# The Utica University Student Conference for Research, Professional Activities, and Creative Arts

Wednesday, April 24, 2024

*Macfarlane Auditorium/Library Concourse/Gordon Science Center/Thurston Hall*

UTICA
UNIVERSITY

## SCHEDULE OF EVENTS

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|---|---|
| 1:30 pm | **Presentation Set-up: Presenters Report to Rooms** |
| 2:00 pm | **Welcoming Remarks – Provost Stephanie Nesbitt Macfarlane Auditorium (DePerno)** |
| 2:15 - 3:00 pm | **Poster Presentations & Refreshments – Library Concourse** |
| 2:30 - 3:30 pm | **ENG 102 Student Research Remix: Space, Place, and the Politics of Belonging**<br>● **Thurston 206**<br>● **Thurston 207**<br>● **Thurston 208** |
| 3:15 – 4:30 pm | **Concurrent Oral Presentations**<br>● **Session A: Gordon 261**<br>● **Session B: Gordon 262**<br>● **Session C: Gordon 271** |

## POSTER SESSION: 2:15 PM – Library Concourse

1. **Fishing Activity Has Minor Effects on Earthworm Communities Adjacent to Central New York Freshwater Habitats**
   - Adam Thomas and Dominic Clark (Sara Scanga, Faculty Advisor)

2. **Global Correlation Between MHD Waves Along Bursty Bulk Flows, Substorms Dynamics, and Solar Wind Conditions**
   - Adam Liebers (Hava Turkakin, Faculty Advisor)

3. **How Can the Use of Cutaneous Functional Units Guide Occupational Therapy Practices in Burn Care?**
   - Isabella Starsiak, Kristen Sellars, Bailey Ford, and Mackenzie Bonyak (Yvonne Monti, Faculty Advisor)

4. **The Impact of Service Dogs on Sleep Dysfunction: A Systematic Review**
   - Anna Owens (Yvonne Monti, Faculty Advisors)

5. **Synthesis and Characterization of Novel Sulfur-based Tetradentate Ligands and Nickel(II) Complexes as Precursors to [NiFe]-hydrogenase Mimics**
   - Abigail Stapf (Elaine Liu, Faculty Advisor)

6. **Discovery of New Secondary Metabolites From the Mycoparasitic Fungus, *Hypomyces hyalinus* (Hypocreales, Hypocreaceae)**
   - Taylor Hastings (Richard Tehan, Faculty Advisor)

7. **The Effects of Soprano Arias on Spatial Memory in Crickets**
   - Cailee Blackington (Thomas McCarthy, Faculty Advisor)

8. **Mitigating the Unmanaged Attack Surface on Cloud-Based Architectures**
   - Belier Javier (Unnati Shah, Faculty Advisor)

## SESSION A: Gordon 261

***Moderator:*** **Jason Denman, Professor of English and Dean of Humanities and Social Sciences**

3:15 - 3:30: **Operating System Forensics**

- Nathaniel Baumes and Gillian Flihan (Unnati Shah, Faculty Advisor)

3:30 - 3:45: **No Universal Healthcare in the U.S: An Anti-Communist Legacy Decades in the Making**

- Victoria Elefante (Jun T Kwon, Faculty Advisor)

3:45 - 4:00: **Analyzing the Divergent Nature of US Alliances with Japan and South Korea**

- Kyle Mitchell (Jun T Kwon, Faculty Advisor)

4:00 - 4:15: **Just Keep Swimming: Applying Ai Chi to Improve Pain, Postural Control and Quality of Life in Those with Neurological Conditions**

- Alyssa Winberg, Eliza Ericson, Ryan Kulawy, and Joslyn Phalen (Gabriele Moriello, Faculty Advisor)

4:15 - 4:30: **Heidelberg Category Review**

- Corrine Bush and Angela Hawthorne (Francesca Dunlevy, Faculty Advisor)

## SESSION B: Gordon 262

***Moderator:*** **Sharon Wise, Professor of Biology and Dean of Natural Sciences and Mathematics**

3:15 - 3:30: **LED vs. Fluorescent Lighting in Alumni Hall: An Environmental and Economical Case Study at Utica University**

- Norman Booth, Mackenzie Kocher, and Victoria Rommel (Hooman Sadeh, Faculty Advisor)

3:30 - 3:45: **Feasibility Study on Reduction of Energy Consumption: A Case Study on Utica University's Thurston Hall**

- Brian Atkinson and Jackson Blanchard (Hooman Sadeh, Faculty Advisor)

3:45 - 4:00: **Life Cycle Cost Analysis Between Individual Plastic Seats and Aluminum Benches**

- James Lanier, Denzere Woolcock, and Dan Masullo (Hooman Sadeh, Faculty Advisor)

4:00 - 4:15: **Life-Cycle Cost Analysis of Utica University Electrical Consumption and Renewable Energy Alternatives**

- Logan Campbell, Jack Pitts, Seamus Crowe, and Tyler Jennings (Hooman Sadeh, Faculty Advisor)

4:15 - 4:30: **Assessing the Cost Impact of Risks on Commercial Construction Projects: A Monte Carlo Simulation Case Study**

- Austin Campbell (Hooman Sadeh, Faculty Advisor)

## SESSION C: Gordon 271

***Moderator:*** **Rick Fenner, Professor of Economics and Dean of Business and Justice Studies**

3:15 - 3:30: **The Features and Characteristics of Sports Endorsements Today**

- Brooke Beleza (Patricia Swann, Faculty Advisor)

3:30 - 3:45: **Who Did It Better: Once Upon a Time... In Hollywood or Knives Out?**

- Chris Carroll (Patricia Swann, Faculty Advisor)

3:45 - 4:00: **YouTuber Apology Videos: To Make a Comeback or Not**

- Isabella Yaghy (Patricia Swann, Faculty Advisor)

4:00 - 4:15: **Factors Influencing Suffolk County Housing Prices**

- Dzana Borovic (Rick Fenner, Faculty Advisor)

# SESSION D: Thurston 206/207/208

***Moderators and Faculty Advisors:*** **Drs. Nicole Lawrence, Kelly Minerva, and Ane Costa**

2:30 - 3:30: **ENG 102 Student Research Remix: Space, Place, and the Politics of Belonging**

- Mia Amendolare
- Jake Bowen
- Connor Cooper
- Nate Hartman
- Jayle Leonard
- Tony Euceda
- Mackenzie Lyons
- Citlali Lopez
- Kourtney Mazurowski
- Eniyah Peart
- Isait Flores
- Billy Beseth
- Jenna McReynolds
- Emily Meeker
- Ava Natale
- Emil Abreu
- Jillian Ryan
- Jarrett Sherman
- Christian Betrand
- Shane Bracken
- Piper Carmen
- Olivia Cyr
- Steven D'Elia
- Siara Elliott
- Daniel Fallo
- Joey Gentile
- Eddie Haeffer
- Anthony Kelly
- Alexis Pula
- Morgan Wrobel
- Peter Amin
- Leisha Ayala
- Rachel Decicco
- Azure Hance
- Elvedina Korkutovic
- Olivia Liccardo
- Braden McVicker
- Isabella Terwilliger
- Nicholas Wehrle
- Erica Zike
- Dominic Aliasso
- Alan Catic
- Christian Dupont
- Shaun Jones
- Y'sland Miller-Seymore
- Tyler Mormando
- Matthew Pallouras
- Karyll Rony-dorceus
- Zachary Smithson
- Jackson Surinach
- Tyshawn Taylor
- Scott Thompson
- Maya Virgil
- Cassondra Wood
- Timothy Jeralds
- Alyssa Hoyos
- Rita Salibi
- Christina Troche
- Joscelyn Spiezio
- Grace Marra
- Joscelyn Wabick
- Jacob Patrella
- Brooke Halter
- Bennett Melita
- Kyle Robare
- Arelya Mathias
- Nazjai Earle
- Thaddeus Luke
- Jonah Ruthig
- Gabe Zawolo
- Abby Condon
- Olivia Rosen
- Elizabeth Scott
- Emma Bloomfield
- Meg Lasher
- Rithy Meas
- Noah Iszard-Michael
- Remi Charlebois

# ABSTRACTS

## Feasibility Study on Reduction of Energy Consumption: A Case Study on Utica University's Thurston Hall

Brian Atkinson and Jackson Blanchard
Hooman Sadeh, Faculty Advisor
*Oral Presentation*

In the context of increasing energy costs and growing environmental concerns, the installation of solar panels at Utica University's Thurston Hall - a 15,000-square-foot building that houses the Construction Management department - can be a highly cost-effective investment for the future. The scope of this feasibility study is to thoroughly propose and discuss the following two alternates. These alternates are sticking to the standard route of using the city's provided electricity, which is recorded by a meter, or installation of solar panels to capture green energy to use for self-sufficiency. This case study will clarify a range of factors that contribute to the cost-effectiveness of solar panels in this specific application, as well as discussing the potential cons. The analysis was conducted through a Life Cycle Cost Analysis using the net present worth method (NPW). The results show over the course of the next twenty years, the university will benefit from a cost savings of four hundred and fifty thousand dollars. This proposal will reduce the university's energy costs and positively affect the local community by reducing the university's manufactured energy footprint.

# Operating System Forensics

Nathanial Baumes and Gillian Flihan
Unnati Shah, Faculty Advisor

*Oral Presentation*

Operating system (OS) forensics stands at the forefront of digital investigation methodologies, providing crucial insights into the activities and intentions of system users. In this presentation, we delve into the intricate world of OS forensics, exploring its methodologies, challenges, and applications in contemporary investigative practices.

Beginning with an overview of the foundational principles of OS forensics, we elucidate the importance of understanding OS artifacts, file systems, and data structures in reconstructing digital scenarios. Leveraging this knowledge, we navigate through the investigative process, from evidence acquisition and preservation to analysis and interpretation.

# The Features and Characteristics of Sports Endorsements Today

Brooke Beleza
Patricia Swann, Advisor

*Oral Presentation*

Athlete endorsements have been used for many decades as a marketing strategy to promote companies and products. In this study, a content analysis of 100 athlete endorsements from the top 10 athletes who make the most earned money via endorsements were analyzed. Posts were analyzed to identify the features and characteristics of sports endorsements today to understand why they are successful. Endorsements were used for a variety of different product categories, having no specific category dominate over the others. Based on a definition of attractiveness that I defined, more than 90% of the athletes used in the endorsements ranked a four or five on a 5-point scale. This was expected, as consumers are attracted to visuals and an attractive celebrity makes the product appear more attractive. In addition to attractiveness, all athletes were considered to be of normal weight and the athlete's ages tended to be from 17 to 45. This study suggests that some certain characteristics and features are commonly used to create successful athlete endorsements.

# The Effects of Soprano Arias on Spatial Memory in Crickets

Cailee Blackington
Thomas McCarthy, Faculty Advisor

*Poster Presentation*

Spatial memory is the ability to recall the path and/or location of an object or stimulus, and plan a course to that location. This type of memory is commonly examined in humans and mice, however is severely understudied in crickets. Crickets, like the previously mentioned organisms, have fully developed auditory systems, and have the ability to hear at high frequencies. Music is frequently used in studies with humans and mice as a way to increase spatial memory, so it is my hypothesis that this would be the same in crickets. In this study, crickets were exposed to high frequency soprano arias for an hour a day for 5 days and ran through a maze each day, with food signifying the end, to evaluate if they were able to reach the end of the maze faster when they were exposed. A group of crickets that were not exposed to music was used as a control group for comparison. Each day, three groups of five crickets from each of the testing tanks were run through the maze and the time it took for the first cricket to reach the end of the maze in each trial was recorded. The time of the first cricket reaching the end of the maze was averaged for both the test and control groups. These averages were run through a Mann-Whitney U nonparametric statistical analysis which revealed that there was not a significant difference between the crickets exposed to music and those who were not.

# LED vs. Fluorescent Lighting in Alumni Hall: An Environmental and Economical Case Study at Utica University

Norman Booth, Mackenzie Kocher, and Victoria Rommel
Hooman Sadeh, Faculty Advisor

*Oral Presentation*

This study evaluates the comparison of LED lighting versus fluorescent lighting in Alumni Hall at Utica University and why LED lights are a much better option when thinking green. By conducting this study, it is concluded that the environmental and economical benefits outweighed the current lighting situation. Alumni Hall at Utica University is a residential dorm on the northwestern side of the college campus. The main objective of our research was to find a way to make our activity on campus more environmentally friendly. There are a few different variables that played a part in our findings, which is why we analyzed different impacts of both lighting types. Utilizing the capital recovery method and life cycle cost analysis, we first assessed the current lighting setup and its energy usage. Subsequent calculations determined the number of bulbs required and the potential energy savings. We first determined the type of lighting there, and then the amount of energy usage of the current bulbs. Then we found the possibilities for more energy efficient bulbs and calculated the amount of lightbulbs needed. The results indicate that over a ten-year period, LEDs would not only reduce energy consumption but also decrease costs, with a projected savings of approximately $28,000. LEDs consume 24 watts less per bulb than the comparable T2 spiral fluorescent bulbs. This research supports the idea that LED lights are more green. By substituting the existing fluorescent lights for LED lights shows significant benefits in terms of operation efficiency and sustainability.

# Factors Influencing Suffolk County Housing Prices

Dzana Borovic
Rick Fenner, Faculty Advisor

*Oral Presentation*

The objective of this study is to determine what factors influence the price of housing. Two empirical models using data on housing prices in Suffolk County between 1986-2022 are used to estimate this. Both regression models utilize measures of the supply and demand for housing. In both models, the results indicate that population, per capita income, fair market rent, and mortgage rates are statistically significant. Unemployment, building permits and construction costs were only found to significantly impact housing prices in the second model.

## Heidelberg Category Review

Corinne Bush and Angela Hawthorne
Francesca Dunlevy, Faculty Advisor

*Oral Presentation*

The relevance and importance of consumer behavior research in making marketing decisions has grown. Our research took a look specifically at the consumer behavior demonstrated by bread consumers both on digital platforms through social media interaction as well as in-store interaction and behavioral tendencies displayed when purchasing bread. We collected data for both in-store and digital interactions to develop a customer profile of the typical consumer for purchasing bread and behavioral tendencies displayed such as brand loyalty. In-store customers exhibited behavior that would confirm our belief that bread is a low-level involvement purchase. Though there was some variability store by store, in general customers fell into two categories, one that included high levels of interaction with the products and an opposing behavior of exhibiting strong brand loyalty and grabbing their "go-to" bread product. Data we gathered from digital interactions also indicated strong brand loyalty associated with consumers.

# Life-Cycle Cost Analysis of Utica University Electrical Consumption and Renewable Energy Alternatives

Logan Campbell, Jack Pitts, Seamus Crowe, and Tyler Jennings
Hooman Sadeh, Faculty Advisor

*Oral Presentation*

Annually, Utica University campus incurs substantial electricity costs, approximately $149,000. In response, we propose a sustainable and economically viable solution through the adoption of wind technology. This project will detail a life cycle cost analysis for installing a wind turbine at Utica University, utilizing Net Present Worth (NPW) calculations to comprehensively compare the long-term financial benefits of this alternative energy source against conventional electricity usage. We aim to demonstrate how current advancements in wind technology not only provide a cleaner energy source but also enhance cost efficiency by significantly reducing lifetime energy costs. Our analysis will analyze the initial installation costs, ongoing operational expenses, and the projected savings, thus emphasizing the potential for a substantial decrease in the campus's carbon footprint and energy expenditures. Our study focuses on the possible money savings on electricity when switching to wind power over the next 10 years. The results show that our wind alternative is a very efficient alternative. Installing a wind turbine would significantly reduce the cost of electricity for the whole campus.

# Assessing the Cost Impact of Risks on Commercial Construction Projects: A Monte Carlo Simulation Case Study

Austin Campbell
Hooman Sadeh, Faculty Advisor

*Oral Presentation*

Construction managers routinely face challenges such as cost and time overruns in managing construction projects. Despite technological advancements enhancing productivity and project management, there remains a critical need for effective risk management to ensure projects are completed within budget and on schedule. The primary aim of this study is to evaluate the effectiveness of modeled risk analysis in strategically allocating scarce resources to effectively mitigate risks in construction projects. Conducted as a case study on a commercial construction project in the Northeast USA, project risks were identified through field observations and expert testimony, then ranked by probability and cost impact. These risks were quantified using a Monte Carlo simulation, processing 10,000 project simulations into frequency distribution histograms of cost and data ranges, where random probabilities were used to model potential outcomes. Additionally, the model was executed post-mitigation to reassess cost impacts based on the risk response plan. The findings show simulated estimated costs relative to base contract amounts and provide probabilistic confidence in completion costs given the assessed risks. Although dependent on the precision of expert opinions and assessments, the Monte Carlo simulation proves to be an effective technique for managing complex construction projects that can be utilized by industry stakeholders throughout the life cycle of projects.

# Who Did It Better: Once Upon a Time... In Hollywood or Knives Out?

Chris Carroll
Patricia Swann, Faculty Advisor

*Oral Presentation*

Watching movies and going to the cinema is a past time that has long been enjoyed by billions of people around the world. Above all it is a treat to see a group of well-known actors collaborate on films for all to enjoy. While it is for the entertainment of viewers it is also a business that incorporates a marketing strategy to ensure a movie's success. Two movies released in 2019 that contain a surplus of big-name actors are Once Upon a Time… In Hollywood directed by Quentin Tarantino and Knives Out directed by Rian Johnson. I intend to use a comparative case study method for my data collection and judgmental sampling to analyze the marketing strategies of both films to find similarities and or differences and see which strategy was more successful at earning a profit from both the box office and their DVD video sales. Using articles, movie databases, and each film's Twitter / X account I intend to create a timeline of each movie from cast announcements to the films release and everything in-between, seeing what was released and announced. My findings will provide new insights into movie marketing.

# No Universal Healthcare in the U.S: An Anti-Communist Legacy Decades in the Making

Victoria Elefante
Jun T Kwon, Faculty Advisor

*Oral Presentation*

Why are democratic countries like Canada and the UK known for their free, government supplied healthcare, while the United States, a nation culturally and politically similar to them, does not? It is my belief that the United States government (and, consequently, many of its citizens) relates universal healthcare to communism, something that it is entirely resistant to due to its history of fighting against the ideology in the twentieth century. Therefore, as long as anti-communist sentiments remain as they have for the past seventy or so years, the United States will not be able (nor willing) to obtain universal healthcare. Subsequently, my hypothesis is that the stronger a country's anti-communist sentiments are, the less likely it will be to have universal healthcare.

In this paper, I explore the United States' relationship with communism by touching on some related historical events surrounding related international conflicts like WWII, as well as looking at the different environments of countries that do have universal healthcare. In this way, I examine this issue, at least partly, through a constructivist lens, to hopefully answer why the United States is one of relatively few democracies that has not adopted the universal healthcare system. Additionally, I look at the benefits universal healthcare has in other societies (including the obvious with poverty), and how it could help in the United States. In order to conduct this research, I found relevant articles on databases and synthesized them in order to form a conclusion, being that my hypothesis is correct.

# Discovery of new secondary metabolites from the mycoparasitic fungus, *Hypomyces hyalinus* (Hypocreales, Hypocreaceae)

Taylor Hastings
Richard Tehan, Faculty Advisor

*Poster Presentation*

Fungi are major producers of structurally diverse, organic molecules termed secondary metabolites (= natural products) many of which have potent biological activities. We set out to study the chemistry of culturable fungi with the goal of discovering new, biologically active natural products with therapeutic potential. For this project, cultures of the mycoparasitic fungus, *Hypomyces hyalinus* were extracted with organic solvents to produce a natural productextract. Extracts were subjected to chromatographic separations, and analyzed by liquid-chromatography with high resolution mass spectrometry (LCMS) to afford a secondary metabolite profile. Mass spectrometry data were analyzed with computational metabolomics tools to provide an overview of the H. hyalinus secondary metabolome which resulted in the identification of a new family of peptidic metabolites. Analysis of high resolution MS/MS fragmentation spectra of these metabolites yielded a structural prediction for a new, linear, eleven-residue peptide, possessing numerous non proteinogenic amino acids including α- amino isobutyric acid (AIB), the hallmark amino acid of the "peptaibiotics", an extensive class of fungal peptides that exhibit antimicrobial activity.

# Mitigating the Unmanaged Attack Surface on Cloud-Based Architectures

Belier Javier
Unnati Shah, Faculty Advisor

*Poster Presentation*

This research aims to improve comprehensive knowledge on the unmanaged attack surface in cloud computing, and investigate current mitigations. Cloud computing has become a renowned technology implemented by many enterprises for complex. On the contrary, cloud computing services are processed via the internet opening vulnerabilities on several aspects. In this poster, we categorize cloud computing architectures into a taxonomy of layers based on their prominency in the research community. Each layer represents a delegated component within cloud-based systems, alongside their occupying vulnerabilities and threat priority level. From this, we observed that the network and data storage layers produce a higher threat priority level compared to the others, based on their subject frequency in research contributions with a higher regard to refinement. Additionally, we provided a demonstration to test the unmanaged attack surface. Using AWS, we developed a misconfigured web hosting service to replicate data leakage; a common fault in cloud solutions. This is followed by the exploitation flow a threat-actor would embark to take advantage of the unmanaged attack surface. We found that threat exposure on complex cloud solutions is fairly difficult to track and manage, leading to exploitation. Furthermore, we evaluated approaches previously conducted by other researchers that aim to secure the unmanaged attack surface. These mitigations were selected by their efficiency and specified topics which they targeted including ML anomaly detection, DDoS prevention, privacy inference mitigations, and data leakage prevention. Our evaluation shows that the most effective solutions use some combination of ML algorithms to manage the unknown.

# Life Cycle Cost Analysis Between Individual Plastic Seats and Aluminum Benches

James Lanier, Denzere Woolcock, and Dan Masullo
Hooman Sadeh, Faculty Advisor

*Oral Presentation*

Stadiums worldwide are increasingly faced with the challenge of balancing environmental sustainability with financial feasibility in their operations and infrastructure. One significant aspect of this balance involves the choice of seating materials, which has implications for both cost and environment over the life span of the facility. This study investigates the life cycle costs and environmental impacts of plastic seats versus aluminum benches in a case study of Syracuse University using Net Present Worth (NPW) analysis. The findings aim to provide stadium managers and environmental policymakers with information that could assist them in making proper economic decisions aligned with environmental sustainability goals. This life cycle cost analysis aims to compare the environmental impact and cost-effectiveness of individual plastic seats versus aluminum benches in the Syracuse Stadium. The study evaluates various factors such as production, transportation, installation, maintenance, and end-of-life disposal to determine which option is more sustainable and economically viable over the entire life cycle. By considering the energy consumption, material usage, greenhouse gas emissions, durability, recyclability, and overall costs associated with each seating solution, this analysis provides valuable insights into the better choice for the environment and long-term financial savings. After coming to a conclusion on which option was better, the Individual plastic seats are a clear winner. The plastic seats come in at a total of $1,877,220 with a yearly cost of maintenance and upkeep of $432,000. The Aluminum benches came in at $2,559,210 and a yearly cost of maintenance and upkeep of USD 495,720. The better option is the Individual Plastic seats.

# Global Correlation Between MHD Waves Along Bursty Bulk Flows, Substorms Dynamics, and Solar Wind Conditions

Adam Liebers
Hava Turkakin, Faculty Advisor

*Poster Presentation*

In this paper, we investigate the emissions of Magneto hydrodynamic (MHD) waves along Bursty Bulk Flows (BBFs) located in the Earth's magnetotail. We use the global MHD code LFM coupled with RCM with real-time solar wind data from OMNI as the driver. In chosen substorm events, we look for MHD wave emissions along BBFs, including several hours before and after the substorm onsets and recovery phases, in order to see the effects of solar wind conditions. We look into every phase of a substorm for any generation of MHD waves along BBFs and their relation to substorm phases and solar wind conditions. We then consider the possible evolution of Kelvin-Helmholtz Instability (KHI) along BBFs with MHD waves in order to investigate if the KHI is the driving mechanism for these waves. We further investigate the characteristics of the emitted MHD waves and their possible impacts on the BBFs and the regions surrounding BBFs.

# National Rifle Association

Michael Malzahn
Patricia Swann, Faculty Advisor

*Oral Presentation*

The National Rifle Association has been around for quite some time, promoting and fighting for gun rights, but how do they do it? This study is investigating just how the NRA communicates with its supporters. A case study showing what type of communication channels they use and some examples of each of them. The NRA uses a variety of communication channels, such as news releases, emails, and text messages, as well as social media platforms like Facebook, Twitter, and Instagram. The NRA website also links its blog and all-access page to talk and show supporters what is going on with gun rights and even the NRA in general. When looking on their website to figure out how they target the correct audience, I found they have two whole sections for Women and Youth, allowing the NRA to have a variety and to make sure everyone is included. Key words across their website usually have something to do with the 2nd amendment rights, and self-defense. When it comes to targeting audiences, the NRA does a good job at taking your geographic location into place, making sure you are receiving things that are happening near where you are. The NRA communicates with its supporters in numerous ways throughout the digital world, their website, and even through regular mail while making sure they are reaching the correct audience, including men, women, and the youth.

# Analyzing the Divergent Nature of US Alliances with Japan and South Korea

Kyle Mitchell
Jun T Kwon, Faculty Advisor

*Oral Presentation*

This research paper carefully examines the many factors that explain the differences between the alliances of the United States, Japan, and South Korea. The study examines these countries' history, political relations, cultural impacts, and strategic choices. It tries to understand the detailed and complex aspects of these partnerships better by doing so. The main goal is to understand more about the different reasons behind these groups. It helps explain how complicated their relationships are with each other. By closely studying the history, world politics, culture, and military aspects of these alliances between America, Japan, and South Korea, this research aims to provide helpful information about their complex connections.

# The Impact of Service Dogs on Sleep Dysfunction: A Systematic Review

Anna Owens
Yvonne Monti, Faculty Advisor

*Poster Presentation*

Trained service animals provide individualized support to their handlers to improve participation in their daily lives. Service dogs offer physical, cognitive, and emotional support so their handlers can successfully perform occupations. Service dogs can also promote recovery, improve quality of life, and decrease symptoms of their primary condition. One symptom that can co-occur with many diagnoses is sleep deficits. We conducted this systematic review to assess service dogs' effect on the occupation of sleep in their handlers.

Methods: A systematic search of peer-reviewed publications in English was performed, with inclusion of research articles that explored the use of service dogs to address sleep deficits The systematic review was conducted following PRISMA guidelines. The following data bases were searched: PubMed, PsycARTICLES, MEDLINE, CINAHL, ProQuest Psychology Journals, and ScienceDirect. The search yielded 171 studies, of which 13 met the inclusion criteria.

Results: Thirteen articles were analyzed. The correlation between sleep and the presence of service dogs was studied for individuals with three different diagnoses: PTSD, chronic
conditions, and dementia. Positive correlations between service dogs and sleep were established for individuals with all three diagnoses. Service dogs were shown to positively influence sleep quality, heart rate during sleep, and a decreased use of sleep medication. Quantitative and qualitative data from this systematic review support incorporating service dogs to improve sleep in their handlers

# Synthesis and characterization of novel sulfur-based tetradentate ligands and nickel(II) complexes as precursors to [NiFe]-hydrogenase mimics

Abigail Stapf
Elaine Liu, Faculty Advisor

*Poster Presentation*

Due to the impending global energy crisis, there is an increasing need for sustainable and renewable energy sources. Hydrogen gas has shown significant promise as a contender for an alternative energy source as the combustion of H2 is an environmentally benign process. A subset of metalloenzymes, hydrogenases, catalyze the reversible oxidation of H2 and are predominantly found in nature. The use of synthetic hydrogenase mimics has been a common theme in recent research. However, current synthetic mimics have been limited by low efficiency and short life spans. A naturally occurring hydrogenase, the [NiFe]-hydrogenase, has been the subject of extensive research, with a specific focus on its mechanisms. While research has primarily focused on the mechanism, the role of the metal centers, particularly the role of the iron, has yet to be expounded upon. This poster will discuss synthesis and characterization of novel tetradentate sulfur-based ligands along with their subsequent Ni(II) complexes as precursors for [NiFe]-hydrogenase mimics. The structure and reactivity of the ligand and Ni(II) complexes will be discussed.

# How Can the Use of Cutaneous Functional Units Guide Occupational Therapy Practices in Burn Care?

Isabella Starsiak, Kristen Sellars, Bailey Ford, and Mackenzie Bonyak
Yvonne Monti, Faculty Advisor

*Poster Presentation*

Total body surface area (TBSA) estimation is the most commonly used calculation to determine burn injury severity. TBSA and calculations of burn depth can help determine the patient's medical needs; however, these methods alone are not good predictors of deficits in mobility and function of the affected body part and may not accurately guide therapeutic practice (Hartl et al., 2023). CFUs measure the amount of skin recruited during range of motion (ROM) at a joint; because of this, CFUs can be a more functional measurement for occupational therapists (OT) working in burn care settings. Measurement based on cutaneous functional units better predicts joint movement limitations that may influence performance and participation in occupations following a burn injury; however, many occupational therapists do not consider CFUs during clinical practice decision-making (Yelvington & Parry, 2023.) This systematic review sought to determine how CFUs can guide OT practices in burn care.

Methods: A thorough search of databases was completed using a developed search string. Searches in CINAHL, Medline, and PubMed yielded 50 articles; after removing duplicates, 19 articles remained. Inclusion and exclusion criteria were applied, and nine articles were included in the review. Data was collected, categorized, and analyzed by the research team.

Results: Data from the nine articles was divided into four categories: assessment, intervention, predicted outcomes, and dosage of services. CFUs were found to be effective in guiding occupational therapy burn practices in all four areas.

Conclusion: CFUs can effectively guide occupational therapy assessment, intervention, outcomes, and service dosage. Further research needs to be completed to add to the body of evidence supporting the use of CFUs in burn therapies.

# Fishing activity has minor effects on earthworm communities adjacent to Central New York freshwater habitats

Adam Thomas and Dominic Clark
Sara Scanga, Faculty Advisor

*Poster Presentation*

The glaciation events of the Pleistocene left many habitats in the northern hemisphere devoid of earthworms. However, anthropogenic activities have since facilitated the spread of exotic earthworm species to these previously glaciated areas, where some have had detrimental effects on North American ecosystems. As these exotic species continue to expand their range, it is crucial to understand the mechanisms by which they disperse through ecosystems and landscapes. One mechanism that likely facilitates the distribution of exotic earthworms is the use of earthworms as fishing bait. In October 2023, we used spicy mustard vermifuge to survey earthworm density, biomass, and species richness at fishing access points and paired non-fishing areas adjacent to 13 freshwater habitats in central New York. We found no significant differences in earthworm density, biomass, or species richness between the fishing and non-fishing areas, which also had similar species composition. Species of Jumping Worms, including Amynthas and Metaphire spp., which are currently expanding their range, showed no difference in density or biomass between the fishing and non-fishing areas. However the density of Lumbricus spp. (Nightcrawlers), which are commonly used as bait worms, was about twice as high in fishing areas than in non-fishing areas. These results suggest that fishing activities may change the local abundance of exotic earthworms used for bait, but have little to no effect on the range expansion of exotic earthworms that are not typically used for bait.

# Just Keep Swimming: Applying Ai Chi to Improve Pain, Postural Control and Quality of Life in Those with Neurological Conditions

Alyssa Winberg, Eliza Ericson, Ryan Kulawy, and Joslyn Phalen
Gabriele Moriello, Faculty Advisor

*Oral Presentation*

Individuals with neurological conditions can present with a variety of impairments which may lead to pain, deficits in postural control and reduced quality of life. Ai Chi has the potential to positively affect these impairments. The purpose of this systematic review was to synthesize all available evidence examining the effectiveness of Ai Chi on postural control, pain, and quality of life in individuals with neurological disorders.

A comprehensive search was conducted using four databases (CINAHL, PubMed, MEDLINE, Physiotherapy Evidence Database) and two gray literature databases (World Cat, Center for Research Libraries Library Catalog). Only randomized control trials were utilized in this review. The researchers completed title, abstract, and full-text screening individually and then in pairs using the selection criteria. Data was synthesized descriptively. The PEDro Scale was used to assess the quality of the final articles.

Eight articles were included in this systematic review. Ai Chi, or a combination of Ai Chi and dry land exercise resulted in better improvements in postural control, pain, or quality of life, compared to exclusive dry land exercises in individuals with Parkinson's disease, stroke, and multiple sclerosis. Treatment effects were large for all outcome measures. Pain showed the highest effect in all populations with stroke having the greatest overall treatment effect.

Physical therapists should consider Ai Chi as an intervention for individuals with neurological diagnoses, especially when the goal is to address their impairments in pain, postural control, and quality of life.

# YouTuber Apology Videos: To Make A Comeback or Not

Isabella Yaghy
Patricia Swann, Faculty Advisor

*Oral Presentation*

With a seemingly ever expanding list of cancellable offenses, YouTube apology videos have become an integral pillar of pop culture. This study aimed to identify observable patterns between aspects of an apology video, and the creators ability (or inability) to bounce back from the controversy. This was conducted through use of a quantitative content analysis, which counted the appearance of common apology video techniques, and the presence of William Benoit's five response strategies. Some examples of these items include the number of times they said, "I'm sorry," noting if they filmed with a disheveled appearance, attempted to reduce the offensiveness of their accusation(s), etc. Following this data collection, an individual case study was conducted on each of the nine YouTuber's being examined, to include context and patterns that have been observed. Some major findings deduced that the more apologies that the YouTuber has issued throughout the duration of their career, the less able they are to make a full comeback. In addition to this, the study determined that when the YouTuber makes significantly more logical points versus emotional points, their apology is better received, thus increasing their ability to recover.

## ENG 102 Student Research Remix: Space, Place, and the Politics of Belonging

Mia Amendolare, Jake Bowen, Connor Cooper, Nate Hartman, Jayle Leonard, Tony Euceda, Mackenzie Lyons, Citlali Lopez, Kourtney Mazurowski, Eniyah Peart, Isait Flores, Billy Beseth, Jenna McReynolds, Emily Meeker, Ava Natale, Emil Abreu, Jillian Ryan, Jarrett Sherman, Christian Betrand, Shane Bracken, Piper Carmen, Olivia Cyr, Steven D'Elia, Siara Elliott, Daniel Fallo, Joey Gentile, Eddie Haeffer, Anthony Kelly, Alexis Pula, Morgan Wrobel, Peter Amin, Leisha Ayala, Rachel Decicco, Azure Hance, Elvedina Korkutovic, Olivia Liccardo, Braden McVicker, Isabella Terwilliger, Nicholas Wehrle, Erica Zike, Dominic Aliasso, Alan Catic, Christian Dupont, Shaun Jones, Y'sland Miller-Seymore, Tyler Mormando, Matthew Pallouras, Karyll Rony-dorceus, Zachary Smithson, Jackson Surinach, Tyshawn Taylor, Scott Thompson, Maya Virgil, Cassondra Wood, Timothy Jeralds, Alyssa Hoyos, Rita Salibi, Christina Troche, Joscelyn Spiezio, Grace Marra, Joscelyn Wabick, Jacob Patrella, Brooke Halter, Bennett Melita, Kyle Robare, Arelya Mathias, Nazjai Earle, Thaddeus Luke, Jonah Ruthig, Gabe Zawolo, Abby Condon, Olivia Rosen, Elizabeth Scott, Emma Bloomfield, Meg Lasher, Rithy Meas, Noah Iszard-Michael, Remi Charlebois

Nicole Lawrence, Kelly Minerva, and Ane Costa, Faculty Advisors

*Poster Presentations/Special Session*

This semester, Drs. Costa, Lawrence, and Minerva directed English 102 student research focused on space, place, and the politics of belonging. Students explicitly thought, read, and wrote about the spaces and places in which we live, work, and study. Specifically, we will be analyzing the connectedness between these ideas and the ways that physical spaces and places can create a sense of belonging or exclusion.

Student research papers have been remixed into informational posters that present students' research and findings regarding the relationships between spaces, places, and belonging. This research will be presented in groups on Student Research Day.

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The following are members of the Organizing Committee for the 2024 Student Conference for Research, Professional Activities, and Creative Arts: Deans Jason Denman, Rick Fenner, Patrice Hallock, and Sharon Wise.