre-production, production, and post-production was applied to complete this project.

Inspired by works like the TV episodic *Abbott Elementary* and the film *Surf's Up,* we gravitated towards the use of comedy and the pseudo-documentary style to convey a sense of realism to the story. Using this genre allows us to explore the difficulties of social isolation during the pandemic for students and the struggle of applying education to the real world with a bit of lightness and laughter. Following Tyler as he navigates through his first day of work at an aquarium, the story explores his struggles to balance his academic learning of marine biology with his unrealistic expectations of handling issues on his own. His repeated failings finally propel him to trust others and ask for help.

Tyler's emotional state in the film reflects our team's anxieties born out of the COVID-19 pandemic experience as college students propelled into the workforce without proper socialization. With our director being Native Hawaiian, contextualizing this experience with the Noʻeau gives a deeper universal meaning to the challenges students face post pandemic. His direction and knowledge of Native Hawaiian culture offers a more relevant and authentic cultural sense of place.

Mentor: Anne Misawa

Samantha Limon
Computer Science
Engineering & Computer Sciences - Research
UROP
Oral Presentation Room: Session 1 (9:45-10:30) in Zoom Room Hinahina

Exploring the Impact of Digital Design on Problem-Based Learning

As students increasingly engage with digital interfaces, understanding how technology influences learning has become essential. This study investigates how variations in instructional website design affect learning outcomes, focusing on identifying specific design elements that enhance engagement, knowledge retention, and cognitive processing in digital environments.

Two instructional websites on Python programming fundamentals were developed using HTML, CSS, Javascript, Typescript, React, Bootstrap, and Node.js. Each website incorporated distinct human-computer interaction (HCI) principles to assess their impact on learning behaviors. User interactions were tracked using WebGazer.js eye-tracking technology, with data stored locally via the IndexedDB LocalForage database. Screen recordings were also utilized to analyze user flows and interaction patterns.

A sample of 10 to 20 students enrolled in introductory computer sciences courses with minimal prior experience in Python were selected to ensure a consistent baseline for learning gains. After exploring the websites, participants took a 10-question quiz that reviewed material covered in the websites. Participants explored the websites, completed a 10-question quiz on the content, and provided feedback through post-study surveys that captured their perceptions of the websites' designs and their influence on the learning experience. Data analysis were conducted using ANOVA and t-tests to evalute the influence of user interface (UI) variations on cognitive processing and retention metrics.
These research findings contribute to educational technology by emphasizing how intentional digital design best enhances engagement, information processing, and learning outcomes. These insights into HCI principles inform best practices for designing educational interfaces that decrease cognitive load to optimize student experiences and promote effective learning in digital environments.

Mentor: Dr. Michael-Brian Ogawa

Jenny Joy Macatumbas
Global Environmental Science
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Oral Presentation Room: Session 1 (9:45-10:30) in Zoom Room Lokelani

Assessing Spring Bloom Timing in the Southern Ocean Using Biogeochemical Float Observations in Comparison to Satellite-Derived Estimates

Phytoplankton are the base of the marine food web and influence oceanic carbon dioxide uptake. Phytoplankton bloom when there is sufficient light and nutrients. Changes in bloom timing affect the food web and potentially biogenic carbon uptake. In the Southern Ocean, studies using satellite ocean-color observations indicate long-term changes in bloom timing, but satellites miss phytoplankton growth below the surface. In this study, we estimate bloom initiation timing from chlorophyll (Chl) and phytoplankton carbon (Cp) derived from robotic profiling float measurements of chlorophyll fluorescence and particulate backscatter located south of 30°S in five distinct ocean biomes. We estimated bloom initiation from seasonal changes in mean Chl and Cp concentrations in the mixed layer depth (MLD), similar to what satellites observe, and from Chl and Cp integrated from the surface to 100m and 200m. We found that bloom initiation estimates from Chl occur before estimates from Cp in permanently stratified and ice biomes. In permanently stratified biomes, MLD mean Chl and Cp bloom initiation estimates occur earlier than integrated Chl or Cp estimates, while the opposite is true in seasonally stratified biomes. We observed a trend toward earlier bloom initiation from 2017 to 2022 estimated from Cp in the South Pacific subtropical permanently stratified biome, however, trends in bloom timing in the other biomes are not clear. Our results suggest that Chl can change without changes in Cp and that using float observations that include phytoplankton production in deeper waters offers useful insights into bloom initiation timing and emerging trends.

Mentor: Dr. Seth Bushinsky
Co-Author: Shannon McClish

Malcolm Mackey
Biology (B.S.)
Natural Sciences
Minority Health Research Training Program
Oral Presentation Room: Session 2 (10:40-11:25) in Zoom Room Kukui

Antibiotic Resistance Profile of *Burkholderia cepacia complex* (*Bcc*) Bacteria Isolated from Patients at King Chulalongkorn Memorial Hospital

Background: The *Burkholderia cepacia complex* (*Bcc*) is a group of Gram-negative bacteria renowned for their intrinsic antibiotic resistance. As primarily opportunistic pathogens, *Bcc* infections primarily impact individuals with cystic fibrosis and those with compromised immune systems, often leading to severe and potentially fatal outcomes. These bacteria are highly transmissible and can persist in healthcare settings, posing significant infection control challenges. Despite the critical nature of *Bcc* infections, research on this pathogen is relatively limited in Thailand.

Objective: Identifying the sequence type of *Bcc* isolates at King Chulalongkorn Memorial Hospital using Multilocus Sequencing Techniques (MLST). Along with mapping the allelic profiles, to analyze the genetic relatedness between *Bcc* infections in various hospital wards.

Methods: Genomic DNA was extracted from a *Bcc* isolate and subjected to MLST using seven housekeeping genes. Polymerase chain reaction amplification and Sanger sequencing were performed to determine allelic profiles, which were compared to the PubMLST database for species identification.

Results: Ten *Bcc* isolates were analyzed, two isolates shared identical sequence types (ST), suggesting potential clonal spread. Notably, all ten isolates exhibited unique ST's not previously reported in the PubMLST database, highlighting the genetic diversity of *Bcc* in this population. The absence of matching ST for most isolates underscores the limited understanding of *Bcc* diversity in Thailand.

Conclusion: MLST proves a valuable method to identify *Bcc* isolates and show the genetic relatedness between isolates found in the hospital setting. This will lead to prevention of hospital acquired *Bcc* infections and influence hospital prevention control measures to curb the spread.

Mentors: Dr. Sunisa Chirakul, Dr. Vivek R. Nerurkar, Dr. Angela Sy
Co-Authors: Ruamporn Suebsakulpaisan, May Note

Roma Amor Malasarte, Computer Science (B.S.)
Jaira B Pader, Computer Science (B.S.)
Engineering & Computer Sciences - Research
UROP
Oral Presentation Room: Session 2 (10:40-11:25) in Zoom Room Hinahina

How Hawaiʻi K-12 Students Perceive Computer Programmers: A Drawing Study

Understanding children's perceptions of professions like computer programming is crucial for shaping career aspirations. Previous research has highlighted the significance of such understanding, often through drawing tasks, interviews, and surveys. However, limited research exists specifically on children's perceptions of computer programmers, especially within diverse cultural contexts such as Hawaiʻi. Prior studies have focused on perceptions of professions like scientists and engineers, but few have explored children's understanding of careers in computing and programming. This gap is particularly important as the technology sector seeks to promote diversity and inclusion. This research project explores the perceptions of computer programmers among K-12 students in Hawaiʻi, using a *drawing-based methodology* to uncover stereotypes, misconceptions, and attitudes toward computer science careers.

This case study aims to bridge this gap by focusing on the perceptions of computer programmers among students at University Laboratory School: A Hawaiʻi Public Charter School. The findings from this case study are expected to contribute significantly to the body of knowledge regarding children's perceptions of computer programming careers and to inform educators, policymakers, and other stakeholders about how to better nurture and support K-12 students in pursuing careers in computing.

Mentor: Dr. Anthony Peruma

Eleanor Masinton
Art History
Arts & Humanities - Research
Honors
Oral Presentation Room: Session 1 (9:45-10:30) in Zoom Room Kauna'oa

Movements of the Immovable: A Discussion of the Devotional and Non-Devotional Images of Fudō Myōō in Japan

Fudō Myōō is a wrathful deity essential to Esoteric Buddhism. He is one of the most popular Buddhist deities in Japan. Conventional art history recognizes that his image often follows one of two specific styles from the Heian period (794-1185 CE) when used in devotional practice. However, due to Fudō's great popularity, his image has seeped outside of ritual practice and into popular culture where its functions are secular and not devotional. These images often do not follow either of the traditional styles. While the majority of art historical discourse focuses on Fudō's devotional image, it lacks a thorough study of these exceptions in his image, especially in modern contexts.

Through a hermeneutical approach of analysis and interpretation, this research examines these non-devotional images of Fudō Myōō with a specific focus on variances from the traditional image, the setting in which the image is found, and the purpose of the image. This is done by assembling a collection of non-devotional images of Fudō, conducting a formal and comparative analysis of those images, and consulting with scholars and scholarship in this and related fields of study. This research demonstrates that in addition to the ancient forms with which he is conventionally associated, Fudō as a subject of illustration continues to develop in the non-devotional spheres he appears within.

Mentor: Dr. John Szostak

Jenna Matsuyama, Botany
Keilah Wilkes, Biological Engineering
Natural Sciences
UROP
Oral Presentation Room: Session 2 (10:40-11:25) in Zoom Room Pupu

Optimizing Maize Protoplast Transfection using Electroporation

This project is a direct branch of the research being done to make maize farming more efficient by using genome engineering technology to address conflicting fluorescence periods of tropical and mainland maize, the number one crop in America and the world. Currently, the industry-standard method to transfect protoplasts is to use polyethylene glycol (PEG) 4000.

This method ensures that they can uptake plasmid DNA by stripping the cell walls of maize cells, known as protoplasts, but the process can be 'toxic' to cells due to lowering the water potential, is time consuming, and labor intensive. While used as the standard, it becomes inefficient especially when the aim is to work with large quantities of samples in every round of transfection. Electroporation is an alternative method for transfection, which could significantly increase productivity and efficiency compared to the PEG methods. It is widely used in molecular biology for bacteria, microalgae, and plant cells to transform cells by creating temporary pores in the cell membrane. The cells will sit in a machine that will send an electric current, which allows for the passage of our plasmid DNA. Electroporation protocols specific to maize protoplasts were created for an efficient and reliable transfection method to engineer maize for better agricultural features. Protocols have been developed, but more research is needed on optimizing viability after transformation.

Mentor: Dr. Zi-Yan (Rock) Du

Cameron Nemeth
Marine Biology
Natural Sciences
UROP
Oral Presentation Room: Session 1 (9:45-10:30) in Zoom Room Lokelani

The Secret of Bubble-Net Feeding:
How Humpback Whale Morphology Distinguishes Them from Other Baleen Whales

Maneuverability in cetaceans is facilitated by pectoral flippers, flukes, and spinal flexibility, features that are pronounced in humpback whales (*Megaptera novaeangliae*). Humpback whales exhibit several foraging tactics requiring high maneuverability not seen in other baleen whales, including bubble-net feeding. We hypothesized that the significant lift force produced by the humpback whale's uniquely large pectoral flippers will result in them being the only species observed executing the tight, high-speed, sustained turns characteristic of solitary bubble-net feeding. To test this hypothesis, we used a combination of inertial sensor tag data and unoccupied aerial systems (UAS; drone) photogrammetry to quantify the turning performance of solitary bubble-net feeding humpback whales, and compared this to similar data from six other mysticete species. We found that solitary bubble-net feeding humpback whales exhibited centripetal accelerations (0.46 m s^{-2}) that exceeded the upper limit quantified in comparable turns by all six other mysticetes. This enhanced turning performance can be attributed to a substantial lift force generated by humpback whale pectoral flippers (7,800 N ± 85 N), which contributes to centripetal acceleration and facilitates faster roll rates, allowing humpback whales to more quickly bank inwards and utilize their spinal flexibility to decrease their turning radius. Our findings demonstrate how humpback whales are uniquely adapted to exploit prey patches that might otherwise be insufficient for capture by animals of such a large size.

Mentor: Dr. Lars Bejder
Co-Authors: William T. Gough. Paolo S. Segre, Frank E. Fish, Andrew Szabo, Wesley N. Fassmann, Scott L. Thomson, Julia A. Burrows, Ellen M. Chenoweth, Jacopo di Clemente, Ari S. Friedlaender, Jeremy A. Goldbogen, Malene Simon, Janice M. Straley, Simone K. A. Videsen

Riku Omata
Finance
Social Sciences
UROP
Oral Presentation Room: Session 1 (9:45-10:30) in Zoom Room ‘Ilima

Analyzing Evasion of Financial Regulations using Cryptocurrencies

This project examines how cryptocurrencies enable capital control evasion in China, as the nation imposes a $50,000 annual cap on foreign exchange per individual set by the State Administration of Foreign Exchange. Our research investigates the use of cryptocurrencies like Bitcoin and Ethereum to transfer funds across borders, bypassing traditional banking channels. We will utilize an Online Analytical Processing (OLAP) system using DuckDB to detect and analyze transaction data to track the flow of cryptocurrencies from Chinese exchanges and miners to international entities to reveal patterns in economic activity associated with regulatory circumvention.

The study’s methodology involves establishing nodes on Bitcoin and Ethereum networks to access live transaction data, followed by data extraction, transformation, and loading (ETL) using Python. Transaction data will be analyzed to locate links between digital wallets and real-world entities using SQL to identify trends in geographic capital movement. By analyzing these flows, we expect to gain insight behind the economic motivations and mechanisms of these transactions.

This research provides a better understanding of cryptocurrency’s role in bypassing capital control, informing policymakers, researchers, and financial analysts on the challenges of regulating these networks. By examining these transactional movements, we intend to offer insights into cryptocurrency's evolving utility in finance world-wide.

Mentor: Dr. Jiakai Chen

Alyssa Poynter
Marine Biology
Natural Sciences
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Oral Presentation Room: Session 2 (10:40-11:25) in Zoom Room Mokihana

Evaluating Nitrogen Pollution in Kāneʻohe Bay Using *Gracilaria salicornia* as a Biogeochemical Indicator

Since the early 1950s, Kāneʻohe Bay faced significant nutrient pollution from wastewater outfalls and increased urban runoff. In 1952, a sewage outfall began releasing untreated water into the southeast end of the bay. By 1963, a second outfall, in the southwest basin began releasing chlorinated effluent at 8 m deep until both closed in 1978. Studies have shown that increased sewage levels are correlated to decreased biodiversity, reduced larval settlement, increased coral bleaching, and rapid algal growth. This study assesses the current status of nitrogen pollution in the southwest basin of Kāneʻohe Bay by analyzing the tissue and isotopic nitrogen composition (%N and δ15N) in *Gracilaria salicornia*, collected from that and other regions. Introduced for agar production, this invasive alga forms dense mats that block light on reefs and trap sediments. The samples were collected at three sites using a transect to measure an onshore offshore gradient, triple-rinsed with deionized water, dried at 60 °C, and ground for isotopic analysis. Results showed δ15N values ranging from 9.3 ‰ to 19.7‰, showing wastewater-derived nitrogen at all sites. In the same samples, %N held values from 0.97%, indicative of healthier ecosystems, to 2.43%, suggesting high nitrogen enrichment. These findings suggest Kāneʻohe bay remains affected by past outfalls or current nutrient inputs despite stopping the outfall discharges. Techniques of invasive algae and sediment removal, such as the SuperSucker, could be useful tools to improve reef health. Continued research and management are essential for further restoration of the bay.

Mentor: Dr. Celia Smith

Ives Rdialul
Microbiology
Natural Sciences
UROP
Oral Presentation Room: Session 1 (9:45-10:30) in Zoom Room Kukui

Leveraging Synthetic Bacterial Communities to Understand their Influence on Mosquito Development

This study investigates the role of aquatic bacterial communities in the development of the mosquito species *Culex quinquefasciatus*, a significant vector of avian malaria here in Hawai‘i and other diseases worldwide. Previous research has established that microbial interactions significantly influence mosquito biology, behavior, and fitness. We hypothesized that the development and biomass accumulation of mosquito larvae are dependent on the functional capabilities of microbial communities comprising *Kosakonia*, *Pseudomonas*, and *Commamonas* compared to communities containing *Novosphingobium*. To test this, we utilized a previously developed experimental model to produce bacteria-free *Culex quinquefasciatus* larvae provided a diet of leaves and worms, mimicking the natural environment. The larvae were exposed to 17 distinct bacterial treatments composed of various combinations of four bacterial isolates. These treatments included synthetic communities where one or more of 4 bacteria is missing in each treatment. Each treatment was replicated six times, resulting in a total of 102 experimental mesocosms. Results show that treatments with live microbes, particularly those composed of *Kosakonia* and *Pseudomonas*, influenced mosquito survival and pupal biomass. In contrast, larvae exposed to treatments of *Commamonas* and *Novosphingobium* alone had no pupations similar to the negative treatment. Overall, our findings further suggest that the mosquito development and survival are influenced by composition of microbial communities. Expanding our knowledge of mosquito-microbe interactions is critical not only for a better understanding of invasive insect physiology and ecology but also for providing new avenues for controlling their negative impacts on human health.

Mentors: Dr. Matthew Medeiros, Dr. Nicola Kriefall

Angel Sanchez
Cinematic Arts and Philippine Language & Culture
Arts & Humanities - Research
UROP
Oral Presentation Room: Session 1 (9:45-10:30) in Zoom Room Lehua

An Exploration And Analysis of Cultural Narratives: A Comparison of European Cinema and International Cinema Showcased In The Venice International Film Festival

How do cultural lifestyles influence storytelling in European cinema compared to international cinema and does understanding the similarities and differences foster cross-cultural storytelling in film? European cinema, films produced in Europe, focus on character-driven narratives, visual storytelling, innovative artistic expression, social and political commentary, slower pacing, and cultural diversity and authenticity of its regions. While international cinema, films produced outside Europe have their unique storytelling style and focus.

To analyze these dynamics, I attended the 81st Venice International Film Festival, watched 12 screenings produced in different countries, and examined additional works of the same caliber. I took note of motifs, visual aesthetics, and storytelling styles, paying attention to how the daily lives of Venetians and Romani might influence their storytelling or vice versa. In observation, I discovered that despite the differences, including European cinema styles in other cultural narratives is not impossible due to similar lifestyles and human experiences. By immersing yourself in the lifestyle of different cultures and embracing and analyzing diverse narratives, filmmakers can create and broaden their storytelling and appreciation of global cinema.

Mentor: Anne Misawa

Melissa Shields
English
Arts & Humanities - Creative
Honors
Oral Presentation Room: Session 2 (10:40-11:25) in Zoom Room Lehua

The Fair American

The purpose of my creative thesis emerged over the course of my research as I learned all I could about the young captain from America. Step by step, I resurrected his story. His undeserved murder in 1790 by native Hawaiians on the leeward coast of Owhyhee was silenced and covered up. The body of the captain was discarded, dragged, and hidden in a lava cave. Dismissed in texts of early Hawaiian history, it was as if he never existed. Who was he? Where did he come from? His courageous presence directly affected the course of Hawaiian history. The ambitious warrior Kamehameha utilized his schooner, cannon, and muskets to win battles from 1790 through 1795.

I became an investigative reporter studying the works of both Western and Hawaiian historians. I interviewed descendants, visited Oahu, Maui, and Hawaii Island battlefields, and walked the lava plains. I searched through cemeteries, museums, national parks, and library archives. The silenced story of the son had been meshed with that of his disgraced father, who was the infamous perpetrator of the Olowalu Massacre. The path of the father was not the path of the son. Additionally, Kamehameha consecrated a Royal Kapu along the coast, that not a word would ever be spoken about the massacre.
My thesis is a memorial to the young American captain who lies entombed, unclaimed, and far from his home, silenced forever in the arms of Pele in a sealed lava cave no one will ever find.

Mentors: Dr. William Howes, Dr. Jonathan K. Kamakawiwoʻole Osorio

Brandon Tabios
Computer Science and German
Engineering & Computer Sciences - Research
UROP
Oral Presentation Room: Session 2 (10:40-11:25) in Zoom Room Hinahina

Personalized Language Learning in the Era of Generative AI: Potentials, Challenges, and Strategies

This presentation reports on the research work done as part of a longitudinal study focused on the capabilities of Large Language Models (LLM) in supporting post-secondary language learning. Through leveraging the capabilities of LLMs, a conversational AI system is developed to engage and guide language learners through structured conversation practices, providing personalized feedback on their focused language. The part of research completed during Summer 2024 focused on evaluating the effectiveness of the AI-generated feedback and learners' perceptions of the AI system's impact on their language learning.

The data sources at this phase of the research were the conversations with the AI, as well as a subsequent user survey. The conversations were analyzed based on the feedback provided by the AI, which was presented at different levels of explicitness to help learners notice and correct their errors over time. The results show that although the AI could provide personalized feedback effectively in most cases, such feedback focused too much on grammar rather than meaning, which was deemed not effective by some learners. Analysis of post-survey also showed mixed perceptions towards this version of the AI system.

The outcome from this phase of the research has informed further modification of the system. The AI-generated feedback is now adapted to a different format, which provides users with a correct version of ungrammatical or inappropriate sentences. The change allowed conversations to flow naturally, resulting in longer conversations and more practice towards the learners.

Mentor: Naiyi Xie Fincham

Gabrielle Justine Tapat
Natural Resources & Environmental Management
Natural Sciences
UROP
Oral Presentation Room: Session 1 (9:45-10:30) in Zoom Room Mokihana

Investigating Impacts of Maui Wildfires on Groundwater Flow and Quality in Lahaina Beach Environments

On August 8, 2023, a rapid and devastating wildfire swept through Lahaina, Maui, causing extensive destruction and environmental disruption. This event released a variety of contaminants into the environment, significantly impacting groundwater flow and quality. The combustion of vegetation, structures, vehicles, and various materials released hazardous chemicals, such as pyrogenic polycyclic aromatic hydrocarbons (PAHs) and heavy metals, along with nutrients like nitrogen and phosphorus. This project aims to understand beach groundwater flow and quality in the affected region. To achieve this, we established two experimental transects in the affected area at Kamehameha Iki Park. One transect involves installing piezometer wells to monitor groundwater table fluctuations in response to tides, while the other transect includes multiport sampling wells for groundwater quality measurements at various depths. We collected groundwater samples for salinity measurements and lab analysis to detect any nutrients. We also analyzed the Conductivity, Temperature, and Depth (CTD) sensors to quantify groundwater table fluctuations. Based on the field measurements, we established models to characterize groundwater flow in the Lahaina beach environment. The combined field observations and groundwater modeling provide a comprehensive understanding of potential pathways and the persistence of contaminants from wildfires in Lahaina's coastal beach environments if there are any. These findings provide insight into assessing the vulnerability and resilience of coastal aquifer systems to wildfire-induced contamination, aiding in developing effective mitigation strategies for affected communities.

Mentor: Dr. Xiaolong (Leo) Geng

Gabrielle Tessier
Molecular Biosciences & Biotechnology
Natural Sciences
UROP
Oral Presentation Room: Session 2 (10:40-11:25) in Zoom Room Mokihana

Screening of Hawaiian Marine Extracts for Antiviral Activity against Dengue Virus

Dengue virus (DENV) is a major health concern, leading to severe illness and death, especially in cases of hemorrhagic fever and shock syndrome. Despite its global impact, treatment options remain limited, with only one partially effective vaccine, Dengvaxia, which is not universally recommended due to safety concerns. Given these limitations, natural products, including marine extracts (MEs), have emerged as promising candidates for antiviral therapies. This study explores the antiviral potential of Hawaiian marine extracts against DENV, hypothesizing that specific extracts will inhibit viral replication.

In collaboration with Dr. Horgen's lab from Hawaii Pacific University, we screened 280 MEs for antiviral activity using Vero cells infected with Luciferase-tagged Zika virus (ZIKV), a model flavivirus related to DENV. Virus replication was quantified using the Nano-Glo® Luciferase Assay System, enabling sensitive detection of antiviral effects. Of the samples tested, 31 extracts demonstrated significant reductions in viral replication, suggesting robust antiviral activity.

These findings validate our hypothesis that Hawaiian marine extracts could contain compounds effective against flaviviruses like DENV. Further research will focus on these 31 extracts, employing plaque assays and RNA quantification to confirm and refine the antiviral properties observed. The study's results lay a strong foundation for developing novel, natural product-based antiviral agents that could ultimately expand therapeutic options for DENV and related viral infections, addressing an urgent public health need.

Mentor: Dr. Saguna Verma
Co-Author: Jonatan Fierro Nieves

Mika Toor
Kinesiology & Rehab Science (B.S.)
Social Sciences
UROP
Oral Presentation Room: Session 2 (10:40-11:25) in Zoom Room ‘Ilima

Assessing the Validity of Sway Mobile Application in Neurocognitive Testing: A Comparative Study with Traditional Neuropsychological Tests

Introductions: Sway is a mobile-based neurocognitive test used by clinicians to measure deficits in balance and cognitive functions commonly observed in concussed athletes. The test provides four cognitive composite scores; Simple Reaction Time ($SWAY^{SRT}$), Impulse Control ($SWAY^{IC}$), Inspection Time ($SWAY^{IT}$), and Memory ($SWAY^{M}$). However, its accuracy has not been fully investigated. Previous studies showed mixed results comparing Sway with computerized tests. Therefore, we aimed to validate Sway’s cognitive tests by analyzing their relationship with traditional NP tests.

Methods: Thirty healthy Japanese university students (ages 18 to 22 ± 0.9) participated in the study. Sway, the Trail Making Test A & B (TMT-A & B), and the Wechsler Adult Intelligence Scale-IV (WAIS-IV), were administered over a two-week period. TMT A & B assesses attention and speed, while WAIS-IV is an IQ test that measures intelligence and cognitive ability. Exploratory Factor Analysis using maximum likelihood extraction was conducted to analyze the relationships among composite scores from each test.

Results: The analysis indicated two distinct factors. Factor one consisted of $SWAY^{SRT}$, $SWAY^{IC}$, and TMT-A completion time with factor loading from .58 to .88. Factor two was three composite scores of WAIS-IV with factor loading from .67 to .74. This suggests that while $SWAY^{SRT}$ may provide insights into motor speed components, the other scores may not adequately represent broader cognitive domains that are important in various cognitive functions necessary in daily activities.

Conclusions: This study underscores the need for a cautious interpretation of Sway’s cognitive assessments, particularly memory and attention, in place of established neuropsychological measures.

Mentor: Dr. Kyoko Shirahata-Maximo

Kaitlynn Weiss
Psychology
Social Sciences
UROP
Oral Presentation Room: Session 1 (9:45-10:30) in Zoom Room ‘Ilima

Mindfulness Meditation and Perceptual Load in Performance on a Visual Capture Task

Mindfulness meditation is shown to have many mental health benefits including decreasing perception of stress. Previous cognitive research has attempted to understand the attentional processes involved in these mental health outcomes. The present study aimed at determining whether meditators have an improved capacity to respond to stimuli with increased perceptual load. The researchers recruited 14 subjects with no meditation experience and 14 subjects with at least 6 months of meditation experience. The subjects underwent a visual capture task to measure their attention in low-perceptual-load and high-perceptual-load conditions. The meditating subjects are expected to have less of an increase in reaction time from low-load to high-load conditions. This indicates that those who practice mindfulness are less affected by high-perceptual load conditions, indicating that they experience less stress from stimuli in their environment.

Mentor: Dr. Jonas Vivell

Jing Ting Zheng
Computer Science
Engineering & Computer Sciences - Research
UROP
Oral Presentation Room: Session 1 (9:45-10:30) in Zoom Room Pupu

Identifying Stress-Related Topics in Speech Recordings Using an Automatic Speech Recognition System and a Deep Learning Topic Model

The heterogeneous nature of stress responses complicates the identification of specific detrimental behaviors through traditional clinical interviews. Moreover, hypertension is frequently associated with a stressful lifestyle. Understanding the themes emerging from discussions about lifestyle and stress offers valuable insights into the experiences of individuals exhibiting these behaviors. This study aims to employ natural language processing (NLP) techniques to uncover recurring themes and analyze trends within transcribed speech recordings.

We selected 12 participants diagnosed with hypertension and self-reporting a stressful lifestyle. Data collection included wearable sensor data and corresponding blood pressure measurements, focusing on the speech recordings from participant interviews conducted after completing the study. The Whisper tool developed by OpenAI was utilized for automatic speech recognition to transcribe the audio recordings. Subsequently, we applied the deep learning topic model, BERTopic, to identify the principal topics within the transcriptions.

The findings from this research can yield actionable insights for interventions and support systems, facilitating real-time identification of issues. Additionally, this study explores how individuals communicate their concerns, aiming to develop more responsive technologies that can provide adequate support and resources.

Mentor: Dr. Peter Washington
Co-Authors: Ali Kargarandehkordi, Aditi Jaiswal

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Horizons Vol IX Release Reception

11:30a - 12:30p

PROGRAM SCHEDULE

Welcome & Introduction, *Dr. Shana Brown, Honors Director*
Panel Discussion, *Volume IX Student Authors & Dr. Siobhán Ní Dhonacha, Editor*
Closing, *Dr. Siobhán Ní Dhonacha, Editor*

ABOUT THE JOURNAL

Horizons is a peer-reviewed academic journal dedicated to high-quality creativity, innovation, and research created, conducted, and synthesized by undergraduate students at the University of Hawai‘i at Mānoa (UHM) in all academic fields represented by the UHM campus community.

Each annual issue is published with simultaneous print and online versions. See the full version on our website at:
https://manoa.hawaii.edu/horizons/

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We invite students enrolled at UHM during the Spring 2023 through Spring 2025 semesters to submit work produced within this time frame to be considered for the Fall 2025 issue (Volume X). We encourage submissions from any undergraduate academic discipline.

For specific deadlines and detailed instructions on how to submit works for consideration, please visit our website listed above.

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