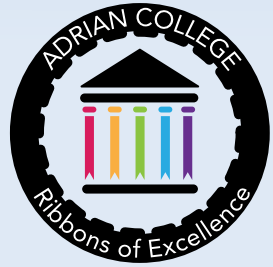


CROSSING BOUNDARIES AND DISCIPLINES

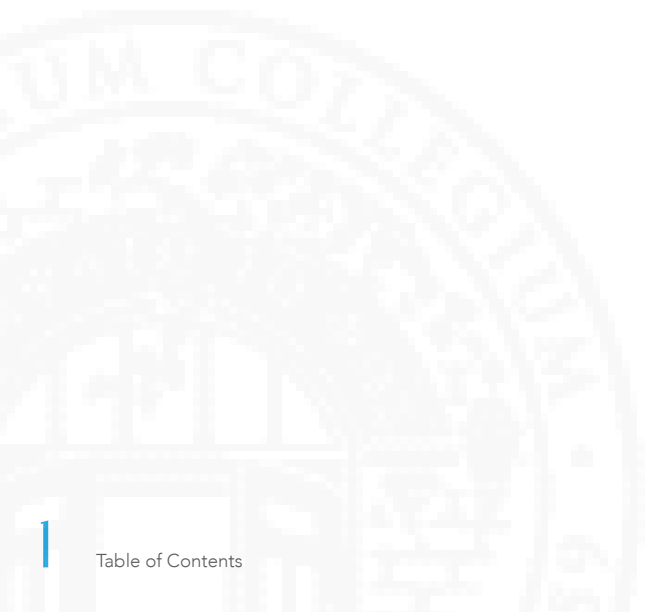
ADRIAN COLLEGE
RIBBONS OF EXCELLENCE DAY
Tuesday, April 9th, 2024



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WELCOME

TO RIBBONS OF EXCELLENCE

Mission Statement:

Adrian College, a liberal arts college in the United Methodist tradition, is committed to the pursuit of truth and dignity of all people. Through active and creative learning in a supportive community, undergraduate and graduate students are challenged to achieve excellence in their academic, personal, and professional lives, and to contribute to a more socially just society.

Hello,

I am pleased to welcome you to our annual Ribbons of Excellence Day Conference at Adrian College, a day dedicated to celebrating scholarly accomplishments of our students through presentations, exhibitions, and performances. A tradition started in 2008, and developed out of a faculty initiative to create and support our academic culture, today is the culmination of at least one year of preparation by students and their mentors.

The Ribbons of Excellence form the foundation of our shared values at Adrian College and each presentation today is linked to at least one thematic ribbon. I would like to thank Dr. Thomas Muntean and the team of faculty and staff who worked in support of this event. We are thrilled that you are joining us today to celebrate our students and their accomplishments.

Best Regards,



Dr. Andrea R. Milner

Vice President and Dean of Academic Affairs

Welcome,

This is such an exciting day on campus, one of my favorite each year. This is the day we get to celebrate all the great things that our Adrian College students and faculty work so hard on throughout the year. This is the time we get to celebrate scholarship and encourage learning and growing. I really hope you enjoy all of the presentations as much as I do and have a great day celebrating our students.

The history of the Ribbons of Excellence Program resides in the Cane Ceremony tradition of tying a ribbon with the names of graduates to the Shepherd's Crook. This tradition has been carried on since 1887; in 2007 the academic community at Adrian College developed its academic vision of the Ribbons of Excellence Program. The Ribbons of Excellence are what each and every member of our community strives for; the Ribbons of Excellence are what we want Adrian College to be known for: caring for humanity and the world; learning throughout a lifetime; thinking critically; crossing boundaries and disciplines; and developing creativity.

Through today's Program we strive to achieve this goal of making this vision a reality. Students embark in research and other projects to think critically and creatively and to tie these ribbons into their lives, not just to the Shepherd's Crook. We also strive to achieve learning throughout a lifetime and caring for humanity by inviting community members, faculty, staff, students and other visitors to attend the day's events. The day is also about crossing boundaries and disciplines, as we are trying to expose students, through their presentations, to other buildings and communities on campus.

On behalf of the Ribbons of Excellence Program Committee, I would like to thank everyone involved in this day for your hard work and especially all of you attending. Thank you for all you did to make the 2024 Ribbons of Excellence Day Program outstanding.

Regards,



Thomas W. Muntean, Ph.D.
Director, Ribbons of Excellence Program

CONFERENCE

SCHEDULE

9:00 am	Student Session 1	Jones 110, Peelle 207, Rush 124
10:00 am	Break	
10:15 am	Student Session 2	Jones 110, Peelle 207, Rush 124
11:15 am	Break	
11:30 am	Welcoming Remarks and Introduction Keynote Address: Mr. Karl Epps <i>"Managing Mayhem: Navigating the flow of an ever-changing professional landscape"</i>	Herrick Chapel
12:15 pm	Lunch Break	
1:15 pm	Poster Session	Peelle Lobby
2:15 pm	Student Session 3	Jones 110, Peelle 207, Rush 124, Hickman Gallery
3:15 pm	Break	
3:30 pm	Student Session 4	Jones 110, Peelle 207, Rush 124, Hickman Gallery
4:30 pm	Alpha Chi Induction Ceremony	Herrick Chapel

KEYNOTE

SPEAKER



Mr. Karl Epps '96

Mr. Karl Epps founded his first computer company in Livonia, Michigan in the summer of 1996. He graduated with two bachelor's degrees from Adrian College in December of that year, and received his first computer forensics certification in 1998.

Since then, Karl has provided computer support to hundreds of small to medium-sized companies in the Detroit and Phoenix metro areas.

Currently, he runs Epps Digital Forensics, LLC and carries numerous designations in digital forensics and ethical hacking/cybersecurity. Karl is a lifelong supporter of Adrian College and Alpha Tau Omega ("ATO") and currently serves as the President of the ATO Board of Trustees.

He is also a member of the Adrian College Board of Trustees and is involved in many projects on the college campus. In his free time, Karl enjoys hiking, traveling, and cooking.

LIST OF SESSIONS

Jones 110	9:00 – 9:20 am	Hydration Status, Sweat Rates and Fluid Replacement Habits of Women Ice Hockey Players	Reid Bahr
Jones 110	9:20 – 9:40 am	Understanding the Relationships Between Sleep, Hydration, Heart Rate, and Perceived Exertion in Female Ice Hockey Players	Matthew Borucki
Jones 110	9:40 – 10:00 am	Factors Influencing High School Students' Interest in Athletic Training and Allied Health Careers	Gabrielle Udell
Peelle 207	9:00 – 9:20 am	Inventory Management Systems	Julia Tierman
Peelle 207	9:20 – 9:40 am	Deep Learning Applications for Robotics Vision	Katherine Berry
Peelle 207	9:40 – 10:00 am	Preserving and Navigating the Legacy of Adrian College through an Interactive Website	Bryce Briggs
Rush 124	9:00 – 9:20 am	Tales for Children: Comparing and Contrasting Children's Bibles	Regan Dawes
Rush 124	9:20 – 9:40 am	Dance Moms: Analyzing Maddie and Chloe's Rivalry in Narrative Theory	Madison Cvengros
10:00 – 10:15 am Break			
Jones 110	10:15 – 10:35 am	The Effects of Knee Injuries on Ground Reaction Forces and Hip Abduction Isometric Strength in Athletes	Griffin Werth
Jones 110	10:35 – 10:55 am	Concentrated Oxygen Effects on Acute Concussion Symptoms & Return to Play Times in Collegiate Athletes	Cody Schramm
Jones 110	10:55 – 11:15 am	Predictors of Kinesiophobia in Athletes Recovering from Knee Injury	Fiona Conway
Peelle 207	10:15 – 10:35 am	Using Neural Networks for English Alphabet Letter Recognition	Matthew Gordon
Peelle 207	10:35 – 10:55 am	RNG Algorithms in Slot Machines	Trevor Trombley
Peelle 207	10:55 – 11:15 am	The emergence of chatbots and the development of an AI	Darren Walter

Rush 124	10:15 – 10:35 am	Silencing Voices, Stifling Growth: Exploring the Consequences of Book Banning in K-12 Classrooms	Allison TenHove
Rush 124	10:35 – 10:55 am	Asian American Transracial Adoption and Identity Development	Noralee Richard
Rush 124	10:55 – 11:15 am	“You Don’t Play With The Swastika!” – Representation of The Holocaust: The Analysis of Literary Strategies and Digital Gameplay in Through The Darkest Of Times	Maria Risner
11:15 – 11:30 am Break			
11:30 – 12:15 pm Keynote Address			
12:15 – 1:15 pm Lunch Break			
Peelle Lobby	Poster Session 1:15 – 2:15 pm	Investigation of Fluctuations in Estrogens on Dopamine-B-Hydroxylase in Female Mice Brain	Keita Kuramitsu, Mae Moose
Peelle Lobby	Poster Session 1:15 – 2:15 pm	The Effects of YLR179c, a Gene of Unknown Function on Stress Pathways in Yeas	Victoria Pilon
Peelle Lobby	Poster Session 1:15 – 2:15 pm	Rain Events and Discharge Rates Effect on Nutrient Concentrations at Walden West	Lauren Falzone
Peelle Lobby	Poster Session 1:15 – 2:15 pm	The Moderating Effect of Attachment Style on Social Exclusion and Productivity	Seneca Craven
Peelle Lobby	Poster Session 1:15 – 2:15 pm	The Effects of Resilience and Gender on Academic Stress in Collegiate Athletes	Hailey Farrell
Peelle Lobby	Poster Session 1:15 – 2:15 pm	Getting A Seat at the Table: Navigating Gender Bias in the Workplace	Clarissa Kayga

Jones 110	2:15 – 2:35 pm	Using Standardized Patients to Increase Athletic Training Students Cultural Competence	Molly Hayes
Jones 110	2:35 – 2:55 pm	National Athletic Trainers' Association Membership Characteristics: To Join or Not to Join	Hunter Schramm
Peelle 207	2:15 – 2:35 pm	Data Security on a Network: Implemented Through a Network Vulnerability Scanner	Michael Rightnowar
Peelle 207	2:35 – 2:55 pm	Speech Recognition and Developing a Voice Assistant	Cody Emch
Peelle 207	2:55 – 3:15 pm	Securing the Digital Frontier: Designing and Testing Virtual Networks for Enhanced Cybersecurity	Lucas St. Antoine
Rush 124	2:15 – 2:35 pm	Canine cases with unexplained bleeding: investigating von Willebrand disease type 1 variant	Rebecca Chenoweth
Rush 124	2:35 – 2:55 pm	Working Memory Retention Through Regeneration in Planaria	Megan Westphal, Aviana Ferrarelli
Rush 124	2:55 – 3:15 pm	Smell Ya Later: The Impact of Working Memory Capacity on Odor-Based Context Dependent Learning	Alexis Arvanitis
Hickman Gallery	2:15 – 2:30 pm	Beyond the Barrette: Exploring Authenticity and Femininity through Afro-American Artistry	Gabrielle Barksdale
Hickman Gallery	2:30 – 2:45 pm	Meditations with Mud: A Potter's Journal of Self-Discovery	Ashley Bayko
Hickman Gallery	2:45 – 3:00 pm	Moths and the Art of Healing: A Journey from Silence to Expression	Maxx Buie
Hickman Gallery	3:00 – 3:15 pm	Stitching the Past, Painting the Present: Healing through Spontaneity	Zoe Leach
3:15 – 3:30 pm Break			

Jones 110	3:30 – 3:50 pm	A case for whey protein- and leucine-enriched multi-nutrient formula(e) high in vitamin D3 to promote body composition, strength, and physical function in sarcopenia: a scoping review	Mitchell Plucinski
Jones 110	3:50 – 4:10 pm	Sensitivity Test of the Seated Single Arm Shot Put Test in Athletes	Ayden Cribbs
Peelle 207	3:30 – 3:50 pm	American Sign Language Computer Recognition	Jason Eckardt-Taing
Peelle 207	3:50 – 4:10 pm	A Comparative Study of Machine Learning Algorithms Used in the Analysis of Lung Cancer Data	Samuel Massnick
Peelle 207	4:10 – 4:30 pm	Stock Price Prediction Using Machine Learning	Branden Gula
Rush 124	3:30 – 3:50 pm	Towards an Automation of Academic Advising	Brandon Falk
Rush 124	3:50 – 4:10 pm	Automotive User Experience Design and Advanced Driver Assistant Systems	Blanca Straub
Hickman Gallery	3:30 – 4:30 pm	Speaking Out: A Reading in Response to Art	Timothy Bilen, Allison TenHove, Donald Davis, Katherine Berry Gabrielle Revels

Reid Bahr

Hydration Status, Sweat Rates and Fluid Replacement Habits of Women Ice Hockey Players.

Mentor: Tina Claiborne

Ribbon: Learning Throughout a Lifetime

Session/Time/Location: 1A, 9:00 – 9:20 AM, Jones 110

Abstract: Context: Dehydration increases physiological strain and negatively impacts athletic performance. Although most research focuses on sports with high incidence of exertional heat illness, cold weather athletes are also susceptible to dehydration. There is little research on hydration habits in ice hockey athletes, particularly women. Objectives: Determine whether NCAA Division III female ice hockey athletes are 1) commencing training dehydrated, 2) voluntarily replacing fluids lost during exercise, and 3) whether an individualized fluid replacement plan changes hydration habits. Design & Setting: This one group pre-test post-test investigation took place in an ice hockey arena. Participants: NCAA Division 3 Female Ice Hockey Players (mean age: 20.2 SD: 1.471960144). Intervention: For 4 days, pre-exercise urine specific gravity (USG), body mass (pre and post-exercise) and fluid intake (during exercise) were monitored. Participants then attended a hydration education session, and individualized fluid replacement plans were provided. For 4 days following hydration education, USG, body mass, and fluid intake was measured again. Main Outcome Measures: Descriptive statistics will determine pre-exercise hydration status (< 1.020 USG = dehydrated). Sweat rate and fluid intake will be compared to determine net fluid gains and/or losses. A dependent samples t-test ($p < 0.05$) will be used to compare mean USG pre- and post- intervention to determine effectiveness of the fluid replacement plan. Results & Conclusions: This study is not completed, results will be presented on ROE day.

Matthew Borucki

Understanding the Relationships Between Sleep, Hydration, Heart Rate, and Perceived Exertion in Female Ice Hockey Players

Mentor: Tina Claiborne, Caleb Christie

Ribbon: Thinking Critically

Session/Time/Location: 11A, 9:20 – 9:40 AM, Jones 110

Abstract: Context: Research shows that college student-athletes are chronically sleep-deprived. Poor sleep negatively impacts many aspects of athletic performance, including peak heart rate (HR) and perceived exertion (RPE). Although research is limited, training loads and dehydration may also impact sleep quality and quantity. In ice hockey, there are only two studies assessing the relationship between various physiological measures and sleep, with no research including women. Objectives: To describe sleep habits in female ice hockey players, and determine the relationships between sleep quantity and quality, heart rate, hydration status, and RPE during on-ice sessions. Design: Descriptive Cross-Sectional Design Setting: Division III Ice Arena Patients or Other Participants: Eligible NCAA Division III ice hockey athletes were recruited through team meetings (Mean Age: $20.2 \pm 1.5y$, height 165.76 ± 4.26). Interventions: Following informed consent, data was collected for 7 combined practice and competition dates. Sleep quantity (hours) and quality (rating scale 1-5), and HR were collected via the Polar Ignite 2® Fitness Watch. Pre-practice urine specific gravity (USG) was measured using a digital refractometer, and post-practice RPE was assessed using the Borg 6-20 RPE scale. Main Outcome Measures: Descriptive analyses will be used to understand participants' sleep habits, training loads, and hydration status. Using sleep quantity and quality as the independent variables, a regression analysis ($p=0.05$) will be used to predict HR and RPE. The relationship between hydration status, and sleep quantity and quality will also be analyzed. Results & Conclusions: Results to be determined.

Gabrielle Udell

Factors Influencing High School Students' Interest in Athletic Training and Allied Health Careers

Mentor: Tina Claiborne, Rebecca Suiter

Ribbon: Thinking Critically

Session/Time/Location: 1A, 9:40 – 10:00 AM, Jones 110

Abstract: Context: Enrollment in athletic training educational programs is declining, making it important to expose high schoolers to the profession and to understand the factors that influence students' career choices. Depending on availability, high school students may explore athletic training and allied health fields through their district's Career and Technical Education (CTE) courses. With limited research on CTE programs, it is unclear what influence these experiences have on high school students' career interests. Objectives: To determine the influence of an Exercise Science and Sports Medicine CTE course on high school students' career interests. Design/Setting: This one-group pre-test, post-test cohort study took place in a high school classroom in Washtenaw County, MI. Participants: 50 students (mean age $16.58 \pm .58y$) enrolled in an Exercise Science and Sports Medicine CTE course. Interventions: Participants completed a pre-survey at the start of the course and a follow-up survey after four months. Using Likert scales and open-ended questions, the surveys inquired about participants' career and subject interests, factors that influence career interests, confidence in their ability to make career choices, and knowledge of specific health-related professions. Main Outcome Measures: Data will be analyzed descriptively to determine top career and subject interests and knowledge of specific health professions. A Wilcoxon Signed Rank Test ($p=0.05$) will determine the influence of the CTE course on students' confidence in seeking accurate information in order to make career choices. Results & Conclusions: This is an ongoing study; results will be presented at the conference.

Julia Tierman

INVENTORY MANAGEMENT SYSTEMS

Mentor: Yasser Alginahi

Ribbons: Learning Throughout a Lifetime, Thinking Critically

Session/Time/Location: 1B, 9:00 – 9:20 AM, Peelle 207

Abstract: Management of inventory in an efficient way is a crucial part for the success of any business. Inventory Management Systems (IMS) are a key part to how companies keep track of their inventory. Before inventory management systems were created companies were forced to use paperwork solutions. The most important part to an IMS is the structure of the database. Building a proper database is key for this project. The IMS for this project will have many features to help keep a business successful. It will have the ability for manual change in levels of stock, adding and removing products, and a tracker that will notify the companies when they need to order new product or when it is getting low. This project aims to create an inventory management system that companies can use to keep control of their companies inventory. The final outcome of this project will include a research paper that dives into the history of IMS, the different types of IMS, and an IMS web application that companies can use.

Katherine Berry

Deep Learning Applications for Robotics Vision

Mentor: Yasser Alginahi

Ribbons: Caring for Humanity and the World, Learning Throughout a Lifetime, Thinking Critically, Crossing Boundaries and Disciplines, Developing Creativity

Session/Time/Location: 1B, 9:20 – 9:40 AM, Peelle 207

Abstract: Robotics has proven to be immensely useful in many real-world applications from industry and manufacturing to everyday life, mitigating menial labor and even preventing situations that would otherwise put humans at risk. Long-term autonomy and computer vision are currently topics under intense study in robotics, especially with the increased prevalence and implementation of deep learning algorithms. While traditional computer vision methods employ mathematical algorithms and transforms to make sense of elements in an image, deep learning methods make use of Artificial Neural Networks that are trained with datasets to produce their own conclusions. With the goal of optimization, there has been much research and debate on which methods yield the most favorable, efficient, and cost-effective results. The goal of this project is to explore the various algorithms, both traditional and deep learning, that make computer vision possible, especially for use with accessible hardware that can be implemented in robotics applications. For this project, a Raspberry Pi 4 will be used with a robot kit to create a mobile robot that has two main functions: to be able to safely traverse its environment while avoiding obstacles, and to be able to find and identify a certain object.

Bryce Briggs

Preserving and Navigating the Legacy of Adrian College through an Interactive Website.

Mentor: Yasser Alginahi, Karl Epps

Ribbons: Caring for Humanity and the World, Learning Throughout a Lifetime, Thinking Critically, Crossing Boundaries and Disciplines, Developing Creativity

Session/Time/Location: 1B, 9:40 – 10:00 AM, Peelle 207

Abstract: In an era defined by digital transformation, the preservation and dissemination of information is imperative. This project aims to digitize the rich history, achievements, and cultural legacy of Adrian College since its founding in 1859 through the development of an interactive website. The project aims to create a platform that encapsulates the essence of the school's journey, facilitating easy access and exploration for students, alumni, faculty, and the broader community. This project will be the framework for an interactive website, and will initially focus on the functionality of login authentication, search bar, and database design. The website will concentrate on the history of Alpha-Tau-Omega at Adrian College. By leveraging digital programming languages and iterative development approaches, the project seeks to foster a deeper connection with the school's past, present, and future, while embracing the dynamic possibilities of digital storytelling and preservation.

Regan Dawes

Tales for Children: Comparing and Contrasting Children's Bibles

Mentor: Scott Elliott

Ribbons: Thinking Critically

Session/Time/Location: 1C, 9:00 – 9:20 AM, Rush 124

Abstract: Children's Bibles have been a staple of Christian children's early lives for hundreds of years, but how do these books compare to one another and to the Bible itself? How do the interpretive communities surrounding these Bibles affect their production and reception, particularly with regard to the processes of selecting which materials to include and which to omit? In this paper, I survey the history of children's Bibles and then compare and contrast three examples from the last decade. I argue that these children's Bibles reflect their social-cultural moments and interpretive communities and that, although they all come from the same source text, no two of them are identical. There are a wide variety of groups that influence the final product: original language translators, editors responsible for determining which biblical narratives and other selections they think children need to hear, other editors who abridge and paraphrase those selections, designers and illustrators, and finally parents and other adults—all of whom determine how children will experience and regard the Bible, and what they will learn from it. This process raises questions about what children should and should not be exposed to in the Bible and who makes these decisions. On a deeper level, it raises questions about what the Bible is and how it can be manipulated to mean different things to different audiences.

Madison Cvangros

Dance Moms: Analyzing Maddie and Chloe's Rivalry in Narrative Theory

Mentors: Christy Mesaros-Winckles

Ribbon: Caring for Humanity and the World, Learning Throughout a Lifetime, Thinking Critically, Crossing Boundaries and Disciplines, Developing Creativity

Session/Time/Location: 1C, 9:20 – 9:40 AM, Rush 124

Abstract: Dance Moms is a reality TV series that aired on Lifetime from 2011 to 2019, focusing on the Abby Lee Dance Company and its young dancers and mothers. Led by the strict dance teacher, Abby Lee Miller, the show explores the competitive world of dance through intense rehearsals, high-stakes competitions, and the relationships with the dancers and their mothers. The series gained popularity for its dramatic moments, showcasing the challenges and sacrifices with the goal of being a 'Star' in the dance industry. This research study explores the cultural impact of Dance Moms, using Walter Fisher's Narrative Paradigm to examine the post-production editing and producing choices to determine what was real and what were fictional elements designed by producers to create drama during the 'Maddie and Chloe Showdown' episodes and its consequences on the narrative. Pursuing knowledge within the theory and media criticism for the manipulative narratives shows the ribbon, Learning Throughout a Lifetime. Coherence and fidelity were investigated to understand the audience's perspective. I analyze the ethics, messaging, the drama affected Maddie and Chloe, and its legitimacy as a reality TV show which reflects the ribbon of Caring for Humanity and the World. Fisher's elements within his theory are versatile as it is used by media critics in Communication and English studies. This conveys the ribbon, Crossing Boundaries and Disciplines. My analysis on post-production manipulation displays content that highlights the significance of critiquing creative media that reflects the Developing Creativity and Thinking Critically ribbons.

Griffin Werth

The Effects of Knee Injuries on Ground Reaction Forces and Hip Abduction Isometric Strength in Athletes

Mentor: Tyler Harris, Daniel Traylor, Jeffery Murphy

Ribbons: Learning Throughout a Lifetime, Thinking Critically, Crossing Boundaries and Disciplines

Session/Time/Location: 2A, 10:15 – 10:35 AM, Jones 110

Abstract: Context: Knee injuries are associated with undesirable lower-body biomechanics such as quadriceps angle (Q-angle), vertical ground reaction force (vGRF), and strength of the hip abductor muscle group. Such biomechanics are characterized by knee valgus and internal rotation motions. These factors have been tested amongst themselves in previous literature but haven't been incorporated together in one study to see their encompassing effect on the knee. More research is needed to characterize lower-body biomechanics in athletes recovering from knee injuries.

Purpose: We will examine the differences between injured and non-injured athletes on Q-angle, vGRF, and hip abductor strength.

Design: Quasi-experimental study design.

Methods: Testing conducted in a research laboratory.

Participants: Target population is injured and non-injured collegiate athletes on men's or women's teams.

Main Outcome Measures: The dependent variables are Q-angle, vGRF, and hip abductor isometric strength. These variables are measured using a goniometer, force plate, and isokinetic dynamometer respectively.

Results: Results will be analyzed through an independent sample t-test representing two groups: injured and non-injured. It is hypothesized that participants with knee injuries will show higher Q-angle, higher vGRF, and lower hip abductor strength than those with no knee injuries.

Implications: The results of this study can be used to gain a better understanding of strength training of the hip abductors for prevention and rehabilitation and provide clinicians with testing values for potential injury risk.

Cody Schramm

Concentrated Oxygen Effects on Acute Concussion Symptoms & Return to Play Times in Collegiate Athletes

Mentors: Tyler Harris

Ribbon: Caring for Humanity and the World, Learning Throughout a Lifetime, Thinking Critically, Developing Creativity

Session/Time/Location: 2A, 10:35 – 10:55 AM, Jones 110

Abstract: Concussions occur at a rate of 0.61 per 1000 athlete exposures (Daneshvar et al., 2011). Hyperbaric oxygen chambers have been shown to aid concussion recovery, but are large and expensive (Lin et al., 2008; Rockswold et al., 2007). Concentrated oxygen canisters are portable and may be a more cost-effective alternative treatment (Such/Ω et al., 2010). The purpose of this study was to examine the effects of concentrated oxygen on acute concussion symptoms and return to play (RTP) times in collegiate athletes. Participants diagnosed with a concussion were asked to administer the oxygen to themselves three times daily until the canister runs out and complete daily concussion symptom checklists. Number of symptoms (out of 21) and symptoms score (out of 126) were recorded each day until RTP. Days until RTP was also measured as an outcome. Preliminary data includes nine participants (M age = 19.1 +/- 1.5, seven males). Day one number of symptoms was M = 8.6 +/- 5.2 and symptom score M = 25.4 +/- 17.8. Days to RTP M = 17.8 +/- 11.06. This RTP timeline is longer than found in the NCAA-DoD CARE Consortium database (12.8 days) and the 14 days found in the Ivy League-Big Ten Epidemiology of Concussion Study (Broglia et al., 2021; Wiebe et al., 2022). More data needs to be collected before we can make a claim as to whether this study supports canister oxygen as a supplemental treatment for concussion recovery.

Fiona Conway

Predictors of Kinesiophobia in Athletes Recovering from Knee Injury

Mentor: Tyler Harris

Ribbon: Caring for Humanity and the World, Learning Throughout a Lifetime, Thinking Critically, Crossing Boundaries and Disciplines

Session/Time/Location: 2A, 10:55 – 11:15 AM, Jones 110

Abstract: Kinesiophobia is the excessive fear of movement resulting from a debilitating fear of reinjury (Cozzi, 2015). Unfortunately, chronic kinesiophobia may be a barrier to a full and safe return to sports participation. Research suggests sleep is related to increased anxiety and functional movement can predict an individual's risk for injury based on restrictions in strength, stability, and mobility (Kiesel et al., 2007). However, research has not examined these variables in relation to kinesiophobia. The purpose of my study is to examine whether sleep quality and functional movement can be used to predict kinesiophobia in athletes with knee injuries. Participants will come into the lab to complete informed consent and a survey measuring their demographics, sleep quality, and the Tampa Scale of Kinesiophobia (Miller et al., 1991). Following this, they will complete the functional movement screen (Cook et al., 2014), and then be asked to wear a Fitbit for three consecutive nights to measure sleep quality. We will run a multiple regression analysis with the outcome of reported kinesiophobia regressed on the predictors of sleep quality as measured by Fitbits as well as FMS scores. Expected results are that kinesiophobia would be negatively associated with sleep quality and FMS score. These results would lead to a greater understanding of kinesiophobia, which could then inform rehabilitation programs in such evidence-based medical fields as physical therapy and athletic training. This study is currently in the data collection phase and we have not made any conclusions to our findings at this time.

Matthew Gordon

Using Neural Networks for English Alphabet Letter Recognition

Mentor: Yasser Alginahi

Ribbons: Caring for Humanity and the World, Learning Throughout a Lifetime, Thinking Critically, Crossing Boundaries and Disciplines, Developing Creativity

Session/Time/Location: 2B, 10:15 – 10:35 AM, Peelle 207

Abstract: The rapid advancement of artificial intelligence technology is transforming various fields of study. There is a need to understand how computers interact with their surroundings. This project aims to develop a deep learning program for reading alphabetical letters using neural networks. The program will be implemented using Python programming and PyTorch, a machine learning framework for computer vision and natural language processing. Then it will be executed on the Raspberry Pi computer board. The primary objective is to create software that can accurately recognize and process the different letters of the English alphabet. The testing phase will assess the program's recognition capabilities, with a focus on achieving high accuracy. Successful completion of this project is expected to provide valuable insights into how deep learning and neural networks enable computers to undergo training processes, handle extensive datasets, and make informed decisions based on their training data.

Trevor Trombley

RNG Algorithms in Slot Machines

Mentors: Yasser Alginahi

Ribbon: Caring for Humanity and the World, Learning Throughout a Lifetime, Thinking Critically, Crossing Boundaries and Disciplines, Developing Creativity

Session/Time/Location: 2B, 10:35 – 10:55 AM, Peelle 207

Abstract: This project focuses on the algorithms that are commonly used in our daily lives, specifically the algorithms used in slot machines. Through basic research, it has been discovered that slot machine algorithms are much more complex than previously believed. The objective is to examine how slot machines utilize random number generators to determine winners. This project, along with a slot machine program, aims to provide a deeper understanding of how these algorithms determine the outcomes. The research findings and testing results will be used to demonstrate the theoretically calculated percentage of wins. Subsequently, the slot machine program will be executed, and the outcomes will be recorded to assess accuracy.

Darren Walter

The emergence of chatbots and the development of an AI.

Mentor: Yasser Alginahi

Ribbons: Caring for Humanity and the World, Learning Throughout a Lifetime, Thinking Critically, Crossing Boundaries and Disciplines, Developing Creativity

Session/Time/Location: 2B, 10:55 – 11:15 AM, Peelle 207

Abstract: In recent years, Artificial Intelligence (AI) has gained significant prominence, with ChatGPT emerging as a notable example. The widespread influence of ChatGPT, encompassing both positive and negative aspects, highlights the increasing significance of AI. What better way to get a full understanding of AI than to make one of your own? In this project, a Chatbot similar to ChatGPT will be developed, but with some personal touches. Research will be the most important part of this project, along with the execution of a software and a comprehensive report that will fulfill the requirements for the Computer Science practicum project. The Python programming language and some third-party APIs in VSCode will be used to implement this project. Designing the chatbot will involve defining its conversational flow, user interface, and incorporating personal touches to distinguish it from existing models. The outcome of this project will be a demo functioning Chatbot application that can enhance a user's experience.

Allison TenHove

Silencing Voices, Stifling Growth: Exploring the Consequences of Book Banning in K-12 Classrooms

Mentor: Kyle Griffith

Ribbons: Crossing Boundaries and Disciplines

Session/Time/Location: 2C, 10:15 – 10:35 AM, Rush 124

Abstract: The recent surge of book banning and challenging of books within K-12 classrooms in the United States raises critical questions about their implications for student development and educational freedom. This project delves into the complex issue of book banning, examining its diverse consequences and potential harm and benefits for students, teachers, and the broader intellectual climate. Drawing from research done in my Capstone this fall, this project will analyze the rationale behind book bans, often rooted in concerns about sensitive topics, diverse representations, and age-appropriateness. However, it will also address and critically examine the unintended consequences of such actions. These include limited knowledge and a hindering of intellectual development, the effect of censorship, undermining diverse identities and experiences, and the eroding trust in educators and educational institutions. This project proposes alternative approaches to addressing concerns about sensitive content, advocating for open dialogue, collaborative selection processes, and the possibility of age-appropriate adaptations. Furthermore, it emphasizes the importance of fostering empathy, critical thinking, and responsible engagement with challenging themes through thoughtful curriculum design and classroom discussions. This project ultimately contends that banning books in K-12 classrooms serves as a detrimental practice that restricts access to knowledge, undermines diverse voices, and inhibits intellectual growth. Instead, access to books promotes the value of open dialogue, informed selection, and critical engagement with literature as foundational elements of a vibrant and inclusive educational environment.

Noralee Richard

Asian American Transracial Adoption and Identity Development

Mentor: Bethany Shepherd

Ribbons: Caring for Humanity and the World, Learning Throughout a Lifetime, Thinking Critically, Crossing Boundaries and Disciplines, Developing Creativity

Session/Time/Location: 2C, 10:35 – 10:55 AM, Rush 124

Abstract: Asian American transracial adoptees to white parents face unique challenges growing up in the United States. As a Chinese adoptee, my feelings about my relationship to Chinese culture are complicated because I have not grown up immersed in it. However, I also am unable to identify with the white culture that surrounds me. This phenomenon is known as the transracial adoption paradox and is experienced by many Asian American transracial adoptees in America. I will use an autoethnographic approach to examine existing research on the struggles Asian American transracial adoptees face in comparison to my own experiences and provide potential solutions to help combat these challenges. Parents of these adoptees play a crucial role in diminishing these challenges in their children's lives. Through practices like cultural and ethnic socialization, parents engage with their children in cultural activities and teachings that familiarize them with their birth culture and foster their sense of pride and comfort with it. Additionally, racial socialization is necessary to help adoptees develop coping mechanisms and tools against racial biases they may encounter and build security within themselves. These methods are in contrast to that of cultural assimilation in which parents are more likely to emphasize a colorblind strategy with their children which deemphasizes discussion and activities that help the child explore their birth culture and racial identity. While there is a wide range of success in connection to these practices, my findings demonstrate that effective pairing of these strategies can help nullify negative effects adoptees may undergo.

Maria Risner

"You Don't Play With The Swastika!" – Representation of The Holocaust: The Analysis of Literary Strategies and Digital Gameplay in Through The Darkest Of Times

Mentor: Bethany Shepherd, Seth Knox

Ribbon: Crossing Boundaries and Disciplines

Session/Time/Location: 2C, 10:55 – 11:15 AM, Rush 124

Abstract: My Ribbons of Excellence presentation, based on my Senior English Capstone Research, seeks to investigate the purpose of video games as part of Holocaust representation in the twenty-first century. I will be analyzing the functionality of video games as a platform that supports the continuation of Holocaust Memory and the importance of this preservation. I depict how video gameplay is an asset to Holocaust representation and how it may benefit both post-witness generation audiences and historiography itself. Related to English Studies, I analyze components of fictionality in gameplay and how fiction has the capability to relay information on events, such as the Holocaust, that other mediums for informational learning cannot. To support this research, I examine the arguments in varying discourse communities on the topic of Holocaust representation mediums and in what ways they represent as necessary and/or appropriate for a varying audience. To conduct my primary research on this topic and contribute to the cross-disciplinary discourse conversation, I explore the Nazi Resistance Strategy Game Through the Darkest of Times by Painbucket Games and plan to create infographics that educate and inform two different rhetoric audiences (English/History Discourse Groups) on concepts within this content. In my research, I argue that virtual gameplay invites audiences to actively engage with history and allows for a purposeful interaction between users and gameplay content portraying the Holocaust. I have concluded that Through The Darkest Of Times curates a valuable exchange of knowledge amongst audiences who engage with this digital and interactive

Keita Kuramitsu, Mae Moose

Investigation of Fluctuations in Estrogens on Dopamine-B-Hydroxylase in Female Mice Brain

Mentor: Ben Pawlisch

Ribbons: Thinking Critically

Session/Time/Location: Poster Session, 1:15 – 2:15 PM, Peelle Lobby

Abstract: Estrogens regulate a variety of physiological processes in the body, and females produce these hormones at significantly higher concentrations in the blood than males. However, these concentrations of hormones fluctuate across the estrous cycle in females. In female songbirds, estrogens change seasonally, with differing concentrations of estrogens that act directly on the brain or influence neurotransmitters that regulate seasonally appropriate behavior (Pawlisch et al. 2012). Estrogens often influence neurotransmitters, like catecholamines, differently during the breeding and non-breeding seasons. One way that estrogens affect catecholamines is through the increased production of dopamine- β -hydroxylase (DBH), which is an essential enzyme in the synthesis of norepinephrine. However, it is not clear how fast these changes in DBH occur in females. Moreover, it is less clear how these fluctuations in estrogens influence the brain and specifically catecholamine production over shorter time periods, like across the menstrual cycle. In order to address these questions, we used immunohistochemistry staining to investigate the number of cells in locus coeruleus, a key region in norepinephrine synthesis, that contain DBH in the brain of female mice. Further studies will include quantification of DBH concentration in the mouse brain by microphotography and quantification on 17- β -estradiol in blood serum. This will potentially provide us with the relationship between concentrations of 17- β -estradiol, and the number of cells with DBH present in locus coeruleus in female mice.

Victoria Pilon

The Effects of YLR179c, a Gene of Unknown Function on Stress Pathways in Yeast

Mentor: Kristie Wrasman

Ribbons: Thinking Critically

Session/Time/Location: Poster Session, 1:15 – 2:15 PM, Peelle Lobby

Abstract: Yeast, or *Saccharomyces cerevisiae*, has been known over multiple decades to have been the optimal experimental organism for modern biological studies and is one of the keys to understanding eukaryotic cell function. There are over six thousand genes in the yeast genome, and as of 2023, approximately 976 genes are still characterized as having unknown functions. Bioinformatic studies on the YLR179c gene suggest that the function may be within the many cellular pathways that help yeast deal with stressors like nutrition deficiency or cellular damage. Previous research demonstrated an elongated cell structure when the cells were starved and a delay in the cell cycle pathway. In this study, we have analyzed the unknown gene YLR179c by creating a knockout strain or deletion of the gene to observe any additional changes in the yeast cell. The previous data could be caused by a malformed cell wall in the knockout cells. We used Calcofluor White staining to observe the cell walls in the knockout strain via fluorescence microscopy. No cell wall malformations have been observed in either the knockout or wild-type strains. We will be using FM4-64 stain to observe the shape of the vacuole in knockout cells to further investigate the specific stress pathways of yeast.

Lauren Falzone

Rain Events and Discharge Rates Effect on Nutrient Concentrations at Walden West

Mentor: Thomas Muntean, Sarah Hanson

Ribbon: Thinking Critically

Session/Time/Location: Poster Session, 1:15 – 2:15 PM, Peelle Lobby

Abstract: This study evaluated the water budget of the Walden West pond system in Franklin Township, Michigan, and how the change in discharge rates and proximity to large rain events impacted nitrogen and phosphorus concentrations of the system. Water samples were collected from the pond, its two-stream inflows (Inflows 1 and 2), a groundwater seep (Inflow 3), and the pond outflow. Inflow 1 is a small creek inflow, and Inflow 2 is a swamp inflow. Samples were analyzed for phosphate and nitrogen values. Samples after precipitation events generally have higher discharges because more water is in the system. The average discharge rates for the stream inflows are greater than the groundwater seep inflow. The discharge rate of the outflow is smaller than that of the sum of the inflow discharge rates. This data shows that groundwater controls the water budget due to the large quantity of groundwater in the system. surface water still affects phosphorus concentrations at all locations except the pond increase after the rain event due to runoff. Nitrogen concentrations have little correlation to precipitation. Nitrogen concentrations have little to no correlation with discharge. Comparing concentrations and discharges at each location concluded that high discharge rates correspond with higher phosphorus concentrations but have little correlation with nitrogen concentration. The results show that increased discharge and rain events increase the phosphorus levels in the system.

Seneca Craven

The Moderating Effect of Attachment Style on Social Exclusion and Productivity

Mentor: Stacey Todaro

Ribbons: Caring for Humanity and the World

Session/Time/Location: Poster Session, 1:15 – 2:15 PM, Peelle Lobby

Abstract: Given the significant role productivity plays in organizational and individual outcomes, understanding the factors that influence productivity has become a vital area of practical and academic research. This study investigates the moderating effect of attachment style on social exclusion and productivity. A total of 52 participants were recruited and all participants were enrolled in an introductory general psychology course at Adrian College. Participants completed the Adult Attachment Scale (Collins & Read, 1990) to determine attachment style and were then classified as having one of three attachment styles: secure, anxious, or avoidant. Then, participants were randomly assigned to the inclusion or exclusion group to play Cyberball. Finally, participants completed a task that measured productivity. It was hypothesized that attachment style would moderate the relationship between social exclusion and productivity, such that securely attached individuals would be less influenced by social exclusion. Results show social exclusion negatively impacted participants' productivity and securely attached participants were more productive than avoidantly and anxiously attached participants. Avoidantly attached participants were the most affected by social exclusion, displaying the lowest overall productivity. This research shows the negative effects of social exclusion and how various attachment styles lead to different responses when being excluded. This research has implications for the importance of organizations recognizing attachment-based barriers and promoting an inclusive work environment to increase worker productivity and well-being. Keywords: attachment style, social exclusion, ostracism, productivity.

Hailey Farrell

The Effects of Resilience and Gender on Academic Stress in Collegiate Athletes

Mentor: Janet Pietrowski

Ribbons: Caring for Humanity and the World

Session/Time/Location: Poster Session, 1:15 – 2:15 PM, Peelle Lobby

Abstract: Many studies suggest that collegiate athletes have higher stress than non-student athletes (Wilson & Pritchard, 2005). Females are also found to have higher stress levels than males (Hamilton & Fagot 1988). Resilience is the ability to cope or adapt to stressful situations or experiences. It has been shown in previous studies that having a higher resilience leads to lower stress levels (Oshio et al., 2003). The present study examined how resilience and gender affect stress levels in collegiate athletes. The participants completed the Academic Stress Scale and the Adolescent Resilience Scale. The participants were then split into a high resilience and a low resilience group, and the results of the Academic Stress Scale were analyzed and compared between the two groups. It was hypothesized that collegiate athletes with higher resilience levels would experience less academic stress than those with low resilience levels, and that females would have a higher academic stress level than males. It was also hypothesized that resilience would have a greater impact on female academic stress levels than male academic stress levels. There were no significant effects for resilience or gender. The interaction between resilience and gender was found to be significant meaning that resilience had a greater impact on female stress levels than male stress levels.

Clarissa Kayga

Getting A Seat at the Table: Navigating Gender Bias in the Workplace

Mentor: Christy Mesaros-Winkles

Ribbons: Crossing Boundaries and Disciplines

Session/Time/Location: Poster Session, 1:15 - 2:15 PM, Peelle Lobby

Abstract: This poster session will outline how to conduct a diversity and inclusion workshop for gender equality in the workplace. Using Deborah Tannen's Genderlect Communication Theory, we will examine the different communication styles between men and women. The workshop aims to help women learn how to code switch and teach men how to develop empathy for the challenges women face in the workplace. The presentation delves into the challenges women face as they strive to secure a meaningful presence in decision making forums. Despite advancements in gender equality, persistent societal expectations and ingrained stereotypes often cast women in subordinate roles, impacting their ability to assert themselves in professional environments. The struggle for "a seat at the table", encompasses various facets of Genderlect Communication, including language choice, assertiveness, and negotiation styles. Women frequently navigate a fine line between being perceived as competent leaders and avoiding backlash for violating traditional gender norms. The workshop explores how women employ strategic communication to overcome these challenges, adopting adaptive approaches that balance assertiveness with empathy. The participants will start by taking the Harvard Bias Test using the QR code provided. This will allow them to see what kind of biases they may have prior. Next, the participants will be put in breakout groups with different scenarios that are introduced in the workplace. After groups have had time to work through these scenarios, we will move onto discussing what we learned, and what we can do better in the future to try and prevent workplace bias.

Molly Hayes

Using Standardized Patients to Increase Athletic Training Students Cultural Competence

Mentor: Victor Liberi

Ribbons: Caring for Humanity and the World

Session/Time/Location: 3A, 2:15 – 2:35 PM, Jones 110

Abstract: Context: A standardized patient (SP) is “an individual carefully trained to portray an injury or illness.”¹ Using standardized patients (SPs) in simulation has grown in various healthcare programs, from nursing to physical therapy, general surgery, and physician assistant programs.^{2–6} Traditionally, SPs have been used to portray specific illnesses or conditions, but SPs can also represent different cultural characteristics.⁷ Objective: This study aims to determine if using standardized patients with a diverse background can increase athletic training student’s cultural competence. Design: This study is a pre-post survey-based design. Setting: This study will be conducted in Adrian College’s Graduate Athletic Training Laboratory. Patient or other Participants: The study participants are a convenient sample from Adrian College’s Graduate Athletic Training Program. This sample includes varying educational levels from juniors, seniors, and graduate students. Interventions: The independent variable of this study is exposing athletic training students to a standardized patient with a diverse background in simulation. The dependent variable is increasing levels of cultural competence before and after simulation. To determine a participant’s level of cultural competence, I will perform a pre-post test using a retrospective, modified Cultural Competence Assessment (CCA). The data collection will begin after the participants sign and read the informed consent form and then complete the modified retrospective CCA. Then, the participants will complete the simulation. Immediately after, the participants will complete the CCA again. Once all data is collected, a paired sample t-test will be conducted to compare the cultural competence levels before and after.

Hunter Schramm

National Athletic Trainers' Association Membership Characteristics: To Join or Not to Join

Mentor: Victor Liberi

Ribbon: Learning Throughout a Lifetime, Thinking Critically

Session/Time/Location: 3A, 2:35 – 2: 55 PM, Jones 110

Abstract: Context: Since 2017, the National Athletic Trainers' Association (NATA) membership has been declining. There was a 17.5% decline in membership from 2017-2022. Therefore, it is crucial to determine factors influencing NATA membership. Furthermore, maintaining and expanding NATA membership is essential in improving the profession of athletic training. Objective: The purpose of the research is to determine the values that influence membership of the NATA. The research hypothesis is that members will experience more benefits from NATA membership than non-members. Design: This research was a cross-sectional study. Setting: This study was conducted through social media and the athletic training Board of Certification survey service. Patients or Other Participants: A convenient sample of a minimum of one thousand participants were recruited through athletic training social media and the Board of Certification. Inclusion criteria required participants to be athletic trainers employed within the United States whereas participants were excluded if they were a non-athletic trainer. Interventions: An adaptation of the Professional Association Membership Questionnaire (PAMQ) was utilized to examine the influential factors for professional association membership between NATA members and non-members. The questionnaire was composed of two parts: a demographic section and the professional association membership questionnaire. Main Outcome Measures: Descriptive and inferential statistics, including a Pearson's chi-squared test was conducted to determine the difference in the PAMQ between members and non-members of the NATA. Results: Data collection is in progress. Conclusions: TBD

Michael Rightnowar

Data Security on a Network: Implemented Through a Network Vulnerability Scanner

Mentor: Yasser Alginahi

Ribbon: Caring for Humanity and the World, Learning Throughout a Lifetime, Thinking Critically, Crossing Boundaries and Disciplines, Developing Creativity

Session/Time/Location: 3B, 2:15 – 2:35 PM, Peelle 207

Abstract: The project that will be presented will be the study of data security on a network and this will be showcased by implementing the research through the development of a network vulnerability scanner. This technology is not a new technology but an important tool in understanding whether a network is safe from attackers. The plan is to dive into the fundamentals of these systems and showcase how each component of the scanner works. These scanners also come in many different forms and with different purposes. Some scanners will scan an application constantly to ensure its security while others might only scan at given instances by the user. As technology continues to improve, so do an attacker's methods to penetrate these systems. It is an important technology that needs to be constantly researched and improved upon. Learning about what tools are used in keeping our data secure is more important than ever due to the increase in cybercrimes across the world. Informing people on the benefits of having these tools is important in why this project should be researched and presented on.

Cody Emch

SPEECH RECOGNITION AND DEVELOPING A VOICE ASSISTANT

Mentor: Yasser Alginahi

Ribbons: Caring for Humanity and the World, Learning Throughout a Lifetime, Thinking Critically, Crossing Boundaries and Disciplines, Developing Creativity

Session/Time/Location: 3B, 2:35 – 2:55 PM, Pelle 207

Abstract: Speech recognition technology has evolved significantly since it was first created in 1952. Transitioning from number comprehension to being able to understand the human language, it's hard to ignore the power of speech recognition. Not only is it powerful, but speech recognition has also evolved the way humans interact with their devices. This research project will cover the history, current capabilities, and future possibilities of speech recognition technology. Using Python and its versatile libraries, this project aims to develop a voice assistant that will enhance user productivity and accessibility. By utilizing speech recognition, users will be able to interact with their computers using their voice. An example of a feature the voice assistant is capable of is saying "Open Google Chrome". The voice assistant will understand what you said and open the browser for you. The possibilities for speech technology are limitless, and a voice assistant is just a glimpse of this technology's potential.

Lucas St. Antoine

Securing the Digital Frontier: Designing and Testing Virtual Networks for Enhanced Cybersecurity

Mentor: Yasser Alginahi

Ribbon: Developing Creativity

Session/Time/Location: 3B, 2:55 – 3:15 PM, Pelle 207

Abstract: In this practicum project, authored by Myself, Lucas St. Antoine and co-authored by Dr. Alginahi, a virtual network is being designed and assessed for security vulnerabilities using GNS3. This involves the implementation of rigorous penetration tests to identify and address security risks. State-of-the-art cybersecurity tools such as Sentinel One, Rapid7, and AdminDroid are incorporated into the testing process. The project commences with the setup of a complex network environment in GNS3, followed by the selection of appropriate security measures. Subsequently, tools for penetration testing are prepared and deployed, a detailed test plan is developed, the penetration test is executed, and the results are documented and reported. Challenges include sourcing necessary devices and addressing complexities in testing artificial devices. Collaborations with Creek Enterprise and Tecumseh Public Schools are anticipated to alleviate some of these obstacles. Ultimately, this project contributes to the field by presenting conventional network security and penetration testing practices.

Rebecca Chenoweth

Canine cases with unexplained bleeding: investigating von Willebrand disease type 1 variant

Mentor: Ben Pawlisch

Ribbons: Caring for Humanity and the World, Learning Throughout a Lifetime, Thinking Critically, Crossing Boundaries and Disciplines, Developing Creativity

Session/Time/Location: 3C, 2:15 – 2:35 PM, Rush 124

Abstract: Veterinary diagnostic laboratories often bank tissue from canine necropsy cases with unexplained hemorrhaging in order to pursue cause of death. Initially, anticoagulant toxicity testing is performed to determine if any toxins were previously ingested. The Animal Disease Diagnostic Laboratory at Purdue University College of Veterinary Medicine had positive ($n = 62$) and negative ($n = 5$) results for this anticoagulant toxicity test across a number of breeds. As a next step, the Canine Genetics Laboratory genotyped these dogs for a Factor VII variant known to cause variable bleeding phenotypes in many breeds of dogs; all results were negative. The present study investigated the known von Willebrand disease type I (vWDI) variant (c.7437G>A). This variant does not always show up in every individual who has the gene mutation and how severe the condition is can vary among different dog breeds. Four heterozygous (vWDVvWD1) dogs were identified in the sample population. Of the four identified carriers, vWDI has been previously observed in three of these breeds (German Shepherd, American Staffordshire Terrier, and Miniature Australian Shepherd). However, for the first time, we observed a Newfoundland carrying vWDI. Our results provide a likely explanation for the bleeding phenotype observed in these four cases; however, the lack of von Willebrand, Åôs factor plasma quantification means this conclusion has some uncertainty. The findings underscore the potential benefits of incorporating routine vWDI genotyping, that especially in breeds known to carry the variant, to make breeders aware in order to ensure the health and well-being of canine populations.

Megan Westphal, Aviana Ferrarelli

Working Memory Retention Through Regeneration in Planaria

Mentors: Marti Morales

Ribbon: Thinking Critically, Crossing Boundaries and Disciplines

Session/Time/Location: 3C, 2:35 – 2:55 PM, Rush 124

Abstract: Planaria are invertebrate organisms that demonstrate similarities to vertebrates with respect to their neurochemical responses. They have similar neurotransmitters as humans and a high regenerative capacity. These organisms take around two weeks to regenerate, allowing them to be studied for regeneration focused within working memory. Working memory is the aspect of short-term memory specific to perceptual processing and execution of cognitive tasks. To better understand this, our research aimed to study working memory retention through regeneration in Planaria. Additionally, whether retention abilities differed between fragmentation location of the organism. Planaria were initially exposed to smooth and textured surfaces and were then exposed to sucrose and caffeine solutions ranging from 0-50% concentration for their preference determination and training. Thereafter, the organisms were cut for regeneration processing. Data analysis showed that the planarians exhibited greater retention of learned behaviors as well as increased overall survival at lower concentrations of sucrose solutions. In particular, there was limited survival as well as retention in the 10% and 50% solution groups through regeneration. Therefore, it can be suggested that working memory is preserved and heritable through regeneration at lower concentrations of stimulation. Furthermore, survival and regeneration abilities seem to favor anterior organismal regions.

Alexis Arvanitis

Smell Ya Later: The Impact of Working Memory Capacity on Odor-Based Context Dependent Learning

Mentor: Janet Pietrowski, Stacey Todaro

Ribbons: Caring for Humanity and the World, Thinking Critically

Session/Time/Location: 3C, 2:55 – 3:15 PM, Rush 124

Abstract: Odor, a known memory cue, provides significant context for the encoding specificity principle (Hertz, 1997; Sorokowska, et al., 2022). Working memory capacity refers to the individualized storage capacity of short-term memory (STM) (Rosen & Engle, 1997). Individuals with low working memory capacity retain less information than individuals with high working memory capacity because they are more easily distracted by external stimuli (Conway et al., 2001). The present study aimed to examine the effectiveness of odor-based context-dependent learning for individuals with both high and low working memory capacities. Thirty undergraduate students completed an autobiographical memory task in one of four match/mismatch odor/no-odor conditions. Tasks were completed over two sessions, spaced approximately 48 hours apart. It was expected that individuals with high working memory capacity would recall more words than those with low working memory capacity, and that those in matched conditions would recall more words than those in mismatched conditions. Results found no significant main effects for condition, and no significant interaction between condition and working memory capacity but a trend of mean differences did support the hypothesis. There was a significant main effect for working memory capacity, with high working memory individuals recalling significantly more words than low working memory individuals. Further research is needed to examine the differences in how odor presence effects encoding and retrieval for individuals of high and low working memory capacities.

Gabrielle Barksdale

Beyond the Barrette: Exploring Authenticity and Femininity through Afro-American Artistry

Mentor: Travis Erxleben

Ribbons: Developing Creativity

Session/Time/Location: 3D, 2:15 – 2:30 PM, Hickman Gallery

Abstract: The recontextualization of ordinary hair accessories is used in my works to spark conversations about representation, heritage, and the beauty that emerges when we embrace and celebrate our authentic selves. As an Afro-American Woman, hair is a profound marker of my identity and holds a unique cultural significance. Through the manipulation and repurposing of everyday hair accessories, particularly those associated with Afro-American hair ornamentation, my works become a conduit for storytelling. By reclaiming and elevating these everyday objects, I foster a deeper understanding of the multifaceted nature of Afro-American femininity. Each sculpture encapsulates the essence of my personal journey, as well as the collective experiences of Afro-American women.

Ashley Bayko

Meditations with Mud: A Potter's Journal of Self-Discovery

Mentor: Travis Erxleben

Ribbons: Learning Throughout a Lifetime

Session/Time/Location: 3D, 2:30 – 2:45 PM, Hickman Gallery

Abstract: Artist Statement: Many Artists find purpose in the practice of meditative making. As a potter, you discover this by spending countless hours in the studio. You try new techniques, you fail, you try again, and you learn something you never sought out to learn in the first place. The medium is your guide. You connect with your Craft in a way that only other Potters can truly understand. To be a Potter, is to live a life dedicated to process and to find deep meaning and fulfillment in the journey rather than the destination. Your journey becomes that of a lifelong learner and the medium never seems to run out of lessons. Each ware in this body of works represents more than just a beautiful, inanimate object. The works represent moments of discovery and personal growth for the Craftsman. Like pages in a journal, each holds a history of its maker's touch, an allusion to their personality, and a testament to their journey.

Maxx Buie

Moths and the Art of Healing: A Journey from Silence to Expression

Mentor: Travis Erxleben

Ribbons: Learning Throughout a Lifetime

Session/Time/Location: 3D, 2:45 – 3:00 PM, Hickman Gallery

Abstract: Artist Statement: I was abused. I was ignored. Fear, sadness, anxiety, grief, pain, and loneliness. These emotions still weigh heavily on me. I have tried to share these feelings for so long, but still feel like no one has ever taken the time to truly hear me. I don't strive to create beautiful work but to make my voice be heard. As a person who grew up experiencing abandonment, I tend to surround myself with things disliked and discarded. I feel at home with them. I find the moth to be a kindred spirit. This body of works uses relief printed moth motifs as a visual language to convey my emotions and memorialize my journey through adverse childhood experiences. Like the moth is drawn to light, I search to find a sense of belonging through my works; someone to listen and someone to care.

Zoe Leach

Stitching the Past, Painting the Present: Healing through Spontaneity

Mentor: Travis Erxleben

Ribbons: Developing Creativity

Session/Time/Location: 3D, 3:00 – 3:15 PM, Hickman Gallery

Abstract: Artist Statement: The tumultuous experiences of my childhood serve as the conceptual foundation for my works. Deriving from a need to process and heal from childhood traumas, the works highlight the inherent human instinct for control amid a life founded in chaos. Through the therapeutic combination of stitching and the use of water colors, I orchestrate the interplay of a selective color palette and delicate paper strips to create three-dimensional compositions on paper. Central to my process is the embrace of spontaneity; devoid of sketches or pre-planning, each stitch or splatter becomes part of an expressionistic dance with the materials. This approach allows my artworks to evolve organically and instinctually; celebrating ambiguity and allowing the viewer to explore and discover their own meanings within the works.

Mitchell Plucinski

A case for whey protein- and leucine-enriched multi-nutrient formula(e) high in vitamin D3 to promote body composition, strength, and physical function in sarcopenia: a scoping review

Mentor: Daniel Traylor

Ribbons: Caring for Humanity and the World, Learning Throughout a Lifetime, Thinking Critically, Crossing Boundaries and Disciplines, Developing Creativity

Session/Time/Location: 4A, 3:30 – 3:50 PM, Jones 110

Abstract: Objective. Nutritional intervention studies have indicated that whey protein- and leucine-enriched multi-nutrient formulas high in vitamin D3 are optimal medical nutrition recipes for treating sarcopenia. The present study undertakes a scoping review of research on whey protein- and leucine-enriched multi-nutrient formulas high in vitamin D3 in older adults with sarcopenia to highlight the impact of feeding and feeding with exercise on body composition, strength, and physical function. Design. Online databases identified studies published from 2005-2023, for which we selected 11 English language studies that experimented with a whey protein- and leucine-enriched multi-nutrient formula(e) high in vitamin D3 on measures of sarcopenia as the primary outcome variables in older adults diagnosed sarcopenic. Results. A total of nine registered human clinical trials and two unregistered human clinical trials were included in the analysis. All studies included sarcopenic older adults with ages ranging from 66.5 to 86.5 years. Two intervention types were identified: nutrition only or nutrition + exercise rehabilitation. Overall, the nutritional interventions resulted in improving lean mass and strength. Conclusion. There is evidence for the effectiveness of several types of whey protein- and leucine-enriched multi-nutrient formulas high in vitamin D3 in improving lean mass and physical performance in older adults recovering from sarcopenia. This scoping review shows that specific formula(e) used with rehabilitation programs can alleviate sarcopenic obesity, support skeletal bone, and improve body composition, lean mass, and physical function with or without exercise (CRD42022342953).

Ayden Cribbs

Sensitivity Test of the Seated Single Arm Shot Put Test in Athletes

Mentor: Daniel Traylor

Ribbons: Caring for Humanity and the World, Learning Throughout a Lifetime, Thinking Critically, Crossing Boundaries and Disciplines, Developing Creativity

Session/Time/Location: 4A, 3:50 – 4:10 PM, Jones 110

Abstract: Background: Few studies have examined the sensitivity of upper body field tests used in therapeutics. Purpose: The present study aimed to determine the relationship between free-weight shot-putting force and velocity and the shot-putting distance performance for the SSASPT. Additionally, we conducted a sensitivity method comparison analysis that focused on comparing the SSASPT arm velocity to the SSASPT distance. Methods: Thirteen healthy and physically active individuals (Male $n = 1$; Female $n = 12$; 20 ± 1 years; 170 ± 9.4 cm; 74 ± 12 kg; 32 ± 7.1 percent body fat; 5 ± 1 kg arm lean mass; 9 ± 1) participated in this study. The participants completed a dual X-ray absorptiometry scan to determine their body composition. Next, the participants performed the SSASPT utilizing a linear encoder and free weight shot test utilizing a dynamometer with both the dominant and nondominant arms. Results: Significant ($P < 0.05$) moderate to strong relationships existed among the SSASPT distance, free weight peak forces, and arm velocities for both limbs. No differences ($P > 0.05$) existed between the limb symmetry indices for SSASPT distances and free weight force and velocity ratios. The Bland Altman analyses indicated values within the 95% limits of agreement intervals (± 1.96 standard deviations) for the SSASPT distance and SSASPT arm velocity. Conclusion: Our findings further characterized the efficacy of the SSASPT and that the field test relates to the skill of movement and coordination patterns in the upper body.

Jason Eckardt-Taing

American Sign Language Computer Recognition

Mentor: Yasser Alginahi

Ribbons: Caring for Humanity and the World, Learning Throughout a Lifetime, Thinking Critically, Crossing Boundaries and Disciplines, Developing Creativity

Session/Time/Location: 4B, 3:30 – 3:50 PM, Peelle 207

Abstract: Sign Language Recognition (SLR) is a technology that allows for computers to detect hands and classify hand gestures. This project highlights what can be done with the MediaPipe framework for SLR. The objective for high accuracy gesture detection and low cost has been a difficult endeavor. SLR provides another form of interaction, where the user can use sign language to interact with the device. SLR can be used in many contexts, one such context is recognizing American Sign Language (ASL) gestures. The various proposed methods for SLR vary in cost and recognition accuracy. New recent advancements in Artificial Intelligence allow for these methods to be implemented reliably with low cost. Cost in the sense of both money and algorithm performance are factors to be considered. The system must be practical to use in a real world setting and must be quick to recognize gestures in a live setting. This project uses a framework developed by Google called MediaPipe. MediaPipe is a framework that abstracts various computer perception models for easy development and integration with machine learning tools such as TensorFlow or Keras. This project makes use of the “Gesture Recognition Task” model. This model allows for hand detection and mapping various points onto a subject’s hand in real time. The application achieved an 83% accuracy with 26 classes and around ~400 samples per class with real time detection. Each class represents a different hand gesture for a letter in the alphabet in ASL.

Samuel Massnick

A COMPARATIVE STUDY OF MACHINE LEARNING ALGORITHMS USED IN THE ANALYSIS OF LUNG CANCER DATA

Mentor: Yasser Alginahi

Ribbons: Caring for Humanity and the World, Learning Throughout a Lifetime, Thinking Critically, Crossing Boundaries and Disciplines, Developing Creativity

Session/Time/Location: 4B, 3:50 – 4:10 PM, Peelle 207

Abstract: Lung cancer is an ever-growing issue throughout the world that requires sophisticated tools for effective analysis. In this comparative study, machine learning algorithms will be used to analyze a dataset concerning lung cancer patients to perform predictive statistics upon said patients to test the effectiveness of the used algorithms. To explain, machine learning is a subset of artificial intelligence that refers to machines or systems that are capable of adapting based on prior decisions made to increase accuracy and to yield a consistent and accurate output. Using Python as well a certain machine learning module that can be used with Python, the data will be processed, analyzed, and reported on. With that said, the machine learning algorithms will be compared using certain performance metrics, those being the accuracy, precision, sensitivity, specificity, F1 score, and the Area Under Curve of the Receiver Operating Characteristic (AUC-ROC) of each algorithm. Furthermore, each of these algorithms will differ and certain ones will be better fits for this project than others. This research may prove itself to be valuable as cancer is a constant issue in the present day and it will show the effectiveness in using machine learning algorithms to analyze data in the modern age. Beyond this, the research holds implications to the future as machine learning continues to be developed, which may eventually allow researchers to find a method to significantly reduce deaths related to cancer in the future.

Branden Gula

Stock Price Prediction Using Machine Learning

Mentor: Yasser Alginahi

Ribbons: Caring for Humanity and the World, Learning Throughout a Lifetime, Thinking Critically, Crossing Boundaries and Disciplines, Developing Creativity

Session/Time/Location: 4B, 4:10 – 4:30 PM, Peelle 207

Abstract: This project delves into stock price prediction. The stock price history data will be extracted from Yahoo Finance API for five different companies\index funds (Apple, Palantir, S&P 500, Nasdaq, and Dow Jones). The stock price will be predicted by going through the following data science steps: data collection, exploratory data analysis (EDA), feature engineering, model building, and visualizations. To enhance the accuracy of the stock price prediction, technical indicators will be applied to the machine learning model. Some technical indicators that will be calculated from the Yahoo stock data are relative strength index (RSI), moving average convergence divergence (MACD), stochastic oscillator, Williams percentage range (W%R), price rate of change (PROC), and Balance Volume (OBV). These indicators can provide insight into market sentiment, investor behavior, momentum, and whether the stock is overbought or oversold. ML algorithms will be utilized to predict the stock prices for these companies. An application will be developed in Python to visualize the outcomes of the data analysis. The final result will include the five companies and their predicted stock prices compared to their actual stock price utilizing Python programming. The end goal is to offer a structured guide for stock price prediction providing a foundation for both technical and non-technical investors.

Brandon Falk

Towards an Automation of Academic Advising

Mentor: Mohammed Ouali

Ribbons: Thinking Critically, Developing Creativity

Session/Time/Location: 4C, 3:30 – 3:50 PM, Rush 124

Abstract: In an era where students grapple with demanding schedules, every minute counts. Effective academic advising is integral to guiding students through their academic journey in higher education. The absence of proper guidance often leaves students adrift, unsure of their future course selections. Although all the information needed for academic advising is available in the college course and program catalog, the student's transcript, and the next semester schedule, navigating between these advising resources can render the process cumbersome for both the student and the advisor and exacerbate student confusion. It is particularly noted that it is necessary for an academic advisor to prepare for the advising meeting making it even more crucial when the student is not in the same department as the academic advisor. It is also noted that the advisor may need to seek program and course information during advising engagements. Our initiative aims to develop a cutting edge tool to enhance advisor preparedness, streamline advising sessions, and optimize time utilization, promising significant reductions in meeting durations. This innovative tool equips advisors with comprehensive insights into students' academic histories, current course eligibility, and outstanding requirements for graduation, hence, also allowing for degree auditing for graduating students. By simplifying organizational tasks, advisors can foster smoother, more confident interactions with advisees, leading to expedited and more efficient meetings leaving time for more important discussions such as change of Major and career advising to name a few. Ultimately, this tool revolutionizes the advising process, offering clarity, simplicity, and efficacy for all stakeholders.

Blanca Straub

Automotive User Experience Design and Advanced Driver Assistant Systems

Mentor: Jason Smart

Ribbons: Caring for Humanity and the World, Learning Throughout a Lifetime,

Thinking Critically, Crossing Boundaries and Disciplines, Developing Creativity

Session/Time/Location: 4C, 3:50 – 4:10 PM, Rush 124

Abstract: Based on the literature collected, my methodology took a mixed methods approach, which includes collecting qualitative and quantitative data. The quantitative data collected consists of about fifteen participants, ages eighteen and up, who tracked their drives for a week, recording their areas of concern from the infotainment system. These infotainment systems, also known as the touch-screen located within the dashboard, allow users to receive information and entertainment. Infotainment is the term used to describe the combination of audio and visual cues a driver experiences when operating a vehicle. The qualitative data collected consists of anonymous interviews with at least two automotive user experience designers from two companies. From the interview portion of the research, there is an understanding of the design method frequently used and their perspective on how the regulations impact them. Participants also shared perspectives about how these laws could impact the design world and what might change to advance user safety and cognitive load. In the end, there becomes an understanding of user concerns regarding the touchscreen and other factors while operating a vehicle, the automotive user experience design method, and the perspective from both ends on the new driving laws in Michigan.

Timothy Bilen, Allison TenHove, Donald Davis, Katherine Berry, Gabrielle Revels

Speaking Out: A Reading in Response to Art

Mentor: Carman Curton

Ribbons: Crossing Boundaries and Disciplines

Session/Time/Location: 4D, 3:30 – 4:30 PM, Hickman Gallery

Abstract: The Greek roots of ekphrasis mean “Speaking Out.” Ekphrastic works are those written in response to an object or experience, most often a work of art.

We, as Creative Writers, find inspiration for our writing in the Hickman Gallery exhibit titled *Voices in Visuals: A Capstone Art Exhibition*, produced by the students of Art 402, Senior Exhibition II.

When we present our works by reading them aloud, we will be responding to *Voices in Visuals* by *Speaking Out*, transforming from audience members to active participants as we create conversations between the artist/speaker and the audience/writer, enacting the value of *Crossing Boundaries and Disciplines* in art and academics.

ALPHA CHI

INDUCTION CEREMONY

Alpha Chi is a national honor society that accepts only the top 10 percent of juniors, seniors and graduate students in all academic fields. Alpha Chi was founded in 1922 with the purpose of honoring academic excellence and exemplary character in college and university students. In addition to being an elite honors society, Alpha Chi also offers the opportunity for students to present annually at a national convention and awards \$60,000 a year in 26 scholarships and fellowships to individual members enrolled in full-time study.

Alpha Chi's name is derived from the initial letters of the Greek words *alethia*, meaning truth, and *xapakthp*, meaning character. The official shield bears a lamp of learning and the initials **AX** in raised letters. In the induction ceremony today, you will see these two virtues are symbolized in the Society's official colors – sapphire blue, depicting truth and emerald green, victory. Knowledge, the basis of truth and character, is symbolized by gold and candlelight. The motto of Alpha Chi is, "You shall know the truth, and the truth shall make you free." John 8:32.

Since its inception in 1922, over 400,000 members have joined this society nationally. The Michigan Alpha chapter here at Adrian College is the oldest chapter in Michigan, established in 1964. Those being inducted today will join over 500 current and alumni members in the Michigan Alpha chapter of Alpha Chi.

Please join us in celebrating the accomplishments of these students as they are welcomed into this prestigious national honor society.



ACKNOWLEDGEMENTS

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- All of the faculty mentors and presenters – this day is all about you and all your hard work.
- ROE 2023-2024 Committee – for all the planning and thought that go into this day.
 - Dr. Yasser Alginahi
 - Prof. Brittney Cole
 - Dr. Dorin Dumitrascu
 - Prof. Jo Lynne Hall
 - Dr. Tyler Harris
 - Dr. Karen Kune
 - Prof. Victor Liberi
 - Dr. Christy Mesaros-Winckles
 - Dr. Jeffrey Murphy
 - Dr. Mohammed Ouali
- All of our moderators and judges – without these volunteers we would not be able to run this conference.
- Cameron DiMarco, for his cover design on the program and graphic design, preparation of many of our printed items, and work compiling and formatting the program.
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