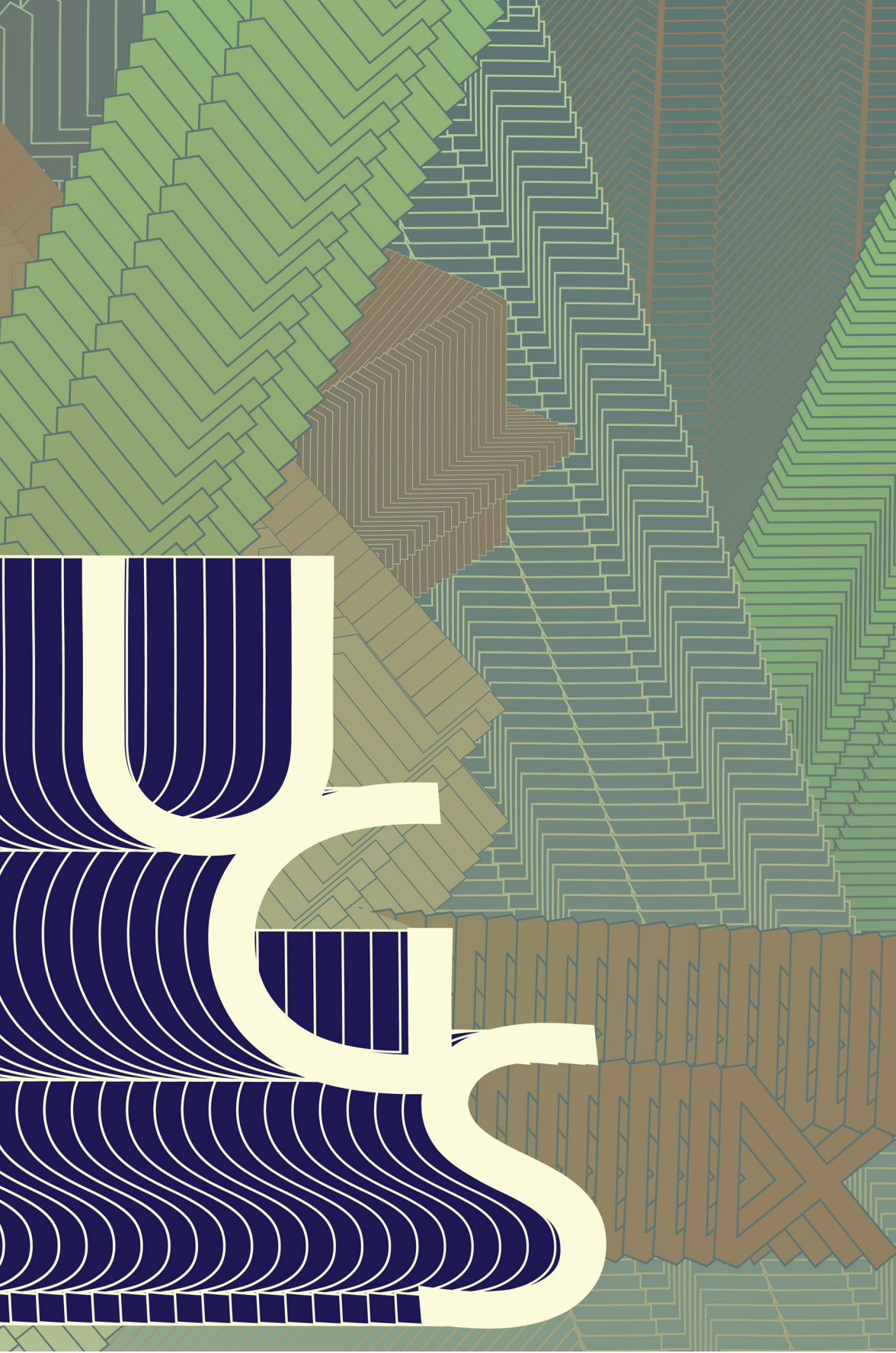

DEAN'S WELCOME

Welcome to Eastern Michigan University's 44th Annual Undergraduate Symposium!

We hope you find this year's event to reflect the traditions established through the Undergraduate Symposium's long, storied history. As in years past, this day of scholarly and creative presentations by our undergraduate students is the culmination of a year-long collaboration between the students and their faculty mentors. All of the presentations, posters, performances and exhibits on display today illustrate the same high level of collaborative accomplishment that we have come to expect from the Symposium. As you explore the extraordinary breadth and depth of student scholarly and creative activity, you will discover the special synergy of teaching, research, and hands-on learning that have powered the Undergraduate Symposium since its inception.

Indeed, today's event is 44 years in the making. Eastern's Symposium is one of the longest standing events of its kind in the country and provides a model for universities that have sought to develop similar programs. In 1980, then professor of chemistry and later provost of the University, Dr. Ronald Collins, conceived the idea of an annual conference opportunity for undergraduate research presentation. This innovative approach to encouraging undergraduate research was supported by then president, John W. Porter and Provost, Dr. Anthony Evans. Each subsequent president and provost has continued to support the Undergraduate Symposium and acted to enhance its stature. The first event began with a handful of students and faculty mentors from the College of Arts and Science and, over the years, has evolved into one of Eastern's signature annual events. The Undergraduate Symposium embodies a philosophy of learning that defines the unique educational experience that EMU students receive.

Although the College of Arts and Sciences is the host of the Symposium, student research presentations can span all five EMU Colleges and every undergraduate discipline.

Many faculty and staff have worked hard to make the Symposium a success, year after year, regardless of the challenges we face. I gratefully acknowledge the efforts of our Event Coordinator, Amy Bearinger, and the volunteer Symposium Planning Committee, chaired by Dr. Harriet Lindsay. We are also thankful for our Symposium graduate assistant Sam Carter, and the staff of the College of Arts and Sciences Dean's Office. Additionally, I want to thank Associate Vice President of Advancement, Jill Hunsberger, and College of Arts & Sciences Gift Officer, Julaine LaDuc for their continued fund-raising efforts on behalf of the Symposium.

The faculty sponsors of the student presenters are the expert core of the Symposium. They deserve special recognition for their voluntary efforts and their stalwart dedication to student mentorship. I also want to recognize the families of the students, and the many sponsors and guests who provided essential support for this event and who are committed to the success of our students in their academic pursuits. A special thank you to donors who have supported the work of our Symposium Undergraduate Research Fellows for this academic year. Lastly, a note of thanks to GameAbove-EMU, our naming sponsor for this year's event.

Most especially, my congratulations to you, our students, who are presenting on the occasion of the Undergraduate Symposium's 44th anniversary!

Dana Heller, Dean
College of Arts and Sciences

EVENT SCHEDULE

Friday, March 22, 2024 **EMU Student Center**

Oral Presentations

Session A	9:00 a.m. - 10:15 a.m.
Session B	10:30 a.m. - 11:45 a.m.
Session C	1:30 p.m. - 2:45 p.m.
Session D	3:00 p.m. - 4:15 p.m.

Poster Presentations

Group 1	9:00 a.m. - 10:30 a.m.
Group 2	11:00 a.m. - 11:45 a.m. and 1:30 p.m. - 2:15 p.m. (Room closed over luncheon)
Group 3	2:45 p.m. - 4:15 p.m.

Crossing Lines Design Expo Gallery Exhibit

9:00 a.m. - 4:00 p.m.

Symposium Luncheon

Dennis M. Beagen
Keynote Speaker
Dr. Dara Walker

12:00 p.m. - 1:15 p.m.

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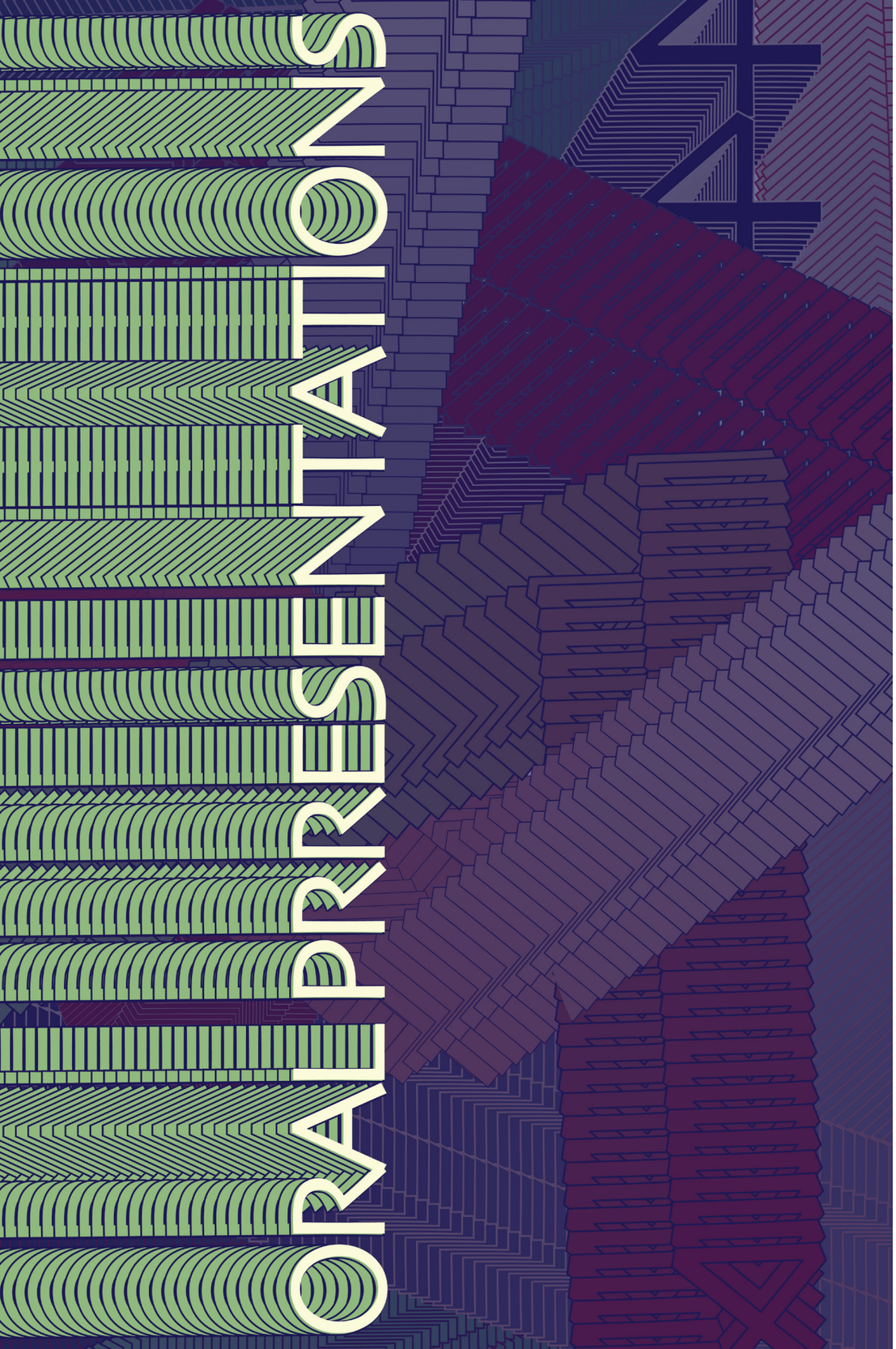

ORAL PRESENTATIONS BY LOCATION:

AUDITORIUM

ORAL SESSION A

MODERATOR: JOHN DORSEY

THE EXPERIENCES OF GENDER NON-CONFORMING BAND DIRECTORS IN THE WORKPLACE
Victoria-Elijah Keeton
Heather Shouldice, faculty mentor
9:00 a.m.

MUSIC WITHIN ME: THE IMPACT OF MUSIC ON THE EXPERIENCE OF CHILDBIRTH
Claire Guilford
Debra Gombert, faculty mentor
9:15 a.m.

PERCEPTIONS OF THE VOICE AS EXPRESSIONS OF GENDER AND IDENTITY IN TRANSGENDER ADULTS
Ariel Contreras Peterson
Theresa Merrill, faculty mentor
9:30 a.m.

VIOLIN CONCERTO NO. 4 IN D MAJOR, K.218, MVT. 1 "ALLEGRO"- W.A. MOZART
Emma Hakken
Daniel Foster, faculty mentor
9:45 a.m.

THE NATURE OF MARIMBA: KEIKO ABE'S *WIND IN THE BAMBOO GROVE*
Jonah DePriest
John Dorsey, faculty mentor
10:00 a.m.

ORAL SESSION B

MODERATOR: JOHN DORSEY

HOW THE COMPOSITIONAL STYLE OF DEBUSSY INFLUENCED THE *HOMMAGE À C. DEBUSSY* FOR CLARINET BY BÉLA KOVÁCS
Marcus Mendez-Gibson
Sandra Jackson, faculty mentor
10:30 a.m.

INTERGENERATIONAL LINGUISTIC DIFFERENCES IN JAPAN
Ian Gabriel Cruz
Hitomi Oketani and Veronica Grondona, faculty mentors
10:45 a.m

DESCARTES AND GOD
Priya Ghotane
Krisopher Phillips, faculty mentor
11:00 a.m.

SITUATED COGNITION: A HYBRID APPROACH TO THE SYMBOL GROUNDING PROBLEM
Amara Kwesiaku
John Koolage, faculty mentor
11:15 a.m.

EXPLORING CAUSALITY IN NON-RESTRICTIVE ADJECTIVALS
Aidan Ozias
Daniel Seeley, faculty mentor
11:30 a.m.

ORAL SESSION C
MODERATOR: CARLA DAMIANO

PROFESSOR, ADMINISTRATOR, HISTORIAN: A TRIBUTE TO EDGAR R. ISBELL AND HIS FAMILY LEGACY
Kaili Brooks
Carla Damiano, faculty mentor
1:30 p.m.

CHAPTERS OF CREATIVITY: ENSURING THE CONTINUED GROWTH AND SUSTAINABILITY OF EMU AMA'S BRAND IDENTITY
Olivia Robinson
Dennis O'Grady and Susan Booth, faculty mentors
1:45 p.m.

COPYRIGHT (TAYLOR'S VERSION): CASES OF OWNERSHIP IN POPULAR MUSIC
Frank Remski
Sadaf Ali, faculty mentor
2:00 p.m.

A MARKETING ANALYSIS OF MID-AMERICAN CONFERENCE SCHOOLS
Charles Borus
Sufian Qrunfleh, faculty mentor
2:15 p.m.

COMING AROUND: A COST-BENEFIT ANALYSIS OF THE VEGAS LOOP
Adriana Henriquez Mora
Jenni Putz, faculty mentor
2:30 p.m.

ORAL SESSION D
MODERATOR: PETER BLACKMER

VIOLENCE, RESISTANCE, AND SURVIVAL
Parker Gregg
Mark Higbee, faculty mentor
3:00 p.m.

WHAT TEACHERS HAVE TO SAY ABOUT THE PUSH TO REMOVE CRITICAL RACE THEORY IN SCHOOLS
Tierra Tresvant
Barbara Patrick, faculty mentor
3:15 p.m.

THE SEAT'S EDGE: RADICAL BLACK THEATRE IN THE NEW DEAL
Elise Nehasil
Ashley Johnson Bavery, faculty mentor
3:30 p.m.

BLACK WOMEN IN HIP HOP: RAP AND RESISTANCE
Alexxus Watson
Peter Blakmer, faculty mentor
3:45 p.m.

FAITH, POLITICS, AND SOCIAL PROGRESS: UNRAVELING THREADS OF GENDER AND RACIAL EQUITY IN AMERICA
Parker Gregg
Ebrahim Soltani, faculty mentor
4:00 p.m.

ROOM 320

ORAL SESSION A
MODERATOR: RJ KOSCIELNIAK

OUTPRICED: AN IN-DEPTH ANALYSIS OF AMERICA'S AFFORDABLE HOUSING CRISIS
Ella Yokom
RJ Koscielniak, faculty mentor
9:00 a.m.

MODEL BASED PREDICTION OF HOUSING PRICES
Nancy Gage
Tanweer Shapla, faculty mentor
9:15 a.m.

THE CRIMINALIZATION OF BEING UNHOUSED IN AMERICA
H. B. Williams
Janet Okagbue-Reaves and Kristal Reyes, faculty mentors
9:30 a.m.

FALL RISKS AND OUTCOMES FOR OLDER ADULTS WITH AND WITHOUT FOOD INSECURITY
Garrett Herrington
Sarah Walsh, faculty mentor
9:45 a.m.

EQUITY AND SOVEREIGNTY: CONFRONTING FOOD DESERTS IN TRIBAL COMMUNITIES
Hoa Le
Michael Koscielniak, faculty mentor
10:00 a.m.

ORAL SESSION B
MODERATOR: MARTHA BAIYEE

ART INTEGRATION: UNLOCKING CREATIVITY THROUGH EMBODIED LEARNING
Sarah Holtz
Meriah Sage, faculty mentor
10:30 a.m.

EMU'S COLLEGE OF EDUCATION AND PLACE-BASED PEDAGOGY WITHIN CONCURRENT HISTORIES
Asterius Olds
Ashley Johnson Bavery, faculty mentor
10:45 a.m.

THE POSITIVE IMPACT OF PRESCHOOL: EXPLORING SCHOOL AND LIFE OUTCOMES FOR YOUNG CHILDREN THAT ATTEND PRESCHOOL
Arnecia Paul
Jessica Grimone-Hopkins, faculty mentor
11:00 a.m.

LATE DISCOVERY: STUDENT EXPERIENCES WITH HIGH SCHOOL DISABILITY DIAGNOSES
Margot Moffa
Rebecca Louick, faculty mentor
11:15 a.m.

THE IMPACT OF IMPLICIT BIAS IN EARLY CHILDHOOD EDUCATION: CULTURAL, SOCIAL, GENDER, AND ECONOMIC BIASES
Caroline Demou
Martha Baiyee, faculty mentor
11:30 a.m.

ORAL SESSION C
MODERATOR: MARIA GARCIA

HOW PROFESSIONAL ATHLETES COMMUNICATIVELY MANAGE UNCERTAINTY
Luke Lass
Dennis O'Grady, faculty mentor
1:30 p.m.

DOSE-RESPONSE RELATIONSHIP BETWEEN PHYSICAL ACTIVITY AND MENTAL HEALTH AMONG COLLEGE STUDENTS
Ashley Wright and Sofia Ivanko
Catherine Gammon, faculty mentor
1:45 p.m.

UNIVERSITY STUDENT MENTAL HEALTH CRISIS: CENTERING PRE-SERVICE TEACHERS' PERSPECTIVES AND FACULTY SUPPORT
Mars Ward
Zuzana Tomas, faculty mentor
2:00 p.m.

FRATERNITIES AS SPACES OF QUEER GENDER EXPRESSION?: AN ETHNOGRAPHIC ASSESSMENT
Mason Saborío
María Luz García, faculty mentor
2:15 p.m.

FEELING SAFE ON CAMPUS: PERSPECTIVES FROM CAMPUS SAFETY STUDENT EMPLOYEES
Jordyn Gerwig
Tricia McTague, faculty mentor
2:30 p.m.

ORAL SESSION D
MODERATOR: JOHN WEGNER

ASSESSING THE IMPACT OF THE GREAT RECESSION ON THE RUST BELT STATES: A POLICY ANALYSIS
Cedrick Charles
Amanda Stype, faculty mentor
3:00 p.m.

UNDER SIEGE: THE HISTORIC MILITARY ACTIONS SURROUNDING DETROIT
Riley Coffee
John Wegner
3:15 p.m.

SOCIAL MEDIA USE IN COURTROOMS
Emma Owens
Sadaf Ali, faculty mentor
3:30 p.m.

CONSEQUENCES OF THE BEECHER-TILTON SCANDAL ON THE 1874 MICHIGAN WOMEN'S ENFRANCHISEMENT REFERENDUM
Anna Bennett
John Wegner, faculty mentor
3:45 p.m.

DEMOCRACY IN DECLINE: THE RISE OF SULLA AND ROME'S FIRST CIVIL WAR
Riley Coffee
Ronald Delph, faculty mentor
4:00 p.m.

ROOM 330

ORAL SESSION A
MODERATOR: BARBARA PATRICK

THE ILLEGALITIES OF THE U.S. CONSTITUTION AND THE RISE OF THE ARTICLE V CONVENTION OF STATES
Dale E. Justice Jr.
Barry Pyle and Barbara Patrick, faculty mentors
9:00 a.m.

MIGRANT VULNERABILITY TO HUMAN TRAFFICKING: A DECADE IN REVIEW
Elizabeth Solis
Shu Wang, faculty mentor
9:15 a.m.

TOP SECRET: A BREAKDOWN AND ANALYSIS OF THE UNITED STATES' BURDEN ON THE CLASSIFICATION SYSTEM
Kathleen Inman
Bill Heinze, faculty mentor
9:30 a.m.

ZERO TOLERANCE DISCIPLINE IN AMERICAN SCHOOLS: RACIAL INJUSTICE IN THE AGE OF YOUTH DISPOSABILITY
Trinity Perkins
Brian Sellers, faculty mentor
9:45 a.m.

BEYOND 'SEVERE MENTAL ILLNESS': SOLITARY CONFINEMENT, BIPOLAR DISORDER AND SCHIZOPHRENIA BEHIND BARS
Coreena Forstner
Kimberly Barrett, faculty mentor
10:00 a.m.

ORAL SESSION B
MODERATOR: MATTHEW PENIX

WINNIE MADIKIZELA-MANDELA: THE "BALANCE SHEET" OF A LEGACY
Paige Abdullah-Albasir
Joseph Engwenyu, faculty mentor
10:30 a.m.

SEXUALITY AND GENDER IN THE OTTOMAN EMPIRE
Stephen VanTuyle
Matthew Penix, faculty mentor
10:45 a.m.

CHRIST'S SIDE WOUND AND WOMEN'S PIETY IN THE MIDDLE AGES
Emma Kurtz
Pamela Stewart, faculty mentor
11:00 a.m.

THE USE OF IMAGERY IN EARLY SIXTEENTH CENTURY GERMAN WITCH HUNTS
Carsyn Bruns
Ronald Delph, faculty mentor
11:15 a.m.

WEDDED TO THE RENAISSANCE: MARRIAGE AND MARRIED WOMEN IN FIFTEENTH CENTURY FLORENCE
Elise Nehasil
Ronald Delph, faculty mentor
11:30 a.m.

ORAL SESSION C
MODERATOR: HEDEEL EVANS

REGULATION OF SOLUBLE E-CADHERIN SIGNALING IN NON-SMALL-CELL LUNG CANCER CELLS
Stuti Goel
Hedeel Evans, faculty mentor
1:30 p.m.

ACTIVATION OF THE EXTRACELLULAR SIGNAL REGULATED KINASE (ERK1/2) IN NON-SMALL-CELL LUNG CANCER CELLS
Brooke Lopo
Hedeel Evans, faculty mentor
1:45 p.m.

IGFBP-3 AND HEPARANASE PLAY OPPOSITE ROLES IN REGULATING A549 LUNG CANCER CELL SURVIVAL
Ravel Ray
Hedeel Evans, faculty mentor
2:00 p.m.

THE ROLE OF CASEIN KINASE 2 AND IGFBP-3 IN REGULATION OF CISPLATIN RESISTANCE IN LUNG CANCER CELLS
Hind Al Khashali
Hedeel Evans, faculty mentor
2:15 p.m.

REGULATION OF THE SOLUBLE AMYLOID PRECURSOR PROTEIN A (SAPPA) LEVELS IN LUNG CANCER CELL MEDIA
Benjamin Haddad
Hedeel Evans, faculty mentor
2:30 p.m.

ORAL SESSION D
MODERATOR: ANDREW ROSS

AI TEXT CLASSIFICATION USING ENSEMBLE TRANSFORMERS
Brian Cong
Ourania Spantidi, faculty mentor
3:00 p.m.

ADAPTING EXISTING MACHINE LEARNING MODELS FOR EFFICIENT BIOCHEMISTRY IMAGING ANALYSIS: A CASE STUDY
Emily Marron
Steven Backues and Andrew Ross, faculty mentors
3:15 p.m.

IMPROVED GENETIC TESTS FOR COLOR-ASSOCIATED VARIANTS IN BALL PYTHONS (*PYTHON REGIUS*)
Uyen Dao and Basmah Shahid
Hannah Seidel, faculty mentor
3:30 p.m.

FINDING THE GENETIC CAUSE OF MORPHS IN THE BLUE-EYED LEUCISTIC COMPLEX OF BALL PYTHONS (*P. REGIUS*)
Sasha Rollinson
Hannah Seidel, faculty mentor
3:45 p.m.

IS AI REPLACING HUMAN ART?
Jasmine Crigger
Guey-Meei Yang, faculty mentor
4:00 p.m.

ROOM 350

ORAL SESSION A

MODERATOR: ROBERT ERLEWINE

YAHWEH AND UGARIT: THE DEITIES AND MYTHS THAT MADE GOD
James Kirk
Robert Erlewine, faculty mentor
9:00 a.m.

WIFE, MOTHER, FEMINIST, DEMON: A BRIEF SOCIAL HISTORY OF LILITH
Megan Bernstein
Robert Erlewine, faculty mentor
9:15 a.m.

COMPROMISE AMIDST CHAOS: HANS WELSER'S BATTLE FOR COMPROMISE IN 16TH CENTURY AUGSBURG
Zachary Anderson
Mark Whitters, faculty mentor
9:30 a.m.

ESTHER BEFORE AHASUERUS: MELDING HISTORY AND FICTION
Hana Finder
Pamela Stewart, faculty mentor
9:45 a.m.

STILL LIFE WITH FRUIT, VEGETABLES, AND DEAD GAME: BEAUTY AND TENSION IN THE DUTCH BAROQUE
Kristi Domako
Pamela Stewart, faculty mentor
10:00 a.m.

ORAL SESSION B

MODERATOR: RUSTY MCINTYRE

EXPRESSIONS AND ATTRIBUTIONS OF ABLEISM FOR DISABILITIES THAT WERE CAUSED OR CONGENITAL
Hadlie Daigle
Rusty McIntyre, faculty mentor
10:30 a.m.

PREDICTORS OF INTERNATIONAL STUDENTS' ACCULTURATION PROCESSES IN THE UNITED STATES
Somaya Eissa
Rusty McIntyre, faculty mentor
10:45 a.m.

FINANCIAL AUTONOMY AND HAPPINESS IN COLLEGE STUDENTS: CAN THEY COEXIST?
Jordyn Gerwig
Rusty McIntyre, faculty mentor
11:00 a.m.

ONLINE AND IN-PERSON DATING VIOLENCE: THE ROLE OF RELATIONSHIP INITIATION CONTEXT
Jesse John
Elizabeth Neilson, faculty mentor
11:15 a.m.

EVALUATING THE EFFECTS OF DISABILITY ON PREFERRED PROXIMITY
Mia "Mickey" McMahon
Rusty McIntyre, faculty mentor
11:30 a.m.

ORAL SESSION C

MODERATOR: CARA SHILLINGTON

DEVELOPMENT OF NATIONALIST POETRY DURING THE NAHDA (1870-1950)
Asterius Olds
Matthew Penix, faculty mentor
1:30 p.m.

THE EFFECT OF BODY SIZE ON MATE CHOICE BETWEEN *AMBYSTOMA LATERALE* AND UNISEXUAL SALAMANDERS
Cole DuVall
Katherine Greenwald, faculty mentor
1:45 p.m.

DIFFERENCES IN ACTIVITY AND BEHAVIOR AMONG LIFE-STAGES OF TARANTULAS (*TLILTOCATL ALBOPILOSUS*)
Annalyse Brogan
Cara Shillington, faculty member
2:00 p.m.

LOVE IN THE FAST LANE: RAPID AGING IN MALE TARANTULAS
Spencer Poscente
Cara Shillington, faculty mentor
2:15 p.m.

PHENOLOGY ANALYSIS OF AMPHIBIANS AND TREES IN AND AROUND VERNAL POOLS
Erin Pilbeam
Katherine Greenwald, faculty mentor
2:30 p.m.

ORAL SESSION D

MODERATOR: CHRIS GELLASCH

SELECTION OF APTAMERS FOR PERFLUOROOCTANE SULFONATE (PFOS)
Aleigha Olejnik
Jeffrey Guthrie, faculty mentor
3:00 p.m.

TRAJECTORY COMPUTATIONS INSPIRED BY SPINLAUNCH AND THE IMPACTS OF LOW-EARTH ORBIT SATELLITES
Nathan G. Guerra
Ernest Behringer, faculty mentor
3:15 p.m.

RELATIVE GROUNDWATER AND PRECIPITATION CONTRIBUTION AND NUTRIENT DYNAMICS IN WETLANDS AT FISH LAKE
Rose Allen and Sydney Davis
Christopher Gellasch, faculty mentor
3:30 p.m.

IMPORTANCE OF GLACIAL TRANSPORT DISTANCE AND ROCK FRACTURES IN SCHMIDT HAMMER EXPOSURE-AGE DATING
Anne Shepherd
Eric Portenga, faculty mentor
3:45 p.m.

GEOCHEMISTRY OF QUARTZ AND RUTILE RECORD P-T-D HISTORY ACROSS THE WESTERN GNEISS REGION, NORWAY
Emily St. Onge
Hannah Blatchford, faculty mentor
4:00 p.m.

ROOM 352

ORAL SESSION A
MODERATOR: BILQUIS FERDOUSI

THE EQUIFAX DATA SECURITY BREACH
Ciana Holloway, Jack Keen, Kathryn Kus, and Wynton Love
Bilquis Ferdousi, faculty mentor
9:00 a.m.

UNVEILING THE DYNAMICS OF SOCIAL ENGINEERING IN CYBERSECURITY
Fatima Hasan
Bilquis Ferdousi, faculty mentor
9:15 a.m.

YOU OWN NOTHING: THE CRUSADE AGAINST THE RIGHT TO REPAIR
Anthony Mitrano
Robert Orrange, faculty mentor
9:30 a.m.

ANALYSIS OF OCCUPY WALL STREET AS A SOCIAL MOVEMENT
Charity Dillard
Anke Wolbert, faculty mentor
9:45 a.m.

THE INTERSECTION OF WHITE COLLAR CRIME AND ADVERSE CHILDHOOD EXPERIENCES
Kayla Grace
Paul Leighton, faculty mentor
10:00 a.m

ORAL SESSION B
MODERATOR: JOSEPH ENGWENYU

COMPARATIVELY ANALYZING THE PROCESS OF SETTLER COLONIALISM & THE IMPORTANCE OF PERSONAL RECORD
Naomi Hardin
Volker Krause, faculty mentor
10:30 a.m.

LEYMAH GBOWEE: HOW PEACEMAKING AND PEACEKEEPING CHANGED LIBERIA AND THE WORLD
Nicole Loshe
Joseph Engwenyu, faculty mentor
10:45 a.m.

CAMELS, CLERICS, AND COMMERCE: THE GROUNDING OF ISLAM IN PRE-COLONIAL MEDIEVAL WEST AFRICA
Tori Zremski
Joseph Engwenyu, faculty mentor
11:00 a.m.

HIV/AIDS DURING THE TWILIGHT OF APARTHEID IN SOUTH AFRICA
Lauren Simpson
Joseph Engwenyu, faculty mentor
11:15 a.m.

THE EAST AFRICAN COAST, THE INTERIOR AND THE INDIAN OCEAN, 1000-1500
Sabrina Kean
Joseph Engwenyu, faculty mentor
11:30 a.m.

ORAL SESSION C
MODERATOR: JEFF BERNSTEIN

DID 'FLIPPING THE SCRIPT' FLIP PERCEPTIONS? THE IMPACT OF A STUDENT-LED TEACHING CONFERENCE
Liv Overbee and Trinity Perkins
Jeffrey L. Bernstein and Sarah M. Ginsberg, faculty mentors
1:30 p.m.

INCLUSIVITY STATEMENTS: CREATING A WELCOMING CLASSROOM ENVIRONMENT IN CHEMISTRY COURSES
Tuka Ebd Alazeem
Amy Flanagan Johnson, faculty mentor
1:45 p.m.

ANALYSIS OF SECONDARY BIOLOGY STUDENTS' CONCEPTIONS OF TOPICS IN INTRODUCTORY GENETICS
Erin Pilbeam
Amy Flanagan Johnson, faculty mentor
2:00 p.m.

WHY IS DIVERSITY IMPORTANT? AN ANALYSIS OF THE IMPACT OF DIVERSITY STATEMENTS IN THE CLASSROOM
CHAS HIGGINS
Amy Flanagan Johnson, faculty mentor
2:15 p.m.

MUSIC FROM RUMBLE STRIPS: DEVELOPING AN EXPERIMENT FOR UNDERGRADUATES
Hannah Popofski
Marshall Thomsen, faculty mentor
2:30 p.m.

ORAL SESSION D
MODERATOR: KHAIRUL ISLAM

HORIZONTAL GARAGE DOOR
Kara Bishop, Rayenna Sutton, Ella Keena, and Camryn Hughes
Emadeddin Tanbour, faculty mentor
3:00 p.m.

COMPARING PREDICTABILITY OF LINEAR MODELS
Ciara Wheeler
Khairul Islam, faculty mentor
3:15 p.m.

ASSESSING NORMALITY OF SAMPLING DISTRIBUTIONS VIA SIMULATION
Solomon Ameyaw
Khairul Islam, faculty mentor
3:30 p.m.

AN EXPLORATION INTO 3D SCANNING
Kara Bishop, Rayenna Sutton, and Ella Keena
LaMar Stewart, faculty mentor
3:45 p.m.

CODECONTEXT: CONTEXT-AWARE REPRESENTATIONS FOR CODE AND COMMENTS
Mohammad Arjamand Ali
Siyuan Jiang, faculty mentor
4:00 p.m.

COLLEGE OF ART AND SCIENCES

AFRICOLOGY AND AFRICAN AMERICAN STUDIES

BLACK WOMEN IN HIP HOP: RAP AND RESISTANCE

ALEXXUS WATSON
PETER BLAKMER, FACULTY MENTOR
ORAL SESSION D / AUDITORIUM / 3:45 P.M.

Hip-hop has emerged as a cultural and artistic movement that transcends time. The 50th anniversary of hip-hop has prompted widespread reflection and appreciation of the art form. Public perceptions of hip-hop are mixed; the most popular narrative is that it is a form of music that often has problematic lyrics and ideas. I, and other scholars who truly appreciate the art form, have a different understanding of the impact of hip-hop. We realize that the heart of this genre is community building and collective resistance. In this presentation, I will explore black female hip-hop artistry, cultural impact, and the intersectionality of their identities and how they navigate the hip-hop scene.

ART AND DESIGN

IS AI REPLACING HUMAN ART?

JASMINE CRIGGER
GUEY-MEEI YANG, FACULTY MENTOR
ORAL SESSION D / ROOM 330 / 4:00 P.M.

With text prompts, generative AI—e.g., Bing and DALL-E—can create images that replicate humanistic qualities in human artwork. This is a case study of four student artists who experimented with AI. They curate an online art exhibit, *Color Me In: The Good, The Bad, & The Crazy*, displaying their handmade artworks alongside AI-generated images. The exhibit and interviews of the artists and the audience are analyzed to answer the following research questions: Did the artists use AI to create a copy of their handmade artwork? Or did they use AI to create a new interpretation of their original idea? What AI-generated images go unnoticed next to handmade art? Are AI-generated images art?

NATURAL HAIR AND THE NATURAL WORLD: A COMPARISON ACROSS MEDIUMS

NIA CRUTCHER
AMY SACKSTEDER AND MARGEAUX CLAUDE, FACULTY MENTORS
CROSSING LINES DESIGN EXPO / ROOM 300 / 9:00 A.M. - 4:00 P.M.

The overarching theme in my art is Blackness—specifically, what it means to be a Black woman and our experiences of aspects of our identities. Hair is a defining feature in the Black community; it has so much weight in our lives. My work reflects my experience, although I'm not the only one experiencing what I depict. Recently, I've chosen to experiment with the idea that natural hair and the natural world are similar in the ways we view and care for them. Our hair is often described as kinky, coily, curly, and you can usually find the same or similar forms and textures in nature. This past semester I focused on this idea and created three pieces that spoke to it.

STILL LIFE WITH FRUIT, VEGETABLES, AND DEAD GAME: BEAUTY AND TENSION IN THE DUTCH BAROQUE

KRISTI DOMAKO
PAMELA STEWART, FACULTY MENTOR
ORAL SESSION A / ROOM 350 / 10:00 A.M.

The visual richness of Frans Snyders's still life highlights traditional luxury in the 17th century, displaying nature's bounty for elite Dutch patrons. However, as a respected member of Saint Luke's Guild in Antwerp, which laid the foundation for the Antwerp Royal Academy, Snyders hints here at more profound philosophical introspection. Research into ancient Greek philosophy and mythology in conjunction with modern archetypal psychology reveals a stunning epistemological language buried within Snyders's work that challenges Baroque conventions of violence, death, and aesthetics, unraveling the logotherapy of *De gustibus non est disputandam*–that beauty is within the eye of the beholder.

EMU ARCHIVE PHOTO BOOK

RACHEL EVANS
RYAN MOLLOY, FACULTY MENTOR
CROSSING LINES DESIGN EXPO / ROOM 300 / 9:00 A.M. - 4:00 P.M.

In this project, I explored the history of Eastern Michigan University's campus architecture utilizing materials available within the University Archives. I chose to make a contemporary photo book using a simple grid system and minimal typography to give presence to the buildings on campus. The goal was to highlight the historical importance of these photos and make the viewer feel informed and educated about campus buildings whether reading from cover to cover or casually flipping through.

ESTHER BEFORE AHASUERUS: MELDING HISTORY AND FICTION

HANA FINDER
PAMELA STEWART, FACULTY MENTOR
ORAL SESSION A / ROOM 350 / 9:45 A.M.

This presentation examines Giovanni Francesco Barbieri (known as Guercino) and his painting *Esther Before Ahasuerus* (c. 1628-1630), including his influences in both technical applications and thematic approaches and its border political and historical context. I then discuss how I used this art historical research to create a fictionalized account of the production of the painting in a short story entitled "The Process." I will share a portion of this work to showcase the merging of historical fact and creative license to educate and entertain, lending legitimacy to the historical fiction genre.

UNDERGRADUATE SYMPOSIUM EVENT DESIGN IDENTITY

TIA HAUGABOOK AND ASHLEY SCHEMER
RYAN MOLLOY, FACULTY MENTOR
CROSSING LINES DESIGN EXPO / ROOM 300 / 9:00 A.M. - 4:00 P.M.

We created an identity for the 44th Undergraduate Symposium that is inspired by repetition. When coming up with identity ideas we wanted to emphasize the fact that this year's symposium would be a palindromic number, so we decided to explore repetition in our designs. In order to find success as students, we often have to remain consistent repeating many of the same tasks in order to master our disciplines and grow. The identity of this year's symposium aims to celebrate the steadfast resolve it takes for students to commit their all-over and over again-to achieve their goals at Eastern Michigan University.

FLORA: AN EXPLORATION IN THE NATURE OF LIGHTING

SYRENA KAPSA
JOHN DEHOOG, FACULTY MENTOR
CROSSING LINES DESIGN EXPO / ROOM 300 / 9:00 A.M. - 4:00 P.M.

Flora is a light fixture I designed with the goal of bringing the elements of harmony, inspiration, and relaxation to the space it occupies. Flora takes the form of a flower constructed using vacuum bent plywood pieces which are then cut, shaped, and mounted to a base. My design originated from the patterns of petals found in flowers I love including magnolias, peonies, and tulips. While creating my design and making material choices, I worked to maintain the natural aspects that inspired me while examining nature. My design comes from my own experiences exploring the natural world around me, especially within Michigan.

CHRIST'S SIDE WOUND AND WOMEN'S PIETY IN THE MIDDLE AGES

EMMA KURTZ
PAMELA STEWART, FACULTY MENTOR
ORAL SESSION B / ROOM 330 / 11:00 A.M.

Christ's body was no stranger to extreme piety in the late Middle Ages, particularly his crucifixion wounds. But there emerged a strange fixation of Jesus's side wound within art in which it took on the characteristics of a breast or vagina. These types of images, many of which were used as talismans and a majority of which were private devotional images, raise a compelling question as to how women in the Middle Ages interacted with Christ's wound. Special devotion to the side wound by women and their hand in the creation of its images suggests that women viewed the side wound not only as a vessel for affective piety but also as a purified female form.

INVESTIGATING BIASES IN AI-GENERATED TEXT AND IMAGES OF NON-WESTERN ARTWORK

MAGGIE PARKS
GUEY-MEEI YANG, FACULTY MENTOR
POSTER GROUP 3 / ROOM 310 / 2:45 P.M. - 4:15 P.M.

AI chatbots and image generators such as ChatGPT and DALL-E have become popular brainstorming tools to provide text and visual information as inspiration for artmaking. My research aims to investigate the biases in AI-generated text and visual images when prompting AI chatbots and image generators to provide information for game card design inspired by a non-Western art style. AI-generated text and images are read and analyzed to answer the following research questions. What types of biases and stereotypes are present in AI-generated text and images? What are the sources of these biases and stereotypes? What are the implications of these biases and stereotypes to artmaking and art education?

THE THEORY OF TIME

NICHOLAS A. PEÑA
LESLIE ATZMON, FACULTY MENTOR
CROSSING LINES DESIGN EXPO / ROOM 300 / 9:00 A.M. - 4:00 P.M.

My project addresses how we perceive time: how we value living life vs. time we put into our professions. We get caught up in our work, clocking in, and the sense of time passing. We get lost in time and wish for time to move backward. Time also seems like a concrete standard that moves as clock arms counting each second, each minute, each hour, or as a calendar that tracks each day, month, and year. Time is situationally unique: it is different for every situation and person. Still, the only concrete fact about time is that it is non-renewable. Work is essential, but it is also vital that we learn to live life outside of work.

LIGHTING AND ATMOSPHERE'S EMOTIONAL TIE WITH ANIMATION

BRIANA RENDER
METAPHOR BROWN, FACULTY MENTOR
CROSSING LINES DESIGN EXPO / ROOM 300 / 9:00 A.M. - 4:00 P.M.

Lighting and atmosphere are key players for everyday lives in society. These two elements can completely change a person's emotions, and play a vital role in storytelling. By using light and color, an animator is able to establish a mood immediately, and carry it through the entire story. Building the scene's composition forms a sense of depth and belonging for the story to take place; once built, an animator creates textures by building layers onto every object. Afterwards, highlighting the textures through lighting helps complete the atmospheric mood between the environment and the character. The lighting conveys information that a character can't and forms an emotional tie for the viewer.

SQUIDCRAFT POSTER

BRIANNA RESSLER
RYAN MOLLOY, FACULTY MENTOR
CROSSING LINES DESIGN EXPO / ROOM 300 / 9:00 A.M. - 4:00 P.M.

My project is a three-dimensional poster for the primarily Spanish-speaking event, "SquidCraft." The objective of this project was simply to create a poster for an event using dimensionality. My goal in making this poster was that anyone who sees it would quickly have an idea of what the event is, even if they are unfamiliar with it. To achieve this goal, I used recognizable imagery from Minecraft, the game in which the event takes place. I spent countless hours folding small paper cubes to simulate the pixelated look of the game, and I created custom typography that aims to make the poster visually interesting from multiple angles.

SIMULATION OF HAIR, FUR, AND CLOTH

JASON ROUSELL
RYAN ENGLISH, FACULTY MENTOR
CROSSING LINES DESIGN EXPO / ROOM 300 / 9:00 A.M. - 4:00 P.M.

In the world of 3D computer graphics, an often-overlooked aspect of the process is simulated hair, fur, and cloth/skin (further referred to as dynamics). In the Simulation, Animation, and Gaming (SAG) program at Eastern Michigan University, there is only one class that specifically deals with dynamics—aptly named "Simulation and Animation Dynamics." Students in SAG don't get the chance to learn about dynamics early enough to be able to focus on that area as a potential career until their final two semesters in the program. This project showcases my exploration into these often neglected areas of simulation, to encourage students to explore other pathways in SAG.

A 3D MODELING AND FEELING

JANELLE SCOTT
RYAN ENGLISH, FACULTY MENTOR
CROSSING LINES DESIGN EXPO / ROOM 300 / 9:00 A.M. - 4:00 P.M.

I have created 3D models in the software Maya that broadcast my deep connection with family and friends. I am an introverted person. I never express my emotions or intimate vision with anyone, but I have challenged myself to go outside that box and express myself with this work. The models that I explore represent intimate moments in time and feeling, and show how connecting with certain people brings me joy.

ANIMATED DEITY SYMBOLS & LENTICULAR REFERENCE CARDS

CALEB STEINER
RYAN MOLLOY AND RYAN ENGLISH, FACULTY MENTORS
CROSSING LINES DESIGN EXPO / ROOM 300 / 9:00 A.M. - 4:00 P.M.

For this project, I utilize my newly-acquired knowledge of 3D modeling and animation software, combined with my knowledge of graphic design practices, to create a series of animations and lenticular reference cards. The animations and cards feature original iconography symbolizing four important deities from my favorite fantasy book series, *The Legend of Drizzt*.

MFA PROMOTIONAL MATERIALS

CALEB STEINER
LESLIE ATZMON, FACULTY MENTOR
CROSSING LINES DESIGN EXPO / ROOM 300 / 9:00 A.M. - 4:00 P.M.

For this project, I was entrusted with designing a series of promotional materials for the Master of Fine Arts program at Eastern Michigan University. This series included a set of seven postcards, three social media graphics, and a brochure. A concept of great importance throughout the project was providing prospective students the ability to imagine themselves in the various Art & Design facilities at EMU. As such, the visuals of the project rely heavily on photographs to represent many of these spaces, as well as a "cutting-mat" aesthetic to push the idea of a student's workspace.

SOFT TARGETS – TRIPTYCH (THREE 22" X 34" POSTER SERIES)

BRANDON TESTER
LESLIE ATZMON, FACULTY MENTOR
CROSSING LINES DESIGN EXPO / ROOM 300 / 9:00 A.M. - 4:00 P.M.

The Soft Targets - Triptych is a political poster series that speaks out against the many senseless acts of violence, such as the mass shootings and hate crimes that occur in our country and around the world every year. So many of these horrible acts are simply the result of societies' silence and passive nature, as it's easier to ignore problems than to solve them or change social norms for the better. Observe and react. Ignorance is bliss.

CHARACTER RIGGING EXPLORATIONS: BASIC SKELETON TO FULL SIMULATED MUSCLE

LINDSAY TIMBS
RYAN ENGLISH, FACULTY MENTOR
CROSSING LINES DESIGN EXPO / ROOM 300 / 9:00 A.M. - 4:00 P.M.

The project creates two rigs for an organic 3D model with realistic skin deformations to compare and contrast the results. Rigs are the controls used to animate a 3D model. A 3D model's skin deformation is how it reacts to the underlying structure when moved. The project focuses on learning to use simulated muscles, which add the ability to imbue subtle secondary motion to the skin and deliver more realistic deformation. The first rig uses standard primary rigging techniques. The second, more advanced rig uses complex simulated muscle deformations. The aim is to compare and contrast their quality based on perceived realism.

THE CHASE - A COLLABORATIVE ANIMATION

LINDSAY TIMBS
METAPHOR BROWN, FACULTY MENTOR
CROSSING LINES DESIGN EXPO / ROOM 300 / 9:00 A.M. - 4:00 P.M.

The goal of this project was to provide a chance for beginning artists to work together on one cohesive project, while still having their own individual creative freedom. This project also facilitated directing and project-lead experience for the students. This was done through the creation of an animation short project involving the Fall 2023 Camera and Light class. My animation takes the form of a chase sequence to create one overall animation and theme. The result of this project is a creative presentation of multiple individuals' styles, skills, and creativity in animation.

THE COLORLESS PARADIGM

KAIA TOLU
PAMELA STEWART, FACULTY MENTOR
CROSSING LINES DESIGN EXPO / ROOM 300 / 9:00 A.M. - 4:00 P.M.

Against a boom of vibrant chromatic stimulation in the world around me, I decenter color to engage with nostalgia and intimate compositions. In a series of black and white photographs, I explore the absence and ultimate power of color. Prioritizing the black-and-white view offers a respite from the expected hues of mass media. As a child, I would rush to the television to watch reruns of uncolored Looney Tunes on Saturday mornings. These cartoons allowed me to see that pigment was a privilege, but at times, also an overstimulating burden. Here, I explore the craft of storytelling through other visual elements as the viewing experience is altered by tone and the presence (or lack) of color.

BIOLOGY

DEER HUNTING AS FOOD SECURITY: QUANTIFYING IMPACTS OF WILD FOOD HARVESTING IN THE MIDWEST

ALYSSA AMOS
JONATHAN HALL, FACULTY MENTOR
POSTER GROUP 2 / ROOM 310 / 11:00 A.M. - 11:45 A.M. & 1:30 P.M. - 2:15 P.M.

Global human population threatens to overwhelm food systems. Wild food provisioning is an understudied food security practice in the Global North. Here, I build on previous research on deer harvest rates in Appalachia for the midwestern states of Michigan, Indiana, Ohio, and Wisconsin from 2018–2022. I also evaluate whether and how deer harvest rates changed in each state during the global pandemic of 2020–2021. During the study period, I estimate that more than 300 million pounds of deer were harvested. In some state, harvest rates increased during the pandemic suggesting a correlation between food insecurity and increased wild food provisioning.

DIFFERENCES IN ACTIVITY AND BEHAVIOR AMONG LIFE-STAGES OF TARANTULAS (*TLILTOCATL ALBOPILOSUS*)

ANNALYSE BROGAN
CARA SHILLINGTON, FACULTY MEMBER
ORAL SESSION C / ROOM 350 / 2:00 P.M.

Life-history strategies vary between tarantula sexes; males reach sexual maturity and leave their burrows to search for females that remain within close proximity to their retreats over a longer lifespan. Surprisingly, little is known about juveniles. We examined differences and correlations in metabolic rates, locomotory activity and behavior among life stages. Using video-tracking equipment, we compared distance, velocity and thigmotactic behavior (staying close to the arena wall when exploring). Initial data indicate higher activity levels for males with less thigmotaxis compared to females and juveniles. Additional correlations between activity and metabolic rates will be addressed.

MAPPING A GENOMIC DELETION CAUSING THE ULTRAMEL COLOR MORPH IN BALL PYTHONS

MURRON BUSTETTER
HANNAH SEIDEL, FACULTY MENTOR
POSTER GROUP 1 / ROOM 310 / 9:00 A.M. - 10:30 A.M.

Ball pythons (*Python regius*) exhibit color variants popular among pet owners. One variant, known as Ultramel, shows a mild loss of the pigment melanin. This variant is associated with a putative deletion in the gene TYRP1, which encodes a melanin-producing enzyme. This project aimed to map this putative deletion and to create a genetic test for it. We report that the putative deleted region is composed of two smaller deletions and an insertion from elsewhere in the genome. Using this information, we created a genetic test to detect the deletion allele. Our results clarify the genetic cause of Ultramel and provide genetic testing opportunities to pet owners.

EFFECT OF EDTA ON PRODUCTION OF ANTIMICROBIAL AGENTS BY BACTERIAL STRAINS

MANAL CHISHTY
PAUL PRICE, FACULTY MENTOR
POSTER GROUP 1 / ROOM 310 / 9:00 A.M. - 10:30 A.M.

Antibiotic resistance is dangerously increasing at a rapid rate. To counter this, researchers all over the world are searching for novel methods to induce antibiotic production from natural sources. We hypothesized that by using EDTA, ethylenediaminetetraacetic acid, to restrict divalent cations, like iron, in the culture media, we could enhance the production of bacterial secondary metabolites with antimicrobial properties. We found that co-culturing multiple bacteria in the presence of EDTA in nutrient-limiting media led to a general increase in antibiotic production.

CHANGES IN SALAMANDER POPULATIONS ACROSS 90 YEARS AT THE E. S. GEORGE RESERVE

KYLE CURTIS
KATHERINE GREENWALD, FACULTY MENTOR
POSTER GROUP 2 / ROOM 310 / 11:00 A.M. - 11:45 A.M. & 1:30 P.M. - 2:15 P.M.

Climate change has driven shifts in geographic distribution and population composition of species around the world, including many amphibians. Within the salamander genus *Ambystoma* there is an all-female complex that reproduces by kleptogenesis (stealing sperm from males of co-occurring species). Because unisexual populations can increase faster than sexual ones, males may become a limiting resource. By reviewing records from the University of Michigan's E.S. George Reserve, I plan to examine the phenology of this species. I aim to understand cyclic changes of the composition of these populations and to use this information to predict future changes.

IMPROVED GENETIC TESTS FOR COLOR-ASSOCIATED VARIANTS IN BALL PYTHONS (*PYTHON REGIUS*)

UYEN DAO AND BASMAH SHAHID
HANNAH SEIDEL, FACULTY MENTOR
ORAL SESSION D / ROOM 330 / 3:30 P.M.

Ball pythons are popular pets due in part to their wide range of heritable color morphs. Genetic testing for these morphs helps owners predict breeding outcomes, but genetic testing is currently cumbersome because tests require multiple steps. Our goal was to streamline genetic testing by developing allele-specific PCR assays for morph-associated genetic variants. These PCR assays can detect the presence or absence of a specific DNA sequence. Thus far, we have developed allele-specific PCR assays for variants in color-associated genes *EDNRB2* and *TFEC*. We are currently expanding our approach to other genes. Our findings expand the genetic testing toolkit for pet owners and breeders.

MANIPULATION OF BACTERIAL GROWTH CONDITIONS TO STIMULATE ANTIBIOTIC PRODUCTION

APRIL DEMBINSKI
PAUL PRICE, FACULTY MEMBER
POSTER GROUP 1 / ROOM 310 / 9:00 A.M. - 10:30 A.M.

The antibiotic resistance crisis poses a serious threat to modern medicine through an increased rate of deadly microbial infections. New antimicrobial compounds can be elicited from soil microbes when grown in competition with other microbes while also varying carbon sources. Antibiotic-producing bacterial strains were grown in co-culture on agar media plates and then inoculated into liquid media containing one of twenty polysaccharide carbon sources. Products were extracted and tested against safe relatives to pathogenic strains. We found that changing both co-cultured microbes and the polysaccharide were important in eliciting the production of antimicrobial secondary metabolites.

COMPARISON OF BIOACOUSTICS OF THE ATLANTIC COAST LEOPARD FROG AND SOUTHERN LEOPARD FROG

MAIYAH DEVENPORT
JEREMY FEINBERG, AND CARRIE KOSIBA (NON-PRESENTING AUTHORS)
KATHERINE GREENWALD, FACULTY MENTOR
POSTER GROUP 2 / ROOM 310 / 11:00 A.M. – 11:45 A.M. & 1:30 P.M. – 2:15 P.M.

The Atlantic Coast Leopard Frog (ACLF) is a newly described and understudied relative of the Southern Leopard Frog (SLF). This study assesses differences in chorusing behavior between ACLF and SLF populations in urban and rural habitats on the East Coast of the U.S. We used bioacoustic analysis to explore the duration of ACLF and SLF calling seasons, identifying seasonal patterns that may contribute to their reproductive behaviors. This work informs our understanding of how and when these species breed in variable habitats in the same geographic area. This will help shape conservation efforts and urban ecology for this newly described species.

THE EFFECT OF BODY SIZE ON MATE CHOICE BETWEEN *AMBYSTOMA LATERALE* AND UNISEXUAL SALAMANDERS

COLE DUVALL
KATHERINE GREENWALD, FACULTY MENTOR
ORAL SESSION C / ROOM 350 / 1:45 P.M.

Within the genus *Ambystoma* exists a complex of unisexual (all female) polyploid salamanders, which can breed with males of five sexual species of salamander. Unisexuals face intense sexual selection from diploid males, who prefer to mate with females of their own species. This experiment aims to determine whether body size plays a role in sexual selection. Male *A.laterale* salamanders were placed in a breeding box with a large and small unisexual; offspring were then genotyped to see which unisexual reproduced. I predict that males will prefer smaller unisexuals that more closely resemble *A. laterale* females, which have a small body size, and that these smaller unisexuals will produce more offspring.

FRESHWATER JELLYFISH *CRASPEDACUSTA SOWERBII* POPULATION DYNAMICS AND BEHAVIORS IN MICHIGAN LAKES

GRACE HALCROW
CARA SHILLINGTON, FACULTY MEMBER
POSTER GROUP 2 / ROOM 310 / 11:00 A.M. – 11:45 A.M. & 1:30 P.M. – 2:15 P.M.

The overall impact of non-native freshwater jellyfish, *Craspedacusta sowerbii*, on local ecosystems is under-studied despite their presence in North America for over a century. EMU's Jellyfish Research class provides a platform to address student-driven research during the Fall mating season. Field work included weekly animal counts and size measurements along with water temperature data over the season. We maintained field-collected animals in lab aquaria and observed and recorded behaviors with video-recordings throughout the day. Analyses of these data on the organismal and population levels, in turn, lay the groundwork for ongoing and future research projects in and out of the classroom.

MICROBIAL DIVERSITY ASSOCIATED WITH *CRASPEDACUSTA SOWERBII* FROM LOCAL MICHIGAN LAKES

GRACE HALCROW, KELSIE MONTROY, AND HALLIE TEMAR
MICHAEL ANGELL, FACULTY MENTOR
POSTER GROUP 1 / ROOM 310 / 9:00 A.M. – 10:30 A.M.

The freshwater ecosystems of the Great Lakes region are home to an abundance of biodiversity, including the little known non-native jellyfish species, *Craspedacusta sowerbii*. This project aims to identify and analyze specific bacterial species associated with *C. sowerbii*. Jellyfish were isolated from local freshwater lakes; Pickerel Lake and Cordley Lake. Microbial populations were harvested and cultured on a variety of media, in order to support a variety of microbial species. Microbial isolates were identified by phenotype, biochemistry, and DNA sequencing. In total, forty-one isolates were obtained, the majority identified within the phylum *Pseudomonadota*.

CHARACTERIZING CMHPR1, A HYDROXYPYRUVATE REDUCTASE FROM *CYANIDIOSCHYZON MEROLAE*

IRSAH HASAN
AARON LIEPMAN, FACULTY MENTOR
POSTER GROUP 1 / ROOM 310 / 9:00 A.M. – 10:30 A.M.

Photorespiration is a vital, but energetically-expensive metabolic pathway in photosynthetic organisms that recycles phosphoglycolate resulting from the oxygenase activity of rubisco. My project aims to understand the temperature response of CmHPR1, hydroxypyruvate reductase from *C. merolae*, a thermophilic alga. I am investigating the thermal response of CmHPR1 by characterizing its activity at different temperatures to determine its Km and Vmax. My eventual goal is to compare the thermal responses of HPR1 enzymes from temperate and heat-adapted plants. Improving the efficiency of photorespiration through genetic modification in crops could be of great agricultural significance.

INVESTIGATING THE *MITF* GENE AS THE CAUSE OF THE SPECIAL MORPH IN BALL PYTHONS (*PYTHON REGIUS*)

IZABELLA LEDERER AND ZOE RICE
HANNAH SEIDEL, FACULTY MENTOR
POSTER GROUP 1 / ROOM 310 / 9:00 A.M. – 10:30 A.M.

The color morph known as Special in ball pythons shows lighter coloration and altered patterning in the skin. We hypothesized that this morph was caused by a defect in the gene *MITF*. This gene controls the development of specialized color cells, including cells that produce melanin and pteridine pigments. Previous work found that an animal described as a Special homozygote was homozygous for nonsense mutation in *MITF*. To determine whether this mutation is associated with the Special morph, we are genotyping a large panel of Special and Non-Special animals for this mutation. Our work will increase knowledge of color genetics in reptiles and may lead to a genetic test for the Special morph.

THE EFFECT OF DAMS ON MACROINVERTEBRATE SPECIES UP AND DOWNSTREAM OF A DAM IN THE HURON RIVER

RAELYN MARONEY
KRISTIN JUDD, FACULTY MENTOR
POSTER GROUP 2 / ROOM 310 / 11:00 A.M. – 11:45 A.M. & 1:30 P.M. – 2:15 P.M.

The effects of dams on fish are widely studied, however, their effects on benthic macroinvertebrates, which support higher trophic levels and provide important ecosystem functions, are commonly overlooked. Our study addresses how dams influence the abundance of macroinvertebrates. We predicted that species richness and the percentage of sensitive species would be lower in the impoundment and would increase further from the dam. To test this, we characterized macroinvertebrate communities up and downstream from the Peninsular Dam on the Huron River. These results can help researchers understand the impact of dams and provide a baseline to assess recovery after the Peninsular Park dam removal.

ANALYZING TEMPERATURE RESPONSES OF ALANINE: GLYOXYLATE AMINOTRANSFERASE 1 FROM *RHAYZA STRICTA*

KELSIE MONTROY
AARON LIEPMAN, FACULTY MENTOR
POSTER GROUP 2 / ROOM 310 / 11:00 A.M. – 11:45 A.M. & 1:30 P.M. – 2:15 P.M.

Photorespiration is a coordinated metabolic pathway in plants that recycles the toxic compound phosphoglycolate produced by the oxygenase activity of rubisco. Photorespiration consumes energy and releases CO2. Current models of photorespiration do not account for its higher than expected release of CO2 at higher temperatures. Aminotransferases catalyze essential reactions within photorespiration. My project aims to characterize the temperature response of the RsAGT1 protein, a photorespiratory aminotransferase from a heat-adapted desert plant, *Rhayza stricta*. Data relating to the temperature stability and kinetics of the RsAGT1 protein at different temperatures are presented.

PHENOLOGY ANALYSIS OF AMPHIBIANS AND TREES IN AND AROUND VERNAL POOLS

ERIN PILBEAM
KATHERINE GREENWALD, FACULTY MENTOR
ORAL SESSION C / ROOM 350 / 2:30 P.M.

Climate change has caused shifts in phenology (timing of life history events) among organisms. Amphibians have shown some of the largest phenological shifts due to climate change, and tend to reside in seasonally-occurring vernal pools. A potential response to climate change in vernal pools could be earlier tree leaf-out, which could shade pools and reduce temperatures during amphibian larval development. This project aims to record amphibian and tree phenology at vernal pools by collecting biweekly data on plant phenology, amphibian breeding activity, and hydrology. If trees respond to climate change with earlier leaf-out, pond temperatures and ecological interactions could be affected.

LOVE IN THE FAST LANE: RAPID AGING IN MALE TARANTULAS

SPENCER POSCENTE
CARA SHILLINGTON, FACULTY MENTOR
ORAL SESSION C / ROOM 350 / 2:15 P.M.

As slow-to-mature, long-lived spiders, tarantulas age uniquely, with females of a species (ex. *Aphonopelma hentzi*) living over 30 years and males less than 10. Sexual maturity initiates a change in cellular function resulting in diminished male lifespans. Metabolic rates (MRs) of field-collected *A. hentzi* males were measured as an indicator of cellular activity throughout the typical mating season, until death. While maximal MRs decreased over time, average MRs stayed the same or increased, suggesting an overall physiological downturn, but continued levels of activity necessary for finding mates. This research provides insight into physiological and behavioral responses to rapid aging.

DOES STRAIN QUALITY AFFECT MULTI-MUTUALISMS AMONG PRAIRIE BEANS, RHIZOBIA BACTERIA, AND SOIL FUNGI?

KAZIMIR RESZETAR
EMILY GRMAN, FACULTY MENTOR
POSTER GROUP 2 / ROOM 310 / 11:00 A.M. – 11:45 A.M. & 1:30 P.M. – 2:15 P.M.

Prairie beans can benefit from multi-mutualisms with rhizobia bacteria and arbuscular mycorrhizal fungi (AMF). Benefits from multi-mutualisms can be equal to the sum of the individual mutualists, more than additive, or less than additive. Because two very effective mutualists have high demand for plant sugars and put more strain on a plant host, we predict that in combination they will be less beneficial than two average-quality partners. We measured plant growth to compare strain quality and multi-mutualist effects among five AMF strains, six rhizobia strains, and all combinations. Our results could improve multi-mutualisms in prairies, increasing plant diversity and restoration success.

LARVAL COREGONINE BODY CONDITIONS IN PRESENCE OF INVASIVE DREISSENID MUSSELS IN LAKE HURON

TE'NIA RICHARDSON
JULIE REINHARDT, FACULTY MENTOR
POSTER GROUP 2 / ROOM 310 / 11:00 A.M. – 11:45 A.M. & 1:30 P.M. – 2:15 P.M.

Lake whitefish (*Coregonus clupeaformis*) are common in the Great Lakes, yet their population has been in decline for the last 20 years. A possible cause is the proliferation of invasive mussels (*Dreissena polymorpha*), which feed on *Diporeia spp.*, a vital food source of larval whitefish. Lake mussels are more abundant in southern Lake Huron than northern Lake Huron, so if they compete with larval whitefish, we predicted that southern larvae would have smaller body morphometrics than northern larvae. By standardizing body length measurements between larvae from both regions, we found that southern larvae overall were smaller compared to those from the north, suggesting starvation.

FINDING THE GENETIC CAUSE OF MORPHS IN THE BLUE-EYED LEUCISTIC COMPLEX OF BALL PYTHONS (*P. REGIUS*)

SASHA ROLLINSON
HANNAH SEIDEL, FACULTY MENTOR
ORAL SESSION D / ROOM 330 / 3:45 P.M.

Skin color in vertebrates is controlled in part by the gene *MITF*, which regulates the development of color cells. *MITF* has been characterized in mammals and fish, but less is known about *MITF* in reptiles. The Blue-Eyed-Leucistic (BEL) complex of the ball python is a suite of phenotypes characterized by blue eyes, color altered patterning, and lighter or all-white skin. Our goal was to test whether mutations in *MITF* cause the BEL complex. We identified nonsense and missense mutations in the MITF gene of ball pythons, and we are testing whether these mutations are associated with BEL phenotypes. This work will expand our understanding of color cell development across vertebrates.

EVALUATION OF A NUCLEOTIDE VARIANT IN AN ALU-BASED MARKER FOR FACILITATING HUMAN POPULATION STUDIES

SARAH SAROFIM
DAVID KASS, FACULTY MENTOR
POSTER GROUP 1 / ROOM 310 / 9:00 A.M. – 10:30 A.M.

Alu elements are a highly abundant family of transposable elements in primate genomes. The more recently integrated elements, roughly 2,000, specific to the human genome have yielded loci not fixed among human populations, generating useful presence-absence DNA markers. We have identified nucleotide variants in two of these Alu-based markers of the Yb8 subfamily and developed simple, cost-effective assays that generated results promoting their usefulness. We have identified a sequence change in the Yc1NBC60 locus and propose expansion of these assays incorporating additional Alu subfamilies will boost the use of these DNA markers for various studies of human populations.

HANDEDNESS DISPLAYED IN MALE TARANTULAS (*APHONOPELMA HENTZI*)

RYAN SHEPPARD
CARA SHILLINGTON, FACULTY MENTOR
POSTER GROUP 2 / ROOM 310 / 11:00 A.M. – 11:45 A.M. & 1:30 P.M. – 2:15 P.M.

Brain lateralization is common in animals and allows for advanced multitasking. It leads to behavioral patterns such as handedness, which influences an organism's interactions with its environment. Lateralization has only been described in one study with male tarantulas and included the presence of female stimuli. We recorded locomotory preferences to indicate handedness and predicted right-handed preferences based on the previous study. From video-recordings of male tarantulas in a circular arena, we determined they spent more time and traveled further when moving clockwise (R-handed). This supports our hypothesis and provides additional evidence for brain lateralization in tarantulas.

DEVELOPING A BIODIVERSITY MANAGEMENT PLAN FOR THE EMU FISH LAKE ENVIRONMENTAL EDUCATION CENTER

OCEAN THOMAS
KATHERINE GREENWALD, FACULTY MENTOR
POSTER GROUP 2 / ROOM 310 / 11:00 A.M. – 11:45 A.M. & 1:30 P.M. – 2:15 P.M.

The EMU Sustainability Commission uses the Sustainability Tracking, Assessment, and Rating System (STARS) to document sustainability practices and find areas of improvement. I will develop and present a biodiversity management plan designed to identify vulnerable ecosystems and species at EMU's Fish Lake Environmental Education Center (FLEEC). This plan will improve EMU's STARS rating and help prevent, manage, and/or remediate damage to natural habitats and sensitive areas. So far, it has been found that most organisms within the defined research area hold the conservation status of "least concern."

CO-CULTURING BACTERIA WITH VARIOUS POLYSACCHARIDES TO INDUCE ANTIBIOTIC PRODUCTION

ALEXANDRA WALSH
PAUL PRICE, FACULTY MENTOR
POSTER GROUP 1 / ROOM 310 / 9:00 A.M. – 10:30 A.M.

New antibiotics are needed to combat the antimicrobial crisis. Co-cultured bacterial strains when grown in various polysaccharides supplemented with known antibiotics can lead to the production of novel antimicrobial metabolites from otherwise genetically silent biosynthetic gene clusters. We tested four *Streptomyces* strains and one non-actinomycete strain by co-culturing them with three different auxotroph strains (*M. smegmatis, E. coli, and B. subtilis*) on media supplemented with known antibiotics. These strains were then co-cultured with various polysaccharides to look for new antibiotic production. We observed a general increase in antibiotic production under these conditions.

HANDEDNESS IN JUVENILE TARANTULAS

NICOLE ZURAW
CARA SHILLINGTON, FACULTY MENTOR
POSTER GROUP 2 / ROOM 310 / 11:00 A.M. – 11:45 A.M. & 1:30 P.M. – 2:15 P.M.

Behavioral lateralization is common in animals and leads to specialization within the brain. This can be recognized as handedness or preference for use of left or right limbs first. Handedness has been documented in male tarantulas and may be associated with detecting cues for mates. However, this may also impact predatory behavior in tarantulas, including prey detecting and handling. In our study, we examined handedness in juvenile tarantulas. We scored direction (clockwise vs counter-) and duration of locomotory activity in a circular arena. Initial analyses indicated a significant preference for clockwise movement suggesting right handedness.

CHEMISTRY

THE ROLE OF CASEIN KINASE 2 AND IGFBP-3 IN REGULATION OF CISPLATIN RESISTANCE IN LUNG CANCER CELLS

HIND AL KHASHALI
HEDEEL EVANS, FACULTY MENTOR
ORAL SESSION C / ROOM 330 / 2:15 P.M.

The basic operative mechanisms underlying cisplatin resistance in non-small cell lung cancer (NSCLC) remain poorly understood. Here, we show that blocking casein kinase 2 (CK2) activity increased sensitivity to cisplatin in the human NSCLC cell lines, A549 and H1299. Phosphorylation of IGFBP-3 by CK2 (P-IGFBP-3) reduced its binding affinity to hyaluronan (HA). P-IGFBP-3 was less effective at decreasing cell viability or increasing apoptosis than IGFBP-3 in the absence or presence of cisplatin. IGFBP-3 was more effective at inhibiting HA-CD44 signaling than P-IGFBP-3 and augmented the effects of cisplatin.

FABRICATION OF RECYCLABLE DMAP-FUNCTIONALIZED POLYMERIC NANOREACTORS FOR USE IN AQUEOUS SOLUTIONS

ALVARO COBOS
GREGG WILMES, FACULTY MENTOR
POSTER GROUP 1 / ROOM 310 / 9:00 A.M. - 10:30 A.M.

The molecular catalyst 4-(N,N-dimethylamino) pyridine (DMAP) is a useful catalyst for chemical reactions. These reactions typically require organic solvents that can dissolve the catalyst; however, the solvents can be toxic and pollute the environment if not disposed of correctly. To forgo the need for organic solvents, recyclable nanoreactors have become a promising path to more environmentally friendly organic synthesis by allowing DMAP catalysis to occur in water. Our work has involved the synthesis and purification of a DMAP analog which may be copolymerized with another polymer to form nanoreactor micelles. This will allow the further study of reaction catalysis without organic solvents.

ANALYSIS OF PERUVIAN RED DYES IN MORTUARY BUNDLE TEXTILES

AVI DRAGUN AND JAMIE WILLIAMS
RUTH ANN ARMITAGE, FACULTY MENTOR
POSTER GROUP 2 / ROOM 310 / 11:00 A.M. - 11:45 A.M. & 1:30 P.M. - 2:15 P.M.

We are analyzing the dyes used in pre-hispanic Peruvian mortuary bundle textiles from the Paracas Necropolis and surrounding regions. These textiles are made from local plant and animal fibers and are colored with dyes made from plants. DART-MS (Direct Analysis in Real Time-Mass Spectrometry) will help us identify the dyes based on the molecules that are present, while IR (Infrared Spectroscopy) provides insight on the functional groups in the fibers to differentiate between cotton and wool. Carbon dating these textiles with plasma oxidation will allow us to properly place them in a timeline. Studying and dating these objects helps us to understand the people and technologies of the past.

INCLUSIVITY STATEMENTS: CREATING A WELCOMING CLASSROOM ENVIRONMENT IN CHEMISTRY COURSES

TUKA EBD ALAZEEM
AMY FLANAGAN JOHNSON, FACULTY MENTOR
ORAL SESSION C / ROOM 352 / 1:45 P.M.

All students seek belonging and comfort in class. This research project investigates the impact of an inclusivity statement on students enrolled in organic and analytical chemistry courses. The students filled out a survey on inclusivity and were invited to participate in an interview. From this data, we learned that many students, especially the international students, find the statement important, in that it shows the professor cares about them. Based on the survey, 86% of the participants feel the statement provides a safe environment. Lastly, our results show the importance of an inclusivity statement to provide a welcoming environment addressing diverse student needs in education.

REGULATION OF SOLUBLE E-CADHERIN SIGNALING IN NON-SMALL-CELL LUNG CANCER CELLS

STUTI GOEL
HEDEEL EVANS, FACULTY MENTOR
ORAL SESSION C / ROOM 330 / 1:30 P.M.

A barrier to the mobility of cancer cells is thought to be strong cell-cell interactions. A fundamental change reported during cancer progression to an invasive state is the loss of intercellular adhesion by the transmembrane protein, E-cadherin, known to have tumor suppressor functions. In this study, we used Non-Small-Cell Lung Cancer (NSCLC) cells to investigate how the ectodomain of the E-cadherin can be cleaved and released in a soluble form referred to as soluble E-cadherin, or sE-cad, accounting for decreased E-cadherin levels at the cell surface.

GENDER DIFFERENCES IN TEST ANXIETY

EMMA GOWER
GAVIN EDWARDS, FACULTY MENTOR
POSTER GROUP 2 / ROOM 310 / 11:00 A.M. - 11:45 A.M. & 1:30 P.M. - 2:15 P.M.

In this work, we report our research on test anxiety and gender. This study will utilize an online survey method and will look at a population of around 200 sophomores in high school in the Ann Arbor area. The work-study aims to determine levels of test anxiety between the different genders to test our hypothesis that females, non-binary, and transgender-identifying individuals suffer more test anxiety when compared to males via a one-way ANOVA to determine whether there are significant gender differences in mean test anxiety scores across the gender groups. A two-tailed test of significance will also be used to determine significance and the subsequent results reported.

REGULATION OF THE SOLUBLE AMYLOID PRECURSOR PROTEIN A (SAPPA) LEVELS IN LUNG CANCER CELL MEDIA

BENJAMIN HADDAD
HEDEEL EVANS, FACULTY MENTOR
ORAL SESSION C / ROOM 330 / 2:30 P.M.

The transmembrane glycoprotein, amyloid precursor protein (APP), and its processing to amyloid beta (Aß) are widely recognized for their involvement in Alzheimer's disease. More recently, research indicates that APP is overexpressed in multiple cancers including lung, promoting cancer cell proliferation. In this study, we set out to identify regulators of soluble amyloid precursor protein α (sAPPα) levels in the media of human non-small cell lung carcinoma (NSCLC) cells. We found that increased acetylcholine levels correlated with increased sAPPα levels and reduced activities of acetylcholinesterase and p53.

CREATION AND ANALYSIS OF UHRF1 AND UHRF2 MUTANTS

PAIGE HATFIELD
BRITTANY ALBAUGH, FACULTY MENTOR
POSTER GROUP 1 / ROOM 310 / 9:00 A.M. - 10:30 A.M.

UHRF1 and UHRF2 are epigenetic regulator proteins with similar sequences and structures that control DNA methylation. UHRF1and UHRF2 are associated with cancers such as breast, cervical, and lung. Both proteins contain TTD and PHD that allow them to bind histone H3. However, there is more known about UHRF1's binding properties compared to UHRF2. The purpose of this study was to test for amino acid residues that are critical for interacting with H3R2. To do this, we made various double mutants containing alterations at E215 and E218 in UHRF2 and tested their interactions with H3 peptides.

WHY IS DIVERSITY IMPORTANT? AN ANALYSIS OF THE IMPACT OF DIVERSITY STATEMENTS IN THE CLASSROOM

CHAS HIGGINS
AMY FLANAGAN JOHNSON, FACULTY MENTOR
ORAL SESSION C / ROOM 352 / 2:15 P.M.

Universities use a diversity statement to show commitment to building an inclusive environment. This research will extend an existing data set measuring Organic Chemistry students' feelings about the Chemistry department diversity statement. Participants are in upper division classes such as Environmental Chemistry and Spectrometric Organic Structure Determination. Previous research showed that Chemistry majors found that data about improvement in the classroom was more important than the actual diversity statement. There wasn't a clear trend compared to previous data, yet survey and interview responses signify the importance of a diversity statement positively shaping a student's education.

CHARACTERIZING UHRF1 AND UHRF2 INTERACTION WITH TAIL PEPTIDES AND NUCLEOSOMES

MATTHEW KOSTOFF
BRITTANY ALBAUGH, FACULTY MENTOR
POSTER GROUP 1 / ROOM 310 / 9:00 A.M. - 10:30 A.M.

UHRF1 and UHRF2 proteins are multi-domain epigenetic proteins. They share many similarities in sequence and structure. The proteins have specific domains used to bind to histone tails and nucleosomes. The purpose of our study is to measure UHRF1 and UHRF2 protein interactions with histone tail peptides and nucleosomes containing H3unmod, H3K9me3, or H4K40me3. These experiments were conducted using peptide fluorescence polarization (FP) assays and nucleosome pull-downs. Both proteins bound to H3K9me3 and H4K20me3 peptides well by FP. However, these proteins did not bind tightly to H4K20me3 nucleosomes. A possible explanation is the structure of the nucleosome hinders H4K20me3 interactions.

SMALL MOLECULE ANALYSIS OF UHRF2 USING FLUORESCENCE POLARIZATION

MATT LANSDALE
BRITTANY ALBAUGH, FACULTY MENTOR
POSTER GROUP 1 / ROOM 310 / 9:00 A.M. - 10:30 A.M.

UHRF1 and UHRF2 are epigenetic proteins that regulate histone modifications and DNA methylation. Both proteins contain TTD (Tandem Tudor Domain) and PHD (Plant Homeodomain) that bind to histone H3 trimethylated at lysine 9 (H3K9Me3). Previous studies have identified multiple small molecules that interrupt UHRF1's ability to bind to histone H3, however, the same molecules have yet to be tested on UHRF2. The purpose of this study was to test the ability of various molecules to disrupt the histone binding properties of UHRF2. Using fluorescence polarization, we performed competition experiments with these molecules against UHRF2 to measure their relative binding affinities.

FINDING THE RIGHT ATG3 MUTANTS FOR STUDYING AUTOPHAGOSOME FORMATION

NICOLAS LAURENT AND SHANNON ROCHON
STEVEN K. BACKUES, FACULTY MENTOR
POSTER GROUP 1 / ROOM 310 / 9:00 A.M. - 10:30 A.M.

Autophagy is a cellular recycling process for the survival and maintenance of eukaryotic cells. One of the proteins involved is Atg3, which is crucial for the attachment of Atg8 to the lipid PE. With the help of other Atg proteins an autophagosome can form. The autophagosome is a double membrane vesicle that forms around cargo to be taken to the vacuole or the lysosome for degradation. Our research has been focused on finding mutants that limit the activity of Atg3 to discover the impact Atg3 has on autophagosome size and number. We have shown that the Y179L mutant severely inhibits Atg3 activity. Currently, we are trying to find a mutant that fits between the wildtype and the Y179L Atg3.

ACTIVATION OF THE EXTRACELLULAR SIGNAL REGULATED KINASE (ERK1/2) IN NON-SMALL-CELL LUNG CANCER CELLS

BROOKE LOPO
HEDEEL EVANS, FACULTY MENTOR
ORAL SESSION C / ROOM 330 / 1:45 P.M.

The extracellular signal regulated kinase (ERK1/2) is also referred to as the mitogen-activated protein kinase (MAPK). This kinase is activated by dual phosphorylation on both Thr202 and Tyr204 residues. Activation of this kinase has frequently been associated with growth and proliferation in a variety of human tumor cell lines. Activated ERK1/2 can phosphorylate a variety of nuclear and cytosolic substrates. In this study, we used Non-Small-Cell Lung Cancer (NSCLC) cells to investigate how different cell treatments activate ERK1/2, affecting cell viability.

SELECTION OF APTAMERS FOR PERFLUOROOCTANE SULFONATE (PFOS)

ALEIGHA OLEJNIK
JEFFREY GUTHRIE, FACULTY MENTOR
ORAL SESSION D / ROOM 350 / 3:00 P.M.

Per and polyfluoroalkyl substances (PFAS) used in water repellent materials, food packaging,
and other products are released into our environment due to improper disposal techniques. Without proper monitoring of PFAS levels, accumulation of these substances into our waterways pose long term health risks from exposure. The long-term goal of this research is to develop a fluorescence-based sensor to detect and monitor several different PFAS contaminants within our water systems. To achieve this goal, we focused on the first step of the overall project, which is the selection aptamers, to recognize and target PFOS, one of the most commonly detected PFAS molecules in the environment.

ANALYSIS OF SECONDARY BIOLOGY STUDENTS' CONCEPTIONS OF TOPICS IN INTRODUCTORY GENETICS

ERIN PILBEAM
AMY FLANAGAN JOHNSON, FACULTY MENTOR
ORAL SESSION C / ROOM 352 / 2:00 P.M.

Genetics is a key part of the curriculum within high school biology classrooms, making it an integral part of students' understanding of life itself. This study focuses on four different classes of secondary biology students' conceptions of introductory genetics topics,
such as protein synthesis and mutations. This work will allow me to identify students' misconceptions of introductory genetics topics, creating a path that targets misconceptions and allowing for mastery of learning these core topics. As a pre-service teacher, results from this work will allow me to reflect on teaching strategies and prepare me for effective teaching of foundational genetics to future students.

THE GREAT SMOKE OF 2023: ANALYSIS OF PM2.5 AND OZONE LEVELS IN ANN ARBOR, MI DURING SUMMER 2023

ERIN PILBEAM, PANIZ EIZADKHAH AND JULIA REIMBERG
GAVIN EDWARDS, FACULTY MENTOR
POSTER GROUP 1 / ROOM 310 / 9:00 A.M. - 10:30 A.M.

Elevated concentrations of the pollutants ozone and particulate matter (PM2.5) are known to be deleterious to human health. In the summer of 2023, Canadian wildfires caused smoke to blanket much of the eastern US, including Michigan. During this time, smoke plumes containing contrasting levels of sometimes high and sometimes low ozone along with record high levels of PM2.5 were recorded at a field site in Ann Arbor, MI. In this work, we will discuss the reason for these contrasting pollution levels and determine how the Canadian wildfires affected the air quality in Ann Arbor, MI in 2023.

FINDING THE RATE-DETERMINING STEP IN AN ARENE AMIDATION REACTION

TAYLOR RAPSON
MARIA MILLETTI, FACULTY MENTOR
POSTER GROUP 2 / ROOM 310 / 11:00 A.M. - 11:45 A.M. & 1:30 P.M. - 2:15 P.M.

Amidation reactions are useful in the synthesis of many different types of pharmaceutical compounds. We investigated a reaction that can be used to amidate arene compounds using a readily-available amidating agent. While the reaction is versatile and efficient, it is limited by its high energy requirements. We used electronic structure methods to identify the reaction step that is responsible for the high-energy requirements and characterized the transition state structure. The results will lead to a better understanding of reaction energetics and suggest ways to improve reaction conditions.

IGFBP-3 AND HEPARANASE PLAY OPPOSITE ROLES IN REGULATING A549 LUNG CANCER CELL SURVIVAL

RAVEL RAY
HEDEEL EVANS, FACULTY MENTOR
ORAL SESSION C / ROOM 330 / 2:00 P.M.

The roles of heparanase and IGFBP-3 in regulating non-small cell lung cancer survival was examined. We show higher heparanase levels and activity and higher levels of heparan sulfate (HS) in the media of H1299 cells, known to be p53-null with no expression of IGFBP-3, compared to the media of A549 cells. While the levels of IGFBP-3 in the media of A549 cells were not affected, inhibiting the activity of heparanase or knockdown of its expression reduced the levels of soluble HS fragments, and diminished interactions between IGFBP-3 and HS in the media. HS was able to compete with hyaluronan (HA) for binding to IGFBP-3 or an IGFBP-3 peptide.

EXPLORING COPPER NANOPARTICLES WITHIN PVP-SUPPORTED CU NANOCLUSTERS: SYNTHESIS, PROPERTIES, AND APPLICATIONS

SARA RAYAN
TIMOTHY BREWER, FACULTY MENTOR
POSTER GROUP 2 / ROOM 310 / 11:00 A.M. – 11:45 A.M. & 1:30 P.M. – 2:15 P.M.

This study delves into copper nanoparticles within PVP-supported Cu nanoclusters, examining their synthesis, properties, and potential applications. The synthesis consists of reducing copper ions by reacting with sodium citrate, resulting in small-sized copper nanoclusters. Despite expectations, adding iron to these clusters doesn't trigger light emission. A preliminary study confirmed that iron ions influence the fluorescence intensity of these copper nanoclusters up to a certain amount. Analysis shows intensity changes up to 0.5 mL of added iron, beyond which it stabilizes. These findings hint at applications in nanotechnology, marking a starting point for further exploration.

THE SYNTHESIS AND CHARACTERIZATION OF ANTHRACENE QUINACRIDONE

CALLUM ROBINSON
GABE RUDEBUSCH, FACULTY MENTOR
POSTER GROUP 1 / ROOM 310 / 9:00 A.M. – 10:30 A.M.

Quinacridone and its derivatives are effective electron transporting layers and organic emitters in OLEDs as they require low driving voltage with high efficiency (1). The greatest changes in physicochemical properties result from elongation of the pi-conjugated structure (1). Recent experimentation in quinacridone derivatives has allowed for extension of the pi-conjugated structure via the central aromatic core (1). The scope of our project is to identify and characterize Anthracene Quinacridone and its derivatives to better understand the effect of incorporating different aromatic cores and substituents in quinacridone molecules.

THE EFFECT OF ATG10 LEVELS ON AUTOPHAGOSOME SIZE AND NUMBER

JUAN SALCEDO AND OLIVIA CLARINO
STEVEN BACKUES, FACULTY MENTOR
POSTER GROUP 1 / ROOM 310 / 9:00 A.M. – 10:30 A.M.

Autophagy is a cellular degradation process that encapsulates cytosolic materials for delivery to the vacuole. It is responsible for recycling nutrients for the organism and is executed by autophagy-related (Atg) proteins. Autophagy promotes cellular health and is critical because it disposes of damaged proteins that lead to diseases like Parkinson's. Our research focuses on the role of the Atg10 protein on the size and number of autophagosomes in yeast cells. In order to study this, we are inhibiting Atg10's enzymatic activity, confirming this through the loss of conjugation of Atg12 and Atg5, and imaging cells by electron microscopy to compare the changes in autophagosome size and number.

IN SEARCH OF THE TRANSITION STATE IN THE DEAGGREGATION OF A RHENIUM DIMER

JASMINE SIRABELLA
MARIA MILLETTI, FACULTY MENTOR
POSTER GROUP 2 / ROOM 310 / 11:00 A.M. – 11:45 A.M. & 1:30 P.M. – 2:15 P.M

We use computational methods to model a reaction that can produce specific alkylated compounds, which are found in a variety of natural products and pharmaceutical compounds. We focus on the key step of the reaction, which involves separating (deaggregating) the rhenium-based catalyst into two fragments that represent its active form. Characterizing the transition state structure for the deaggregation step of the reaction will allow us to suggest modifications to the catalyst structure that would make it more efficient.

EXPLORING A REACTION ENERGY PROFILE LEADING TO A BIOLOGICALLY RELEVANT COMPOUND

SYED WASIUDDIN
MARIA MILLETTI, FACULTY MENTOR
POSTER GROUP 2 / ROOM 310 / 11:00 A.M. – 11:45 A.M. & 1:30 P.M. – 2:15 P.M.

ß-carbolines are common pharmaceutical compounds that have anti-cancer, anti-fungal and neuroprotective properties. In 2019, researchers were able to synthesize dihydro-ß-carbolines using more than one catalytic system: a rhodium acetate dimer and a basic organo-catalyst. We have analyzed the proposed reaction mechanism using computational methods; specifically, we have focused on two possible reaction pathways and the relative stability of the intermediate and transition state structures.

SYNTHESIZATION OF FLUORESCENT SILVER NANOCLUSTERS, SILVER NANOPARTICLES, AND THEIR BIOSENSING USES

JAIME WILLIAMS
TIMOTHY BREWER, FACULTY MENTOR
POSTER GROUP 1 / ROOM 310 / 9:00 A.M. – 10:30 A.M.

Silver nanoclusters and nanoparticles prove to be an inexpensive, alternative way of sensing different biomolecules through optical property abilities (e.g. fluorescence). Fluorescent silver nanoclusters also have an ability for pH-switching agglomeration and dispersion that allow for a possible control on the total solution. The synthesis of the solutions is the first step of this process, with direct reduction of a silver ion from a starting silver solution. The absorption and fluorescence spectrum of the silver nanoclusters were similar to previously reported results, which allow for the detection and characterization of glucose and vitamin B2 from fluorescence intensity changes.

WHAT AMINO ACID RESIDUE IS RESPONSIBLE FOR THE INTERACTION OF ATG11 WITH ITS AUTOPHAGY PARTNERS?

PATRICIA WOGHIREN
CHIMI SHERPA, NON-PRESENTING AUTHOR
STEVEN BACKUES, FACULTY MENTOR
POSTER GROUP 1 / ROOM 310 / 9:00 A.M. - 10:30 A.M.

Autophagy is a cellular function where formation of a double membrane vesicle isolates and transports cellular materials to the vacuole or lysosome for degradation and recycling. My research is on the autophagy protein Atg11 and its interaction with Atg9 and Atg1. My goal is to find specific amino acids on Atg11 that are responsible for the interaction with Atg9 and Atg1. A quadruple mutation was made in Atg11 and our results showed that Atg11's interaction with Atg9 and Atg1 was disrupted by this mutation. For specificity, double mutants were made, but gave no disruption in interaction. Triple mutants are currently being tested to see if they are sufficient to disrupt the interaction.

COMMUNICATION, MEDIA AND THEATRE ARTS

A WRINKLE IN DESIGN: AN EXPLORATION OF FOLEY ARTISTRY AND SOUND CREATION

FRANKIE CRAMER
DUSTIN MILLER, FACULTY MENTOR
CROSSING LINES DESIGN EXPO / ROOM 300 / 9:00 A.M. - 4:00 P.M.

A Wrinkle in Design: An Exploration of Foley Artistry and Sound Creation is an overall exploration of sound design and its techniques, seamlessly blending Foley artistry, instruments, and modern technology. This project pioneers the convergence of these realms, employing natural techniques to create a practical yet distinctive sonic landscape. Foley becomes a co-creator, its everyday sounds intricately woven with instruments to create atmosphere and magical effects. Making everyday sounds with non-everyday items, the project serves as a blueprint for all of my sound designs. My designs challenge conventions, celebrating the artistry of sound in a unique, immersive, and universally resonant way.

ANALYSIS OF OCCUPY WALL STREET AS A SOCIAL MOVEMENT

CHARITY DILLARD
ANKE WOLBERT, FACULTY MENTOR
ORAL SESSION A / ROOM 352 / 9:45 A.M.

Occupy Wall Street was a social movement spanning from September 17th – November 15th, 2011. While the movement originated in Manhattan, smaller groupings of the movement took place around the world all with one promoted purpose, to protest the wage gap and corporate corruption. The following is a communications analysis of the overall success of the social movement, its impact on the world, as well as future social movements. To do this, the strategies used during the protest are analyzed using the strategies of agitation and control as outlined by Bowers et al. (2010) in *The Rhetoric of Agitation and Control*.

ART INTEGRATION: UNLOCKING CREATIVITY THROUGH EMBODIED LEARNING

SARAH HOLTZ
MERIAH SAGE, FACULTY MENTOR
ORAL SESSION B / ROOM 320 / 10:30 A.M.

This presentation explores the transformative power of art integration in education, serving as a bridge to overcome challenges. By blending artistic expression with academic content, it enriches the curriculum, promoting creativity. Central to this approach is embodied learning, emphasizing that engaging the mind and body enhances the learning experience. The presentation advocates for lifelong learning through art integration, positioning it as a dynamic tool to nurture creativity and address educational obstacles. It encourages educators to use innovative strategies for an enriched education, empowering students to become lifelong learners ready to navigate future complexities.

HOW PROFESSIONAL ATHLETES COMMUNICATIVELY MANAGE UNCERTAINTY

LUKE LASS
DENNIS O'GRADY, FACULTY MENTOR
ORAL SESSION C / ROOM 320 / 1:30 P.M.

Previous research has examined the kinds of uncertainty college student-athletes face and how they manage this ambiguity communicatively. In this study, public statements of professional athletes facing uncertainty are analyzed to compare and contrast their communication with the college student sample.

SOCIAL MEDIA USE IN COURTROOMS

EMMA OWENS
SADAF ALI, FACULTY MENTOR
ORAL SESSION D / ROOM 320 / 3:30 P.M.

There is a strong public interest in spreading information regarding judicial proceedings. When it is believed that attending court sessions would serve the public interest, journalists do so. The media's duties involve covering the public interest and important stories and holding those in positions of authority accountable. More sophisticated uses of social media have been made to spread misinformation and sway public opinion. The Depp v. Heard defamation trial demonstrated the expanded use and power of social media after a highly publicized trial airing entirely on television allowed the most private details of two people's lives to be broadcast.

COPYRIGHT (TAYLOR'S VERSION): CASES OF OWNERSHIP IN POPULAR MUSIC

FRANK REMSKI
SADAF ALI, FACULTY MENTOR
ORAL SESSION C / AUDITORIUM / 2:00 P.M.

Who owns music? The answer depends on the contract and the people involved. Although there are specific copyright laws in the U.S., the specifics often vary from artist to artist, contract to contract, and label to label. Sometimes artists have full ownership over their music, sometimes artists use pieces of other's music in their own art, and sometimes artists have to recreate their work from the ground up. These issues are demonstrated in case studies of popular musicians such as Beyoncé, Nicki Minaj, Tracy Chapman, Olivia Rodrigo, Ed Sheeran, Marvin Gaye, Dua Lipa, Taylor Swift, Prince, JoJo, Rina Sawayama, Matty Healy, Justin Bieber, and Katy Perry.

CHAPTERS OF CREATIVITY: ENSURING THE CONTINUED GROWTH AND SUSTAINABILITY OF EMU AMA'S BRAND IDENTITY

OLIVIA ROBINSON
DENNIS O'GRADY AND SUSAN BOOTH, FACULTY MENTORS
ORAL SESSION C / AUDITORIUM / 1:45 P.M.

In 2022, The EMU Arts Management & Administration (AMA) Program unveiled its new landing page, branding, & future goals. A project in its third year of development, EMU AMA has worked with EMU's School of CMTA, AMA alums, EMU's Amplifying the Arts, & Washtenaw Community College to establish its identity within the university & in the greater community. This presentation intends to share AMA's most recent marketing strategies & its goals for 2024 & beyond. It will report on the recent design & distribution of new marketing materials, its PR internship opportunity, a 2023 national advertising campaign, its published alum interviews, & collaborations with its WCC affiliation program.

ASSISTANT PROJECTION DESIGN SHOWCASE FOR CYRANO DE BERGERAC

SARAH WEBB
JEROMY HOPGOOD, FACULTY MENTOR
CROSSING LINES DESIGN EXPO / ROOM 300 / 9:00 A.M. - 4:00 P.M.

This film project is a documentation of the production process for the projection design in the theater rap-poetry show Cyrano de Bergerac. Projection design involves projecting both still and moving images during the show. The film documents the system design, creation and utilization of these images, setting up equipment, and production images. The filmed process includes meetings between the production's head designer and assistant designer to document collaborative efforts. The Assistant Projection Designer will create the film in conjunction with the academic fields of Digital Media Production and Entertainment Design and Technology.

COMPUTER SCIENCE

CODECONTEXT: CONTEXT-AWARE REPRESENTATIONS FOR CODE AND COMMENTS

MOHAMMAD ARJAMAND ALI
SIYUAN JIANG, FACULTY MENTOR
ORAL SESSION D / ROOM 352 / 4:00 P.M.

In the ever evolving field of software development, understanding and maintaining complex codebases is crucial. Existing source-code machine learning models aid this, yet they often overlook an important factor: the code's context. Our research focuses on leveraging external contextual information to enhance source-code model performance. We've developed a data pipeline that utilizes CodeQL to extract contextual information from the CodeSearchNet dataset and developed CodeContext, a transformer model that integrates context with code in an effective manner. This approach promises to enhance code comprehension and maintenance, marking a significant advancement in software development tools.

AI TEXT CLASSIFICATION USING ENSEMBLE TRANSFORMERS

BRIAN CONG
OURANIA SPANTIDI, FACULTY MENTOR
ORAL SESSION D / ROOM 330 / 3:00 P.M.

With consumer ease of access to large language models like ChatGPT, the need for differentiating between AI generated and human models is now a more critical task than ever. While there is a capability gap between large language models and ability of the average person to discriminate between human and AI texts, this paper outlines an approach involving enhancing transformer architectures with human generated classification features in order to outperform available contemporary commercial models in the task of text classification.

FIND A WAY!

BO FRENCH, VICTOR TYLER JR.
ANDRE KASHLIEV, FACULTY MENTOR
POSTER GROUP 1 / ROOM 310 / 9:00 A.M. - 10:30 A.M.

We were tasked with figuring out a computer program to navigate a drone through a maze of any structure without any manual assistance from a pilot. This issue demands critical thinking and a solution applicable to various test cases. We designed a computer algorithm that directs the drone to move in a new direction whenever a wall is detected. The algorithm uses a triple nested loop that checks various conditions to determine which way the drone will turn and move. We call this algorithm Cupid Shuffle. We implemented this in Python and tested it with real drone flights in a Computer Science research lab in Pray Harrold.

PSST! SECURE MAILBOX SERVICE AND TWO-STEP AUTHENTICATION UTILIZING UDP NETWORKING SOCKETS IN C

ARIE GENTRY
ELSA POH, FACULTY MENTOR
POSTER GROUP 1 / ROOM 310 / 9:00 A.M. - 10:30 A.M.

The User Datagram Protocol (UDP) is a series of rules that two hosts abide by to communicate over a network, such as the Internet. This project utilizes UDP networking sockets to establish a client-server relationship that serves as the basis for a secure messaging service. Users send messages encrypted using Rivest-Shamir-Adleman (RSA) encryption, which are stored on a server until the intended recipient calls to retrieve them, where they are then decrypted locally. Users must also register with a two-factor authentication program to send or receive messages. This project served both as my introduction to networking principles in a self-written program, and to the C programming language.

EXPERIMENTAL STUDY OF APPROXIMATION ALGORITHMS FOR TRAVELING SALESMAN PROBLEM

DAVID GOH
S. MANICCAM, FACULTY MENTOR
POSTER GROUP 1 / ROOM 310 / 9:00 A.M. - 10:30 A.M.

The traveling salesman problem is a well known problem in computer science and mathematics. The problem is to find a minimum length cycle that visits each node of a weighted graph. It is a difficult problem and there are no known polynomial time algorithms to solve it. In this work, we study various approximation algorithms such as random node selection, minimum node selection, minimum edge selection, multiple node look ahead, cycle building by node insertion, cycle modification by edge exchange, and multiple chain building. We study the general problem without the metric assumption. We write computer programs, perform various experiments, compare the algorithms, and report the results.

AN INVESTIGATION OF COMPUTING ESTIMATED TIME OF ARRIVAL USING DRONE TECHNOLOGY

ZIAD SABRI
ANDRII KASHLIEV, FACULTY MENTOR
POSTER GROUP 1 / ROOM 310 / 9:00 A.M. - 10:30 A.M.

Drone delivery is an emerging technology that is used to deliver packages autonomously and remotely while maintaining a consistent altitude level. This necessitates a unique approach to calculating the Estimated Time of Arrival (ETA). Calculating and reassessing accurate ETA is challenging due to the ever-changing wind, battery level, and other conditions that slow down the drone. In this project, we developed a computer program and an algorithm that continuously communicates with the drone in flight and updates ETA. We designed, implemented, and tested our algorithm using a real drone, called Cordoned Edu, and the Python programming language.

ECONOMICS

ASSESSING THE IMPACT OF THE GREAT RECESSION ON THE RUST BELT STATES: A POLICY ANALYSIS

CEDRICK CHARLES
AMANDA STYPE, FACULTY MENTOR
ORAL SESSION D / ROOM 320 / 3:00 P.M.

This study investigates the widespread economic implications of the 2007-2008 Great Recession in the Rust Belt states of Illinois, Indiana, Michigan, Missouri, New York, Ohio, Pennsylvania, West Virginia, and Wisconsin. I use historic economic data combined with information on state-level policy responses to evaluate how the Rust Belt states addressed this consequential economic event. The study utilizes data from 2005 to 2019 including state-level GDP, unemployment, income tax receipts, median income, poverty measures, and the governor's political affiliation. Specifically, I will examine the types of policies enacted and seek a more nuanced understanding of their effectiveness and results.

COMING AROUND: A COST-BENEFIT ANALYSIS OF THE VEGAS LOOP

ADRIANA HENRIQUEZ MORA
JENNI PUTZ, FACULTY MENTOR
ORAL SESSION C / AUDITORIUM / 2:30 P.M.

An ex-ante cost benefit analysis of the Vegas Loop was executed, where the possible costs and benefits of implementing the entirety of the project were quantified in monetary terms to measure the consequences of it on all members of society. The Boring Company's Vegas Loop is a tunnel system which utilizes human-controlled Tesla Model X and Y vehicles to move passengers around the city of Las Vegas, directly to their destination without additional stops. For this analysis, the considered benefits were: fares, reduced travel times, reduced emissions, and bolstering of tourism. Conversely, the considered costs included: the implementation cost, the maintenance costs, and construction costs.

ENGLISH LANGUAGE AND LITERATURE

WRITTEN IN THE STARS

KAYCEE JOHNSON
CHRISTINE HUME, FACULTY MENTOR
CROSSING LINES DESIGN EXPO / ROOM 300 / 9:00 A.M. - 4:00 P.M.

This project is an Independent Study and my Senior Project in Creative Writing. It is an in-progress poetry collection exploring the artistry of the scientific concepts related to outer space and the parallels that can be drawn between the vast out-there and our personal human experiences. It will be presented multi-modally, with visual and audio elements. My poetry aims to highlight creativity as a ubiquitous feature of our universe in ways that both scientists and everyday readers can benefit from. Selected pieces will showcase how the seemingly objective, complicated subjects of science and math contribute subjective insight and beauty to our world.

EXPLORING CAUSALITY IN NON-RESTRICTIVE ADJECTIVALS

AIDAN OZIAS
DANIEL SEELEY, FACULTY MENTOR
ORAL SESSION B / AUDITORIUM / 11:30 A.M.

Contributing to ongoing research on participial phrases, this paper examines reduced non-restrictive adjectivals with causal relationships to main predicates, particularly those containing the copula. A prototypical construction is *Mary, being a lawyer, prepared the documents*, which is interpreted to mean Mary prepared the documents *because* she was a lawyer; *Mary, a lawyer, prepared the documents* is not causal. Corpus analysis correlates some forms with stronger causality even if such an interpretation is semantically nonsensical. This paper posits syntactic explanations and explores their implications for the relationship between participial phrases and predication.

GEOGRAPHY AND GEOLOGY

RELATIVE GROUNDWATER AND PRECIPITATION CONTRIBUTION AND NUTRIENT DYNAMICS IN WETLANDS AT FISH LAKE

ROSE ALLEN
CHRISTOPHER GELLASCH, FACULTY MENTOR
ORAL SESSION D / ROOM 350 / 3:30 P.M.

Understanding the role that water chemistry and nutrients play in wetland ecosystems is crucial to wetland management and restoration. The project goal was to understand the differences between the bog and kettles at EMU's Fish Lake Environmental Education Center in terms of precipitation, groundwater input, and nutrient dynamics. Groundwater and surface water sampling occurred over 16 months. Samples were analyzed for parameters such as pH, electrical conductivity, nitrate, nitrite, and phosphorus. Data suggest that the wetlands closest to the lake are more groundwater influenced, and become more precipitation sourced towards the bog. This study supports other research at Fish Lake.

CHARACTERIZE GROUNDWATER FLOW AND RECHARGE RATES IN THE BOG AND KETTLES AT FISH LAKE

SYDNEY DAVIS, JASMINE ROSS, HALEY MURPHY, AND ROSE ALLEN
CHRISTOPER GELLASCH, FACULTY MENTOR
POSTER GROUP 2 / ROOM 310 / 11:00 A.M. - 11:45 A.M. & 1:30 P.M. - 2:15 P.M.

Knowing how water interacts with geologic material is a fundamental component of hydrogeology. This project aims to characterize the groundwater flow direction and recharge rates in the bog and kettles at EMU's Fish Lake Environmental Education Center. Fish Lake has multiple wells with leveloggers that continuously measure the water level. Previous research collected monthly groundwater and surface water samples and tested them for various nutrients. The current project will use those data, new samples, and the logged water levels to calculate recharge rates. This study will support future research at Fish Lake.

RECOVERY OF ANCIENT BIOMOLECULES FROM FOSSIL MACROALGAE ("SEAWEEDS"): A PROGRESS REPORT

ARIEL DOROGI
STEVEN LODUCA AND RUTH ANN ARMITAGE, FACULTY MENTORS
POSTER GROUP 2 / ROOM 310 / 11:00 A.M. - 11:45 A.M. & 1:30 P.M. - 2:15 P.M.

In 2018, a remarkable paper announced the recovery of original (endogenous) biomolecules from fossils of early animals approximately 560 million years old. The class of biomolecules recovered in that study are known broadly as sterols, which are themselves a subgroup of steroids. Here, a progress report is provided of a study that aims to recover similar biomolecules from 430-million-year-old fossil macroalgae from northern Michigan. This study, the first to attempt recovery of biomolecules from ancient macroalgae, is important because data of this sort has the potential to provide key biological information, including whether the fossils represent the remains of green algae or red algae.

EQUITY AND SOVEREIGNTY: CONFRONTING FOOD DESERTS IN TRIBAL COMMUNITIES

HOA LE
MICHAEL KOSCIELNIAK, FACULTY MENTOR
ORAL SESSION A / ROOM 320 / 10:00 A.M.

Food insecurity is a pervasive issue affecting diverse demographic groups, including children, the elderly, and low-income individuals. This issue is exacerbated by the existence of food deserts, a result of complex historical factors, urban sprawl, and socio-capitalism in the United States. In my presentation, I will specifically focus on the disproportionate impact of food insecurity on Tribal communities, particularly those from the Great Lakes region. By delving into the unique histories of these groups, I aim to shed light on the current status of food access within them and draw observations that contribute to our broader understanding of Indigenous food sovereignty as a whole.

COMPARISON OF PALMATOPHYCUS FROM THE SILURIAN OF MICHIGAN, ONTARIO, AND THE CZECH REPUBLIC

OLIVIA MITCHELL
STEVEN LODUCA, FACULTY MENTOR
POSTER GROUP 2 / ROOM 310 / 11:00 A.M. - 11:45 A.M. & 1:30 P.M. - 2:15 P.M.

Palmatophycus was described as a new genus of fossil alga in a 1941 report by Boucek based on specimens from Silurian-age rocks, ~435 million years old, within the Czech Republic. Two species were recognized in that report, P. kettneri and P. contractus, these differing mainly in terms of stalk width and number of side branches. Here, we report the results of a detailed morphological comparison between the Czech material of *Palmatophycus* and specimens of *Palmatophycus* recently discovered in Silurian-age rocks in Ontario and Michigan. These comparisons indicate that the Ontario specimens are similar to *P. kettneri*, whereas the Michigan specimens are similar to *P. contractus*.

IMPORTANCE OF GLACIAL TRANSPORT DISTANCE AND ROCK FRACTURES IN SCHMIDT HAMMER EXPOSURE-AGE DATING

ANNE SHEPHERD
ERIC PORTENGA, FACULTY MENTOR
ORAL SESSION D / ROOM 350 / 3:45 P.M.

Schmidt Hammers (SH) seem to be an effective tool for constraining glacial ice retreat. SH rock strength measurements (R-values) tend to be inversely related to exposure ages of glacial boulders (erratics), but many protocols for collecting and analyzing R-values exist. Several R-value measurement guidelines were tested on five erratics in southeast Michigan. Mean R-values from untreated or lightly treated rock surfaces accurately reflect rock weathering, which means that data scatter in a prior SH Great Lakes study is not related to field methodology. Erratic transport distance and degree of fracturing likely plays a greater role in the efficacy of SH studies than is currently recognized.

GEOCHEMISTRY OF QUARTZ AND RUTILE RECORD P-T-D HISTORY ACROSS THE WESTERN GNEISS REGION, NORWAY

EMILY ST. ONGE
HANNAH BLATCHFORD, FACULTY MENTOR
ORAL SESSION D / ROOM 350 / 4:00 P.M.

Earth's largest mountains are formed by the collision and deep burial (>90 km) of the crust to high-pressure/ultrahigh-pressure (HP/UHP) conditions. However, little is known about how large volumes of (U)HP rocks respond to exhumation. To investigate the early exhumation history of deformation in Norway's Western Gneiss Region UHP terrane, samples of deformed gneisses and eclogites were studied using paired Ti-in-quartz and Zr-in-rutile thermobarometry. Results indicate temperature conditions of early exhumation are highest in the northern part of the terrane and decrease southward, all at similar pressures. Previously established UHP conditions for the terrane indicate a different trend.

OUTPRICED: AN IN-DEPTH ANALYSIS OF AMERICA'S AFFORDABLE HOUSING CRISIS

ELLA YOKOM
RJ KOSCIELNIAK, FACULTY MENTOR
ORAL SESSION A / ROOM 320 / 9:00 A.M.

With the general cost of living continuing to rise, housing instability due to a lack of affordability is becoming a consistent reality for millions of Americans. The goal of this project was to determine why such a crisis arose and how it continues to impact the nation. The issue disproportionately affects people of color and low-income communities which is due to systemic racism that deems these groups as being undesirable. This in turn results in widespread evictions and homelessness. Therefore, affordability has evolved from an issue of price into an issue of oppression on a widescale level. It sets the precedent that homes are reserved for the wealthy and elite.

HISTORY AND PHILOSOPHY

WINNIE MADIKIZELA-MANDELA: THE "BALANCE SHEET" OF A LEGACY

PAIGE ABDULLAH-ALBASIR
JOSEPH ENGWENYU, FACULTY MENTOR
ORAL SESSION B / ROOM 330 / 10:30 A.M.

The late Winnie Mandela is a controversial personality in South African politics. Imprisoned, tortured, and banished for her anti-Apartheid activism, she is also at times portrayed as flawed, indeed, as a villain linked to murder. This paper will, therefore, attempt to construct a "balance sheet" of Winnie's political career to determine how the positives square with the rather controversial negatives. The paper concludes that, not only do the positives outweigh the negatives; actually, it is now possible to refute some of the negative accusations against Winnie Madikizela-Mandela.

COMPROMISE AMIDST CHAOS: HANS WELSER'S BATTLE FOR COMPROMISE IN 16TH CENTURY AUGSBURG

ZACHARY ANDERSON
MARK WHITTERS, FACULTY MENTOR
ORAL SESSION A / ROOM 350 / 9:30 A.M.

In the early 16th century, the city of Augsburg was on the brink of political and revolutionary meltdown. The Roman elites of Augsburg commanded the inner circle to enforce fasting during the season of Lent. Due to this command, the city council members were pressured by revolters to form a compromise that aligned with the city's interests. Hans Welser, Patrician Mayor and leader of the Swiss Faction, presented to the council a signed petition from non-Catholic council members advocating for compromise. If the members could not come to a compromise, they faced an invasion from the devout Catholic Holy Roman Emperor Charles V.

CONSEQUENCES OF THE BEECHER-TILTON SCANDAL ON THE 1874 MICHIGAN WOMEN'S ENFRANCHISEMENT REFERENDUM

ANNA BENNETT
JOHN WEGNER, FACULTY MENTOR
ORAL SESSION D / ROOM 320 / 3:45 P.M.

In March 1874, an amendment to Michigan's constitution legalizing woman suffrage passed the legislature with a large majority. However, this initiative was overwhelmingly defeated by voters in November. What could have caused such a defeat? Among the reasons that swayed Michigan voters was the titillating New York "Beecher-Tilton Scandal" that had captured the nation's attention in the newspapers. This scandal involved prominent leaders of the women's rights movement, such as Elizabeth Cady Stanton and Susan B. Anthony, and the very famous clergyman, Henry Ward Beecher. The gossip generated by the scandal damaged reputations and set back the women's rights movement in Michigan by decades.

THE USE OF IMAGERY IN EARLY SIXTEENTH CENTURY GERMAN WITCH HUNTS

CARSYN BRUNS
RONALD DELPH, FACULTY MENTOR
ORAL SESSION B / ROOM 330 / 11:15 A.M.

In sixteenth-century Germany, thousands of women faced trials for the crime of witchcraft. Several German artists such as Hans Baldung Grien, produced artwork depicting witches in hideous fashion, often performing heinous acts. The witches in question were typically wearing little clothing and portrayed as elderly and unsightly. Why did imagery reflect the fears and prejudices of people in sixteenth-century Germany? This paper demonstrates that these works reflected the anxiety and judgment in sixteenth-century Germany, due to the fear of uncontrolled female sexuality, panic over fertility and impotence, and unease of unrestricted female power that threatened the patriarchal structure.

DROLLERY, DRINKING, AND DERVISHES: ALCOHOL CONSUMPTION AND PEDAGOGICAL HUMORISM IN BEKTASHI PRACTICE

ZAYAN CHAUDHRY
MARK WHITTERS, FACULTY MENTOR
POSTER GROUP 3 / ROOM 310 / 2:45 P.M. - 4:15 P.M.

The Bektashi Order is one of the most well-known Sufi orders. The order is perhaps better regarded for the unique practices that are often attributed to them: drinking and imparting lessons through humor. While these supposed practices may receive casual attention, the order has been subject to little scholarly work, except on loftier theological and historical topics. This presentation is based on observation at the nearby Albanian American Bektashi Monastery in Taylor, as well as the reading of texts written by a classically educated monk. This poster will address the incidence of the supposedly once ubiquitous practices of drinking and pedagogical humourism in Bektashi religion.

DEMOCRACY IN DECLINE: THE RISE OF SULLA AND ROME'S FIRST CIVIL WAR

RILEY COFFEE
RONALD DELPH, FACULTY MENTOR
ORAL SESSION D / ROOM 320 / 4:00 P.M.

One single event did not cause the fall of the Roman Republic—its collapse was instead the result of decades of political strife. The beginning of the end can be attributed to the unusual career of one man, Lucius Sulla. Despite the accomplishments of his military service many in Rome thought him an outsider unfit for advancement. In 83 B.C.E Sulla took up arms against his countrymen and plunged Rome into a bloody civil war. This presentation explains why Sulla decided to spill the blood of his fellow Romans, and how his rule served as a template for future tyrants.

UNDER SIEGE: THE HISTORIC MILITARY ACTIONS SURROUNDING DETROIT

RILEY COFFEE
JOHN WEGNER
ORAL SESSION D / ROOM 320 / 3:15 P.M.

Detroit was the historical commercial and cultural center of French-held Michigan. Being at the forefront of trade and tribal relations opened the fort up to military conflict mostly stemming from intertribal warfare of French allied nations. This presentation chronicles the Sac and Fox Rebellion, tracing the migration of the Fox to French Michigan and discussing the mounting hostility. Claims of raiding, overhunting, and territorial violations would eventually boil over into a multiday-long conflict that expelled the Fox from Lower Michigan.

DESCARTES AND GOD

PRIYA GHOTANE
KRISOPHER PHILLIPS, FACULTY MENTOR
ORAL SESSION B / AUDITORIUM / 11:00 A.M.

In Descartes' third meditation, he attempts to prove the existence of an all-perfect being, which he refers to as God. This paper focuses on his causal proof for God's existence, which is an examination of the relationship between ideas and reality. The foundation of this proof lies in his idea of perfection and a perfect being, which is characterized as "infinite, immutable, omniscient, and omnipotent." Rather than conceptualizing God as one singular being, this perfection may be manifested in multiple entities each containing one of the traits attributed to perfection.

VIOLENCE, RESISTANCE, AND SURVIVAL

PARKER GREGG
MARK HIGBEE, FACULTY MENTOR
ORAL SESSION D / AUDITORIUM / 3:00 P.M.

The Night Watchmen is a Pulitzer Prize-winning book by Louise Erdrich, and *The Heartbeat of Wounded Knee* is the first one-volume survey of North American indigenous history by David Treuer. Both grapple with how America's history of violence has affected and shaped indigenous communities and its impact on indigenous cultures and experiences. Both books challenge white perceptions of indigenous people and their history by remaining focused on indigenous love, life, resistance, and survival.

THE EAST AFRICAN COAST, THE INTERIOR AND THE INDIAN OCEAN, 1000-1500

SABRINA KEAN
JOSEPH ENGWENYU, FACULTY MENTOR
ORAL SESSION B / ROOM 352 / 11:30 A.M.

The East African coastal city settlements and islands developed contacts with West and East Asia, between 1000 and 1500. A wealthy civilization then thrived between the regions via the Indian Ocean without any significant political state formation. This paper documents the major characteristics of this civilization: the geographic challenges, international trade, and the blend of cultures between the Asian visitors and their African hosts. Moreover, gold and ivory flowed from the interior of East and Central Africa to fuel the trade with the Orient. East Africans, in turn, imported and extensively consumed luxury goods from their trading partners.

SITUATED COGNITION: A HYBRID APPROACH TO THE SYMBOL GROUNDING PROBLEM

AMARA KWESIAKU
JOHN KOOLAGE, FACULTY MENTOR
ORAL SESSION B / AUDITORIUM / 11:15 A.M.

The symbol grounding problem is an argument concerned with how symbols acquire meaning and relay such to a cognitive agent. I begin by explaining the problem and how it presents a challenge in the development of plausible theories about cognition, focusing on the problem's implications for nonrepresentational theories about cognition. I then introduce the concept of situated cognition, a position that is not strictly representational or nonrepresentational, as an alternative solution to the symbol grounding problem.

LEYMAH GBOWEE: HOW PEACEMAKING AND PEACEKEEPING CHANGED LIBERIA AND THE WORLD

NICOLE LOSHE
JOSEPH ENGWENYU, FACULTY MENTOR
ORAL SESSION B / ROOM 352 / 10:45 A.M.

Liberia was tragically impacted by a Civil War, 1999-2003, during which child soldiers were exploited and abused especially by the Charles Taylor government and even the opposition. Leymah Gbowee led the women of Liberia in championing *peacemaking*. She organized sit-ins and demonstrations in Monrovia, did more of the same during negotiations in Accra, and also significantly aided the *peacekeeping* disarmament of the child soldiers at the end of the war in 2003. Gbowee became the 2011 Nobel Peace Laureate. This paper chronicles these events, but gives a rather unexpected explanation of the roots of Leymah Gbowee's power in changing the world!

THE SEAT'S EDGE: RADICAL BLACK THEATRE IN THE NEW DEAL

ELISE NEHASIL
ASHLEY JOHNSON BAVERY, FACULTY MENTOR
ORAL SESSION D / AUDITORIUM / 3:30 P.M.

Drafted and founded as a branch of the Works Progress Administration within the New Deal in 1935, The Federal Theatre Project was the first government funded theater program in the United States. The FTP offered a progressive platform for African American artists, as it sought to include minority creatives and present dramatic and realistic characterizations of the African American experience. The Federal Theatre Project drew attention to the presence of African American artists by enforcing anti-discrimination and desegregation policies. Using archival collections, newspaper articles, and photographs, I will demonstrate the FTP's creation of a diverse, American theater culture.

WEDDED TO THE RENAISSANCE: MARRIAGE AND MARRIED WOMEN IN FIFTEENTH CENTURY FLORENCE

ELISE NEHASIL
RONALD DELPH, FACULTY MENTOR
ORAL SESSION B / ROOM 330 / 11:30 A.M.

Between the thirteenth and fifteenth centuries, upper class women occupied a nuanced domestic and social sphere in Florence. The social status, wealth, and power of their families depended on alliances created by their marriages, which were arranged by their parents. After marriage, these women were expected to take on the roles assigned to them by the patriarchy: becoming good wives and mothers. Despite the constraints of these limited domestic roles, some women were able to exercise a great deal of power and influence in Florentine society.

EMU'S COLLEGE OF EDUCATION AND PLACE-BASED PEDAGOGY WITHIN CONCURRENT HISTORIES

ASTERIUS OLDS
ASHLEY JOHNSON BAVERY, FACULTY MENTOR
ORAL SESSION B / ROOM 320 / 10:45 A.M.

This paper situates Eastern Michigan University's prevalence regarding Place-Based Education (PBE) and teacher preparation in a historical manner. Within the concurrent histories of federal PreK-12 school legislation, local innovation, and testing culture, PBE has attempted to work within the limits of legislation and testing culture as an innovative pedagogy for the benefit of the students. Advocacy starts in teacher preparation. This presentation explores why EMU has such a connection to PBE and pedagogical innovation.

DEVELOPMENT OF NATIONALIST POETRY DURING THE NAHDA (1870-1950)

ASTERIUS OLDS
MATTHEW PENIX, FACULTY MENTOR
ORAL SESSION C / ROOM 350 / 1:30 P.M.

This presentation explores the development of Syrian-Lebanese and Egyptian nationalist poetry during the Nahda (1870-1950 CE). The national uprisings and literary development formed separately due to the sociopolitical turmoil during and after World War I. The first front in Syria-Lebanon focused first on a unique literary voice following a style of European romanticism that built into the Syrian Nationalist Movement, while the second front in Egypt evolved from Egyptian Nationalism that culminated in Nationalist romanticism.

HIV/AIDS DURING THE TWILIGHT OF APARTHEID IN SOUTH AFRICA

LAUREN SIMPSON
JOSEPH ENGWENYU, FACULTY MENTOR
ORAL SESSION B / ROOM 352 / 11:15 A.M.

From the first documented case of HIV/AIDS in South Africa in 1985 to the end of the presidency of Thabo Mbeki in 2008, South Africa was at a crossroads concerning the spread of HIV/AIDS in the country. This paper highlights four critical areas of concern in the rapid spread of HIV/AIDS in South Africa at that turn of the century as follows: (i) The creation of an economic system rooted in the male migrant labor system, (ii) a backward unequal Bantu Education system deficient in HIV/AIDS education, (iii) inequalities in healthcare resulting in disparities in opportunities for early detection and treatment, and (iv) denial by a significant number of Black people, including former president Thabo Mbeki.

SEXUALITY AND GENDER IN THE OTTOMAN EMPIRE

STEPHEN VANTUYLE
MATTHEW PENIX, FACULTY MENTOR
ORAL SESSION B / ROOM 330 / 10:45 A.M.

The Ottoman empire was a rich Islamic empire that existed from the Fourteenth to the Twentieth Century. At its height it spanned from its heartland in Anatolia, south to the Arabian Peninsula, north to Balkans and central Europe, and west to Egypt and Tunisia. It was an empire comprised of a diverse collection of religions, races, and ethnicities. It is not surprising that the Ottoman Empire also had a fascinating and complex history regarding the phenomena of homosexuality and people with varying gender identities. This presentation will uncover the truth about why open attitudes toward sex and gender in Ottoman society were tolerated in culture and law.
Oral Session B / Room 330 / 10:45 a.m.

RIVERS OF WAR

JOSLYNN WARD
MATTHEW PENIX, FACULTY MENTOR
POSTER GROUP 3 / ROOM 310 / 2:45 P.M. - 4:15 P.M.

In the records of American history, the War of 1812 often stands in the shadows of larger conflicts, though the significance is highlighted through events such as the Battle of the River Raisin. I explored the complexities of this engagement with insights from historians and soldiers from the battle. Challenges, misjudgments, and the damaging aftermath were revealed. The legacy of the battle, etched in monuments and commemorative initiatives, speaks to its enduring impact on American history – extending beyond military significance to political and cultural realms. The Battle of the River Raisin emerges as a crucible sacrifice, resilience, and an intense chapter in the War of 1812.

CAMELS, CLERICS, AND COMMERCE: THE GROUNDING OF ISLAM IN PRE-COLONIAL MEDIEVAL WEST AFRICA

TORI ZREMSKI
JOSEPH ENGWENYU, FACULTY MENTOR
ORAL SESSION B / ROOM 352 / 11:00 A.M.

Pre-colonial medieval Sudanese States of West Africa were significantly affected by Islam. This was made possible by camels, clerics, and commerce, in the form of The Trans-Saharan Trade. This paper narrates and analyzes the diffusion of Islam to the West African ruling classes, the elite, and ultimately the urban and rural masses. Muslim clerics and missionaries strengthened the impact of the religion by preaching not only the Pillars of Islam, but also usable Islamic Law. In turn, West Africans embraced and Africanized Islam because of the compatibility of the religion with African culture. These attributes were unique and positive to West Africa.

JEWISH STUDIES

WIFE, MOTHER, FEMINIST, DEMON: A BRIEF SOCIAL HISTORY OF LILITH

MEGAN BERNSTEIN
ROBERT ERLEWINE, FACULTY MENTOR
ORAL SESSION A / ROOM 350 / 9:15 A.M.

This research will culminate in a paper outlining the social history of Lilith, the mythological mother of demons and supposed first wife of Adam. Beginning with origins in Sumerian and Babylonian mythology, this paper focuses on examining the roles Lilith has played in different cultures and religions throughout history. Particular attention will be paid to Lilith's role in Jewish folklore and magic, including perceptions of young women, mothers, and female sexuality in Judaism. Finally, in American pop culture, the ways in which the meanings and focus of the myth of Lilith have both shifted to reflect evolving social values will give an understanding of how it still functions today.

YAHWEH AND UGARIT: THE DEITIES AND MYTHS THAT MADE GOD

JAMES KIRK
ROBERT ERLEWINE, FACULTY MENTOR
ORAL SESSION A / ROOM 350 / 9:00 A.M.

In Northern Syria in 1928, several stone tablets were excavated at the ancient site of Ugarit. Some of these tablets told religious epics with their own pantheon of gods, goddesses, and monsters. Many of these deities, myths, and religious concepts were absorbed into Yahweh as the Hebrew Bible presents him. By further exploring these connections, a more rounded historical picture of the Biblical God is gained. This historical picture of the Biblical God adds to the discussion of the formation of monotheism by highlighting how deep its polytheistic roots go and how integral they are to the Hebrew Bible.

THE COVENANT AS FORMULA: EXPRESSING THE NOAHIDE & ABRAHAMIC COVENANTS THROUGH MATHEMATICAL MODELS

OLIVIA ROBINSON
ROBERT ERLEWINE, FACULTY MENTOR
POSTER GROUP 1 / ROOM 310 / 9:00 A.M. - 10:30 A.M.

This paper, written for the Honors College, reviews the two main unilateral covenants found in Genesis and the Hebrew Bible. *The Covenant as Formula* argues that this heuristic device has an openness that can be observed in its continuous interpretations, reinterpretations, and Midrash. Therefore, this paper presents two mathematical models, displaying The Noahide covenant as using simplification to express a relationship between God and humanity and The Abrahamic Covenant as employing multiplication to introduce the new variables of land, progeny, and blessing. This presentation depicts a consistent but changing relationship with God and a new way to compare covenantal literature.

MATHEMATICS AND STATISTICS

ASSESSING NORMALITY OF SAMPLING DISTRIBUTIONS VIA SIMULATION

SOLOMON AMEYAW
KHAIRUL ISLAM, FACULTY MENTOR
ORAL SESSION D / ROOM 352 / 3:30 P.M.

Sampling distribution plays an important role in estimation, test of hypothesis, and making statistical inference. It appears that sampling distribution of sample mean and proportion are normal. What about the sampling distribution min, max, standard deviation (sd), coefficient of variation (cv), range, etc.? Are they all normal? Indeed, sampling distribution of many of these statistics are unknown. As such we rely on simulation for making inference. In this study, we seek to assess sampling distribution of various statistics via simulation and evaluate for normality. We simulate sampling distributions of statistics from normal and non-normal distributions to assess their properties.

MODEL BASED PREDICTION OF HOUSING PRICES

NANCY GAGE
TANWEER SHAPLA, FACULTY MENTOR
ORAL SESSION A / ROOM 320 / 9:15 A.M.

House price depends on a number of socioeconomic phenomena. The prediction of house price is important to the stakeholders, and is a challenging task. In this presentation, we attempt to model house price on several predictors such as crime rate, air quality, proximity to highways, tax rate, distance to employment centers, etc., available in an underlying house price data. We seek to find the best model by sub-setting a group of predictors on the basis of model selection criteria.

ADAPTING EXISTING MACHINE LEARNING MODELS FOR EFFICIENT BIOCHEMISTRY IMAGING ANALYSIS: A CASE STUDY

EMILY MARRON
STEVEN BACKUES AND ANDREW ROSS, FACULTY MENTORS
ORAL SESSION D / ROOM 330 / 3:15 P.M.

Biochemistry researchers need to segment transmission electron microscope images to determine the size of autophagic bodies in yeast cells. This task is quite time-consuming to do by hand, so they wanted help from a machine learning (ML) model; this is difficult since our dataset is small (about 250 images). So, we tried to adapt an existing model to our needs. We found Cellpose 2.0's CPx model to be the closest match. After training this model with our data, it performed as well as our researchers did. This model can be used by itself for image analysis, or its output can be double checked by a human expert, which is still 5 times as fast as having the human expert do it alone.

COMPARING PREDICTABILITY OF LINEAR MODELS

CIARA WHEELER
KHAIRUL ISLAM, FACULTY MENTOR
ORAL SESSION D / ROOM 352 / 3:15 P.M.

Various models such as simple-linear, linear-log, log-log linear, etc. are useful in practice depending on the nature of the data and the assumed relationship between the response and predictor. When using different models, the criteria of predictability such as coefficient of determination, root mean squared error and prediction error rate helps to find the best model. In this study we compare predictability of four different models in the light of a given set of criteria. By predicting sales via advertising cost in Youtube, using the marketing dataset from the R datarium package, this study suggests that the log-log model performs best among all underlying models given a single predictor.

MUSIC AND DANCE

THE NATURE OF MARIMBA: KEIKO *ABE'S WIND IN THE BAMBOO GROVE*

JONAH DEPRIEST
JOHN DORSEY, FACULTY MENTOR
ORAL SESSION A / AUDITORIUM / 10:00 A.M.

Wind in The Bamboo Grove is one of five compositions published in Keiko Abe's first collection of marimba solos titled *Works for Marimba* in 1984. Keiko Abe is widely recognized as one of the most influential marimba performers and composers of all time and is credited with pioneering the marimba as a serious solo instrument. Through her improvisational nature of writing and playing, she evokes intense imagery and emotion. Many of her compositions are influenced by Japanese culture, nature, and music. This presentation will examine the intricacies of Keiko's improvisational method of composition through her work for solo marimba.

MUSIC WITHIN ME: THE IMPACT OF MUSIC ON THE EXPERIENCE OF CHILDBIRTH

CLAIRE GUILFORD
DEBRA GOMBERT, FACULTY MENTOR
ORAL SESSION A / AUDITORIUM / 9:15 A.M.

With the rise of medical music therapy, music has been increasingly used to positively contribute to the overall experience of childbirth. The period of pregnancy and childbirth can be one of the most intimate and meaningful passages in a person's life, however, it can also be intensely painful and potentially traumatic. This presentation will review the literature about the efficacy of music as a nonpharmaceutical pain management alternative and the impact of music on overall maternal satisfaction. A live presentation of music will give attendees the opportunity to experience the physiological effects of music.

VIOLIN CONCERTO NO. 4 IN D MAJOR, K.218, MVT. 1 "ALLEGRO"- W.A. MOZART

EMMA HAKKEN
DANIEL FOSTER, FACULTY MENTOR
ORAL SESSION A / AUDITORIUM / 9:45 A.M.

During his short life, Wolfgang Amadeus Mozart (1756-1791) was a prolific composer with a large and expansive range of works, including 41 finished symphonies, 27 piano concerti, 5 violin concerti, and more. The first movement of his fourth violin concerto is nicknamed the "military" Mozart concerto. The name is inspired by the fanfare heard from the orchestra (or piano) in the beginning, which is later expanded on by the soloist. The structure of this concerto is modeled loosely on the works of Luigi Boccherini, but still shows large differences from typical concerti of the time, showing his creativity as a composer and his contributions to expanding the depth of classical music.

THE EXPERIENCES OF GENDER NON-CONFORMING BAND DIRECTORS IN THE WORKPLACE

VICTORIA-ELIJAH KEETON
HEATHER SHOULDICE, FACULTY MENTOR
ORAL SESSION A / AUDITORIUM / 9:00 A.M.

With the gender expansive community growing, the number entering the education field is likely also increasing. This research will explore the unique experiences of gender non-conforming band directors using a multiple case study design to provide guidance for music educators facing similar challenges as well as to suggest ways to make the education field more welcoming for gender expansive individuals. Maximum variation sampling will be used to include interviewees at different phases in the teaching lifespan, in different regions of the U.S., and at different points in their gender journeys.

HOW THE COMPOSITIONAL STYLE OF DEBUSSY INFLUENCED THE *HOMMAGE À C. DEBUSSY* FOR CLARINET BY BÉLA KOVÁCS

MARCUS MENDEZ-GIBSON
SANDRA JACKSON, FACULTY MENTOR
ORAL SESSION B / AUDITORIUM / 10:30 A.M.

Hommage à C. Debussy was published in 1994 by Hungarian composer and clarinetist, Béla Kovács. Kovács (1937-2021) performed as principal clarinetist in the Budapest Philharmonic Orchestra and taught as a Professor of Clarinet at the Franz Liszt Academy of Music. Claude Debussy (1862-1918) was a composer during the late 19th and early 20th century who was one of the leaders of the musical movement known as impressionism. This presentation will look at the compositional style of Debussy and how Kovács used musical concepts from Debussy's solo work, *Première Rhapsodie* as well as other works as inspiration to compose *Hommage à Claude Debussy* in his honor.

PERCEPTIONS OF THE VOICE AS EXPRESSIONS OF GENDER AND IDENTITY IN TRANSGENDER ADULTS

ARIEL CONTRERAS PETERSON
THERESA MERRILL, FACULTY MENTOR
ORAL SESSION A / AUDITORIUM / 9:30 A.M.

This survey seeks to understand transgender adults' perceptions of and relationship to their voice as an instrument of expressive communication and personal identity. 417 responses were analyzed with existing and revised (modifications to eliminate gendered language and to promote inclusivity) assessments. Findings have potential to expand vocal assessment tools and to inform a model of practice for music therapy with transgender adults. This study lays a foundation for a queer dialectic model encompassing intersecting dimensions of the Voice.

PHYSICS AND ASTRONOMY

SIMULATING THE PATH OF A BIKE RIDER USING COMPUTER MODELING

HAMZAH AL THANI
DAVE PAWLOWSKI, FACULTY MENTOR
POSTER GROUP 1 / ROOM 310 / 9:00 A.M. - 10:30 A.M.

The purpose of this project is to explore the relationship between the power output and the aerodynamic drag of a biker along a given bike route. Starting with basic parameters for the biker (mass, power output, etc.) and initial conditions for the bike route (elevation, length, etc.), I will write a computer model that simulates the position, distance, and velocity of the biker over time. After quantifying the effects of aerodynamic drag as well as the power output of a biker, I will see how I could optimize those two factors to result in faster lap times for a given route.

ENHANCING A GLOBAL CLIMATE MODEL OF THE UPPER ATMOSPHERE OF MARS

JOUD BAMEHRIZ
DAVE PAWLOWSKI, FACULTY MENTOR
POSTER GROUP 1 / ROOM 310 / 9:00 A.M. - 10:30 A.M.

In this study, a comparative analysis is applied to investigate the behavior of oxygen ions in Mars's atmosphere during dynamic periods. I accomplish that by running a global climate model that is designed to simulate the different interactions in the upper atmosphere of Mars. Utilizing such a sophisticated model allows for a better understanding of the martian atmosphere. The obtained simulation results are compared with observational data acquired by NASA's MAVEN mission, which helps identify further improvements to the atmospheric chemistry scheme used by the model. As a result, the model will better reflect realistic data, thus giving access to accurate future simulations.

STRATOSPHERIC BALLOONING DURING ECLIPSES

ROSALYN FRIEND, LAUREN EICHER, GIANLUCAS SHERRILL VELARDE, AND HANNAH POPOFSKI
DAVID PAWLOWSKI AND THOMAS KOVACS, FACULTY MENTORS
POSTER GROUP 1 / ROOM 310 / 9:00 A.M. - 10:30 A.M.

Atmospheric gravity waves occur when the equilibrium state of the atmosphere is disrupted. During our first ballooning mission to observe these gravity waves in the western United States, we observed strong updrafts due to westerly winds interacting with nearby mountains. To collect the needed data, we flew a scientific weather balloon to an altitude of 85,000 feet with payloads to measure temperature, speed, and position. We will run another ballooning mission to collect more data and observe the presence of atmospheric gravity waves during the April 8th, 2024 total solar eclipse. By flying a weather balloon, we can understand the mechanisms of energy transfer throughout our atmosphere.

TRAJECTORY COMPUTATIONS INSPIRED BY SPINLAUNCH AND THE IMPACTS OF LOW-EARTH ORBIT SATELLITES

NATHAN G. GUERRA
ERNEST BEHRINGER, FACULTY MENTOR
ORAL SESSION D / ROOM 350 / 3:15 P.M.

SpinLaunch is a company that is making the world's first giant slingshot to launch satellites into low-Earth orbit (LEO), 220 miles above the ground. We have used Excel, Python, and WebVPython to simulate increasingly complex SpinLaunch rocket trajectories to learn more about their dependence on atmospheric and initial conditions. We will describe these simulations and some possible consequences associated with increasing the number of LEO satellites. We will also discuss current and potential impacts of these satellites on ground-based astronomy, and on launches of planetary or deep space probes, as well as ways to reduce these impacts.

RADIO ASTRONOMY: 21 CM HYDROGEN LINE TELESCOPE

MILES MERCIER
DAVID PAWLOWSKI, FACULTY MENTOR
POSTER GROUP 1 / ROOM 310 / 9:00 A.M. - 10:30 A.M.

Radio telescopes allow astronomers and physicists to gather data from distant celestial objects by observing light in ways the unaided human eye cannot. The overarching goal of this project is to construct and collect data using a parabolic dish radio telescope. The radio telescope used can observe at a frequency of 1420 MHz, capturing photons released during the spin-up to spin-down of hydrogen atoms. Detecting the hydrogen line has given astronomers the ability to map the spiral arms of the Milky Way.

ARE SCIENTIFIC ETHICS COURSES COMMONLY REQUIRED IN COLLEGIATE STEM PROGRAMS?

ALLIE MUSCHONG
MARSHALL THOMSEN, FACULTY MENTOR
POSTER GROUP 1 / ROOM 310 / 9:00 A.M. - 10:30 A.M.

College course work challenges physics students to think in terms of numerical concepts, but career physicists are often faced with non-mathematical questions; e.g., "How do I ensure that my colleague is properly credited in my paper?" At EMU, students pursuing a B.S. in Physics are required to take the one-credit course *PHY 406*: Ethical Issues in Physics. How common is a scientific ethics requirement in physics and other STEM programs nationwide? We examine the prevalence of this degree requirement in U.S. schools at the large private, small private, large public, and small public levels. This material is based upon work supported by the National Science Foundation under Award No. 2316107.

MUSIC FROM RUMBLE STRIPS: DEVELOPING AN EXPERIMENT FOR UNDERGRADUATES

HANNAH POPOFSKI
MARSHALL THOMSEN, FACULTY MENTOR
ORAL SESSION C / ROOM 352 / 2:30 P.M.

Rumble strips are evenly spaced parallel grooves along the shoulders of some highways that produce steering wheel vibrations when driven over. If it is proposed that sound-producing vibrations in a car are created at a frequency determined by the number of rumble strips driven over each second, then the resulting sound has a frequency that is a function of the speed of the vehicle. Although this relationship makes for simple calculations, it seems to be rarely used in physics courses. This project provides guidance on how undergraduate lab activities can be developed to explore sound production by measuring the speed-dependent pitch heard when driving over a rumble strip.

POLITICAL SCIENCE

TOP SECRET: A BREAKDOWN AND ANALYSIS OF THE UNITED STATES' BURDEN ON THE CLASSIFICATION SYSTEM

KATHLEEN INMAN
BILL HEINZE, FACULTY MENTOR
ORAL SESSION A / ROOM 330 / 9:30 A.M.

This study examines the overburden the United States has put on its classification system over the last 50 years and how it has impacted our democracy. The key findings discuss the prevalence of classified documents in US governance, How documents are meant to be classified, and how agencies have overused the system. This study highlights that overclassification has created a level of state anxiety furthered by Heightened Vigilance from the government and fuels radical conspiracies that threaten our democracy. By examining how the classification system works, its applications and limitations, and its implications, this study aims to find a balance between secrecy and accountability.

FAITH, POLITICS, AND SOCIAL PROGRESS: UNRAVELING THREADS OF GENDER AND RACIAL EQUITY IN AMERICA

PARKER GREGG
EBRAHIM SOLTANI, FACULTY MENTOR
ORAL SESSION D / AUDITORIUM / 4:00 P.M.

Throughout American history, movements for gender and racial equity have been advanced by progressive individuals and religious institutions, while reactionary forces have sought to impede such progress. The Civil Rights Era and subsequent birth of the pro-life movement is one such example of religion playing this role in politics. The consequences of political decisions made in this era endure, impacting gender and racial politics in contemporary America. This research project focuses on the following questions: How did religion shape the Civil Rights Era and responses to the Roe v. Wade decision? In what ways have these transformations influenced gender and racial politics in America?

COMPARATIVELY ANALYZING THE PROCESS OF SETTLER COLONIALISM & THE IMPORTANCE OF PERSONAL RECORD

NAOMI HARDIN
VOLKER KRAUSE, FACULTY MENTOR
ORAL SESSION B / ROOM 352 / 10:30 A.M.

I argue for the necessity of framing settler colonialism as an ongoing process of exploitation and genocide, rather than an event of the past. In a sketch of settler colonialism as it is happening in Palestine, Algeria, and the Americas, I engage with comparative scholarship to reveal the legacies empires have left in these regions. I identify models of settlement involving resource extraction, establishment of bureaucratic forces, and world power relationships that perpetuate colonialism.. I then explain how personal record is a powerful tool in combating settler colonialism. By understanding settler colonialism as ongoing systems of domination we honor the lives of those under its rule.

THE ILLEGALITIES OF THE U.S. CONSTITUTION AND THE RISE OF THE ARTICLE V CONVENTION OF STATES

DALE E. JUSTICE JR.
BARRY PYLE AND BARBARA PATRICK, FACULTY MENTORS
ORAL SESSION A / ROOM 330 / 9:00 A.M.

Is the Constitution of the United States genuinely legal and legitimate? This inquiry delves into the Constitution's historical origins to address this question and demonstrate why it deserves meaningful debate. It also considers whether we are seeing history repeat itself as the modern political climate brings forth an old idea renewed of an Article V Convention of States to propose new amendments. The research employs mixed methods that include interviews with scholars.

DID 'FLIPPING THE SCRIPT' FLIP PERCEPTIONS? THE IMPACT OF A STUDENT-LED TEACHING CONFERENCE

LIV OVERBEE AND TRINITY PERKINS
JEFFREY L. BERNSTEIN AND SARAH M. GINSBERG, FACULTY MENTORS
ORAL SESSION C / ROOM 352 / 1:30 P.M.

When students are given the platform to advocate for their own educational experiences, major changes can occur within the higher education environment. These opportunities allow for a new sense of belonging, understanding, and innovation to occur between students and faculty. On December 1st, the Faculty Development Center held "Flipping the Script: A Student-Led Teaching and Learning Conference" to accomplish just that. This project explores the impact "Flipping the Script" had on the participants and attendees, why Eastern Michigan University benefits from student-faculty partnerships, and how EMU can harness the power of bringing students into conversations about teaching.

MIGRANT VULNERABILITY TO HUMAN TRAFFICKING: A DECADE IN REVIEW

ELIZABETH SOLIS
SHU WANG, FACULTY MENTOR
ORAL SESSION A / ROOM 330 / 9:15 A.M.

Since the establishment of the Trafficking Victims Protection Act in 2000 the state of human trafficking in the United States has evolved. While more policy and protection exist, it still remains an under researched and under-evaluated issue. This study looks through the annual Trafficking In Persons reports from the years 2013-2023 to note migrant vulnerability trends and analyze the effectiveness of recent human trafficking policy implementation. The main objective is to study how migrant vulnerability to human trafficking evolved. The predicted results are a decreased number of migrants involved in the persecution of traffickers due to a large number of human trafficking policy passages.

WHAT TEACHERS HAVE TO SAY ABOUT THE PUSH TO REMOVE CRITICAL RACE THEORY IN SCHOOLS

TIERRA TRESVANT
BARBARA PATRICK, FACULTY MENTOR
ORAL SESSION D / AUDITORIUM / 3:15 P.M.

Critical Race Theory (CRT) is a highly debated and controversial topic. Although state policymakers are introducing and passing legislation regarding the teaching of CRT content in the classroom, the term is often incorrectly used and misunderstood by the general public. Equally concerning is the absence of research assessing the legislation's impact on the recruitment and retention of teachers. My research project seeks to understand what teachers know about CRT and how they feel anti-CRT policies impact themselves and their students.

PSYCHOLOGY

INTERNALIZATION OF THE MODEL MINORITY MYTH IN ASIAN AMERICANS: ITS RELATION TO TOLERANCE OF RACISM

TALAL ALI
STEPHEN JEFFERSON, FACULTY MENTOR
POSTER GROUP 3 / ROOM 310 / 2:45 P.M. - 4:15 P.M.

This study seeks to examine the model minority myth and how it may impact Asian Americans. For a sample of adult Asian/Asian American respondents (Mage = 34), the association between their internalization of model minority myth attitudes and their tolerance for displays of racial bias from others was found to be mediated by their endorsement of colorblind racial attitudes. Implications will be discussed.

AUGMENTED REALITY FOR SPECIFIC PHOBIA: A REVIEW

JOE BROWN AND KARLA SUNDBAUM
ASHTON CLARK (NON-PRESENTING AUTHOR)
ELLEN KOCH, FACULTY MENTOR
POSTER GROUP 3 / ROOM 310 / 2:45 P.M. – 4:15 P.M.

Augmented reality (AR) is a modern technology that allows users to interact with virtual stimuli in the real world in almost any natural environment. Recently, AR has been studied as a method of delivery for exposure therapy. Exposure therapy is the gold standard for the treatment of anxiety disorders such as specific phobias. This review explores research on the use of augmented reality exposure therapy (ARET) as a novel treatment for specific phobia and the implications for its use in the treatment of other anxiety disorders.

EXPRESSIONS AND ATTRIBUTIONS OF ABLEISM FOR DISABILITIES THAT WERE CAUSED OR CONGENITAL

HADLIE DAIGLE
RUSTY MCINTYRE, FACULTY MENTOR
ORAL SESSION B / ROOM 350 / 10:30 A.M.

Ableism is a form of systemic oppression of disabled people. Ableist views perpetuate the idea of being non-disabled as the ideal and being disabled as a flaw or weakness to avoid. This study compared how different reasons for disabilities might lead to ableism toward auditory and cognitive disabilities. Results from the study supported our hypothesis that ableism is more strongly expressed when the disabled person might be seen as responsible for the disability as compared to when they are seen as less responsible. The results have implications for how individuals who hold ableist views might perceive specific disabilities and how that leads to the continuation of such beliefs.

THE EFFECTS OF SOCIAL SUPPORT ON DEPRESSION RELATED TO DISCRIMINATION

HADLIE DAIGLE, ANTONIA GITAU
MIEKE KARTH (NON-PRESENTING AUTHOR)
ANGELA STAPLES AND JAMIE LAWLER, FACULTY MENTORS
POSTER GROUP 3 / ROOM 310 / 2:45 P.M. – 4:15 P.M.

Depression has been shown to be influenced by discrimination (Klonoff et al., 2000). Previous research has shown that social support has a link to lower depression (Alsubaie et al., 2019). We hypothesized that social support could act as a buffer on the relationship between discrimination and depression. We used data from a larger study of child development to study this link in a group of parents (N = 27) of young children. We found that depression and discrimination scores were moderately correlated ($r = .46$, $p = .015$) but social support was not found to buffer this relationship, contrary to our hypothesis. Further research could examine the effect of coping skills on these variables.

AMILORIDE VS. BENZAMIL: DISTINGUISHING THE NEURAL CODING OF TASTE ANTAGONISTS

YASHODA KRISHNA DAS
JOSEPH BREZA, FACULTY MENTOR
POSTER GROUP 2 / ROOM 310 / 11:00 A.M. – 11:45 A.M. & 1:30 P.M. – 2:15 P.M.

Salt is a critical taste quality, necessary for osmoregulation and signaling. It drives appetite, yet its overconsumption can cause hypertension and cardiovascular disorders. Unraveling the neural mechanisms of its palatability can reduce sodium consumption without affecting preference. Amiloride and benzamil are diuretics that block the appetitive salt transduction pathway, but the latter fails to abolish appetite in rodents, despite greater potency. Data from whole-nerve electrophysiology showed that, unlike amiloride, benzamil failed to suppress the initial phasic neural responses to stimulus onset. We conclude that the phasic neural responses are necessary for driving sodium appetite.

PARENTING CONFIDENCE UNDER SCRUTINY: TRAUMA'S LINK TO SLEEP QUALITY

AMINATA DOUMBOUYA AND EMILY HOLTHUS
MADISON DAVENPORT AND MAITRI JAIN (NON-PRESENTING AUTHORS)
JAMIE LAWLER AND ANGELA STAPLES, FACULTY MENTORS
POSTER GROUP 3 / ROOM 310 / 2:45 P.M. – 4:15 P.M.

This study explores the links between adverse childhood experiences (ACEs), sleep quality, and parenting sense of competence (PSOC) in parents (n=254) of children aged 2 to 6. We measured all three variables using self-report questionnaires. Results showed a significant correlation between sleep quality and parental competence, as well as between ACEs and parental competence. However, the relation between ACEs and PSOC did not vary based on sleep quality. Limited trauma variability in the sample may have influenced this. Despite the lack of moderation, the study emphasizes sleep quality's crucial role in predicting parental competence, suggesting it as an intervention target.

A SOCIOECONOMIC LENS: PARENTAL ADVERSE CHILDHOOD EXPERIENCES AND CHILD WELLBEING

AMINATA DOUMBOUYA
MAITRI JAIN (NON-PRESENTING AUTHOR)
JAMIE LAWLER AND ANGELA STAPLES, FACULTY MENTORS
POSTER GROUP 3 / ROOM 310 / 2:45 P.M. – 4:15 P.M.

This study explores the impact of parental adverse childhood experiences (ACEs) on preschool-aged children's emotional and behavioral wellbeing, considering the potential moderation by family socioeconomic status (SES). The study hypothesized a positive association between parental ACEs and child emotional and behavioral problems, with a stronger link in low SES families. Data from 225 parents of 2 to 6-year-old children were collected through online questionnaires. While the interaction between ACEs and subjective SES did not significantly predict child behavioral problems, both ACEs and lower subjective SES independently predicted greater intensity and more behavior problems.

PREDICTORS OF INTERNATIONAL STUDENTS' ACCULTURATION PROCESSES IN THE UNITED STATES

SOMAYA EISSA
RUSTY MCINTYRE, FACULTY MENTOR
ORAL SESSION B / ROOM 350 / 10:45 A.M.

This research investigates the factors influencing how 67 collegiate international students adopt, acquire, and adjust to the cultural environment of the United States. The acculturation process includes how the person changes their lifestyle, habits, clothing, etc., to acculturate into a new culture. It is hypothesized that there is going to be a significant correlation between the factors investigated and the four models of acculturation: assimilation, separation, integration, and marginalization. The factors explored self-reports of upbringing, religiosity, personality, stigma around home culture, previous assumptions about and previous experiences with the United States.

FINANCIAL AUTONOMY AND HAPPINESS IN COLLEGE STUDENTS: CAN THEY COEXIST?

JORDYN GERWIG
RUSTY MCINTYRE, FACULTY MENTOR
ORAL SESSION B / ROOM 350 / 11:00 A.M.

The study examines how financial autonomy affects happiness when spending money charitably or on oneself. Participants are asked to imagine situations where they have the ability to spend money freely or have to first seek advice before spending money. Half of these groups will be asked to consider spending on themself or others. It is hypothesized that spending money on others freely will result in higher happiness and autonomy ratings. It is also hypothesized that financial restraint may lessen this, such that happiness and autonomy are experienced when it is felt that there is no freedom to spend as pleased. The study will add insight into how charity and autonomy affect happiness.

EFFECTS OF A FACT SHEET ON STUDENTS' MISCONCEPTIONS ABOUT APPLIED BEHAVIOR ANALYSIS

HANNAH GOIKE
ADAM BRIGGS, FACULTY MENTOR
POSTER GROUP 3 / ROOM 310 / 2:45 P.M. – 4:15 P.M.

Previous research has shown that college students reliably endorse misconceptions about behavior analysis. The purpose of this study was to assess college students' knowledge of behavior analysis and identify the extent to which participants were likely to endorse common misconceptions. In particular, we replicated Artzen et al. (2010) and extended it by adding questions related to recent trends and contemporary misunderstandings in applied behavior analysis (ABA) that stem from common misconceptions held by the public. We also extended Artzen et al. by evaluating the effects of a brief intervention for improving participants' knowledge of behavior analysis.

ONLINE AND IN-PERSON DATING VIOLENCE: THE ROLE OF RELATIONSHIP INITIATION CONTEXT

JESSE JOHN
ELIZABETH NEILSON, FACULTY MENTOR
ORAL SESSION B / ROOM 350 / 11:15 A.M.

Dating violence (DV) is a pervasive phenomenon, especially among cisgender women and sexual and gender minority (SGM) individuals. Despite the prevalence of internet usage and online dating among young adults, little is known about how dating violence manifests online (i.e., cyber victimization). This study's primary aims are to compare cyber victimization rates between cisgender females and SGM emerging adults and explore how cyber- and in-person DV victimization and mental health outcomes vary based on the extent to which the relationship was initiated online. Results will inform interventions for protective behavioral strategies against dating violence.

DIFFERENCES IN SEVERITY OF POSTPARTUM DEPRESSIVE SYMPTOMS ACROSS INCOME AND RACE

JASMINE JOHNSON
MICHELLE LOBERMEIER (NON-PRESENTING AUTHOR)
JIN BO, NAOMI HASHIMOTO, AND RENÉE LAJINESS-O'NEILL, FACULTY MENTORS
POSTER GROUP 2 / ROOM 310 / 11:00 A.M. – 11:45 A.M. & 1:30 P.M. – 2:15 P.M.

Despite well-established differences in postpartum depression symptoms (PPDS) across income, there are equivocal findings regarding the severity of PPDS across self-identified race. Income, race, and PPDS at 2 months postnatal were analyzed in 422 participants from the PediaTrac™ project. t-tests revealed no difference in PPDS by race, despite a significant income disparity. A two-way ANOVA revealed no main or interaction effect of income or race on PPDS. These findings indicate that neither income nor race is a main contributor to PPDS severity in this sample and emphasize the importance of considering other factors on maternal mental health, such as access to healthcare and social support.

CAREGIVER FEEDING STYLE, NUTRITION KNOWLEDGE AND CHILD EATING BEHAVIORS

CAMILLE LEHRMANN AND JULIANA SAID
HEATHER JANISSE, FACULTY MENTOR
POSTER GROUP 2 / ROOM 310 / 11:00 A.M. – 11:45 A.M. & 1:30 P.M. – 2:15 P.M.

Research has shown that caregivers' feeding behavior and knowledge of nutrition may play a role in the eating behavior of their children. For children of lower socioeconomic status, the risk of developing adverse health conditions is greater than those with higher socioeconomic status, therefore healthy eating is important. Accounting for past research, we will use data collected from 52 caregiver-child dyads with a preschool child enrolled in Detroit Head Start to examine the relation between caregiver feeding style, nutrition knowledge, and child eating behaviors. As rates of overweight children continue to rise worldwide, examining the role of caregivers on child eating behavior is vital.

EVALUATING THE EFFECTS OF DISABILITY ON PREFERRED PROXIMITY

MIA "MICKEY" MCMAHON
RUSTY MCINTYRE, FACULTY MENTOR
ORAL SESSION B / ROOM 350 / 11:30 A.M.

People with disabilities frequently face the barriers of prejudice, stereotypes, low expectations, and the doubt that they can be adequate romantic partners (Zewude & Habtegiorgis, 2021). The research will examine if greater ableism prejudice is displayed toward a target individual who has a disability or are proximally associated with a disability, compared to targets who are more distally associated with a disability. It is hypothesized that participants who rank highly in ableism will report a preference for distance from individuals with clearly described and not obscured disabilities.

CORRELATION BETWEEN ALCOHOL USE, DEPRESSION, AND SOCIAL ROLES IN YOUNG ADULTS

ELEISE OYSTER
ALINA DILLAHUNT (NON-PRESENTING AUTHOR)
RENEE LAJINESS-O'NEILL, JIN BO, AND NAOMI HASHIMOTO, FACULTY MENTORS
POSTER GROUP 2 / ROOM 310 / 11:00 A.M. - 11:45 A.M. & 1:30 P.M. - 2:15 P.M.

Research suggests that depression is related to increased risky alcohol use and social roles. This study aims to explore the connection between alcohol use, depression, and social roles. It is expected that elevated alcohol use will be positively correlated with depression and negatively correlated to the strength of social roles. Fifty-two participants were recruited from the EMU campus through the SONA system. A correlation analysis was conducted, and we found a significant negative correlation between depression scores and social roles ($r=-.644$, $p<.001$). Of note, there were floor effects in the alcohol-use questionnaire. Further research should be done with a bigger sample size.

ADOLESCENT GIRLS' EMOTION REGULATION, CONFLICT RESOLUTION STYLES, AND RELATIONSHIP WITH THEIR MOTHER

ETHAN RICK
CHONG MAN CHOW, FACULTY MENTOR
POSTER GROUP 2 / ROOM 310 / 11:00 A.M. - 11:45 A.M. & 1:30 P.M. - 2:15 P.M.

Adolescents with adaptive emotion regulation (ER) show healthy conflict resolution styles (CR) and better parent-child relationship quality (RQ). Drawing on a study with 104 adolescent girls, we captured CR styles using the Conflict Resolution Inventory, RQ with mother with the Network of Relationship Inventory, and ER with the Difficulties in Emotional Regulation Scale. Adolescents with better ER skills tend to employ adaptive CR styles, with problem-solving being pivotal in predicting closeness and discord in mother-child relationships. This underscores the significance of adaptive ER in shaping quality parent-child interactions, specifically through effective problem-solving strategies.

INVESTIGATING THE IMPACT OF SLEEP PARAMETERS ON INHIBITORY CONTROL IN PRESCHOOL CHILDREN

KARLA SUNDBAUM
MICHELLE LOBERMEIER (NON–PRESENTING AUTHOR)
RENEE LAJINESS O'NEILL, JIN BO, AND NAOMI HASHIMOTO, FACULTY MENTORS
POSTER GROUP 2 / ROOM 310 / 11:00 A.M. - 11:45 A.M. & 1:30 P.M. - 2:15 P.M.

Existing literature has highlighted positive associations between sleep and executive functioning; however, the subdomain of inhibitory control has yet to be as extensively studied. The relation between Inhibitory Control (K-CPT 2, NEPSY Statue) and sleep parameters (sleep duration, night wakings, bedtime resistance) examined in a preschool cohort (N=26) using a Spearman's rho was non-significant, possibly due to a small sample size or low variability within our sample. Expanding sample size and conducting longitudinal studies will contribute to understanding the impact of sleep on inhibitory control and may provide a target for intervening in disinhibited or dysregulated behavior.

SOCIOLOGY, ANTHROPOLOGY AND CRIMINOLOGY

CAPITAL PUNISHMENT: A CONSIDERATION OF THE LATENT HUMAN COST

HAILEY ADKINS
KENDRA SMITH, FACULTY MENTOR
POSTER GROUP 2 / ROOM 310 / 11:00 A.M. - 11:45 A.M. & 1:30 P.M. - 2:15 P.M.

At the end of 2020, the U.S. Department of Justice reported that there were 2,469 prisoners on death row. Often, research about capital punishment focuses on the effectiveness in reducing violent behavior or the total dollar cost to taxpayers. This study focuses on the latent human impact that the death penalty has on jurors, criminal justice officials, family members of the victim(s) and accused, as well as the inmates housed on death row.

BEYOND 'SEVERE MENTAL ILLNESS': SOLITARY CONFINEMENT, BIPOLAR DISORDER AND SCHIZOPHRENIA BEHIND BARS

COREENA FORSTNER
KIMBERLY BARRETT, FACULTY MENTOR
ORAL SESSION A / ROOM 330 / 10:00 A.M.

Solitary confinement is commonly used in U.S. correctional facilities, particularly affecting individuals with severe mental illnesses like bipolar disorder and schizophrenia. Existing literature often lumps these conditions together, overlooking their unique aspects. This study addresses this gap by examining the distinct experiences of incarcerated individuals with bipolar disorder and schizophrenia during solitary confinement. The project highlights potential discrepancies in the use of solitary confinement for these specific mental health conditions. Findings indicate an increased likelihood of individuals with bipolar disorder/mania or schizophrenia being placed in solitary confinement.

FEELING SAFE ON CAMPUS: PERSPECTIVES FROM CAMPUS SAFETY STUDENT EMPLOYEES

JORDYN GERWIG
TRICIA MCTAGUE, FACULTY MENTOR
ORAL SESSION C / ROOM 320 / 2:30 P.M.

Emotional labor, the way workers manage emotions according to employee guidelines, is often referenced when discussing customer service jobs. However, it is also something that can be experienced in a negative way when faced with stressful situations in campus safety jobs. Through participant observation and interviews, this research examines how emotional labor presents in student employees in campus safety. Through questions related to the work environment and their feelings at and outside of work regarding campus safety, this research shows how campus safety employees are directly affected by their work.

THE INTERSECTION OF WHITE COLLAR CRIME AND ADVERSE CHILDHOOD EXPERIENCES

KAYLA GRACE
PAUL LEIGHTON, FACULTY MENTOR
ORAL SESSION A / ROOM 352 / 10:00 A.M.

White collar crime includes actions by corporations that cause suffering and are harmful to human development. For example, pollution and hazardous chemicals can negatively impact child development, including impaired memory, learning disabilities, etc. This research is an initial investigation connecting such crimes to what is known as Adverse Childhood Experiences (ACEs). This research explains what white collar crime is, what ACEs are, and some ways that corporations injure children when they cut corners to save money. White collar crime may explain some ACEs, and calls for the development and enforcement of safety protocols to protect children from the harms of white-collar crimes.

YOU OWN NOTHING: THE CRUSADE AGAINST THE RIGHT TO REPAIR

ANTHONY MITRANO
ROBERT ORRANGE, FACULTY MENTOR
ORAL SESSION A / ROOM 352 / 9:30 A.M.

Our fundamental Right to Repair is being eroded and nullified in real time. Corporate consolidation of the aftermarket repair market in multiple sectors has resulted in decreased consumer rights, increased cost for repair, and a slew of purposefully unrepairable products. This process causes consequences in the economy, environment, and consumer confidence. Furthermore, a trend of increasing digital goods coupled with decreasing analog goods further detracts from consumers' ability to actually own the products that they buy. This erosion of rights affects every single person regardless of what products you buy, how you buy them, and whether or not you repair them yourself.

ZERO TOLERANCE DISCIPLINE IN AMERICAN SCHOOLS: RACIAL INJUSTICE IN THE AGE OF YOUTH DISPOSABILITY

TRINITY PERKINS
BRIAN SELLERS, FACULTY MENTOR
ORAL SESSION A / ROOM 330 / 9:45 A.M.

This presentation critically examines how neoliberal social controls and school criminalization efforts via zero tolerance policies in response to school violence moral panics actually produce racial and income-based disparities in how school discipline is administered contributing to the school-to-prison-pipeline. This leads to these same disparities in the Criminal Justice system affecting the racial and income rates of prisoners and mass incarceration. American school disciplinary trends from the School Survey on Crime & Safety data collected by the National Center for Education Research are analyzed.

FRATERNITIES AS SPACES OF QUEER GENDER EXPRESSION?: AN ETHNOGRAPHIC ASSESSMENT

MASON SABORÍO
MARÍA LUZ GARCÍA, FACULTY MENTOR
ORAL SESSION C / ROOM 320 / 2:15 P.M.

This research is an ethnographic investigation of how masculinity operates in a gender-inclusive fraternity of queer and trans students. I use mainly participant-observation to examine the role of language that is used in this fraternity to both reproduce and challenge masculine fraternity norms. This raises questions about the dominance of masculine heteronormative norms in what has normally been assumed to be a fixed space for gender expression and the potential of queer students to reappropriate these places.

METRIC SEXUAL POLYMORPHISM IN THE CLAVICLE AND HYOID BONES

HERMES WILSON AND RYLAND LAMBERT
MEGAN MOORE, FACULTY MENTOR
POSTER GROUP 2 / ROOM 310 / 11:00 A.M. - 11:45 A.M. & 1:30 P.M. - 2:15 P.M.

The goal of this research is to increase the accuracy of identification for deceased transgender individuals via sex estimation using the hyoid bone and clavicle. These are the last two bones to develop after puberty. Sex estimation heavily relies on sexual dimorphism in the skull and pelvis; however, hormone therapies could alter bone development creating intermediate characteristics. Being able to recognize transgender status from the hyoid and clavicle could be crucial to the positive identification to provide closure and seek justice for families.

WORLD LANGUAGES

PROFESSOR, ADMINISTRATOR, HISTORIAN: A TRIBUTE TO EDGAR R. ISBELL AND HIS FAMILY LEGACY

KAILI BROOKS
CARLA DAMIANO, FACULTY MENTOR
ORAL SESSION C/ AUDITORIUM / 1:30 P.M.

In 2024, Eastern Michigan University celebrates its 175 years. Located in the Literary Archive lies the sole comprehensive history of the university from its founding to 1963. Spurred on by his desire to reignite campus tradition and community, Professor Egbert R. Isbell, a former dean, set out to unite educational and historical heritage within its pages. After Dr. Isbell and his wife Florentine's passing, their two daughters have continued to pour life into the institution through historical tales and generous scholarships. Join me as I tell their story, from Germany to Ypsilanti and beyond, gaining insight into a family that has helped shape the University's chronicle as we know it today.

INTERGENERATIONAL LINGUISTIC DIFFERENCES IN JAPAN

IAN GABRIEL CRUZ
HITOMI OKETANI AND VERONICA GRONDONA, FACULTY MENTORS
ORAL SESSION B / AUDITORIUM / 10:45 A.M.

As time passes, languages will evolve and change. This is evident through the differences in the way younger speakers vs older speakers communicate in their native language. This study focuses on the linguistic changes in the Japanese language over three generations of native Japanese speakers. The data for this study was collected in Hikone City, Shiga Prefecture, Japan in Fall 2023. The study analyzes the use of Japanese honorific forms, especially suffixes and first-person personal pronouns, and lexical differences.

UNIVERSITY STUDENT MENTAL HEALTH CRISIS: CENTERING PRE-SERVICE TEACHERS' PERSPECTIVES AND FACULTY SUPPORT

MARS WARD
ZUZANA TOMAS, FACULTY MENTOR
ORAL SESSION C / ROOM 320 / 2:00 P.M.

An unprecedented mental health crisis has affected university students, including pre-service teachers who think about mental health through their lens and the lens of their future students. This study reports on data from 50 preservice teachers' anonymous surveys and three qualitative interviews, shedding light on these students' university experiences. Implications for support provided by university faculty and administrators are discussed.

COLLEGE OF BUSINESS

MARKETING

A MARKETING ANALYSIS OF MID-AMERICAN CONFERENCE SCHOOLS

CHARLES BORUS
SUFIAN QRUNFLEH, FACULTY MENTOR
ORAL SESSION C / AUDITORIUM / 2:15 P.M.

Across the country, millions of high school seniors make the decision on where to attend college, basing these decisions on a variety of factors. For a high school student living in the Midwestern United States, they are starved for choice. Larger universities in this region come with an established reputation of academic prowess. Smaller institutions such as those that are a part of the Mid-American Conference (MAC) offer all the same experiences, just with a smaller student population. With competition from larger universities in the area, how can universities in the MAC attract and retain students? How can this information be applied to Eastern Michigan University?

MANAGEMENT

THE IMPACT OF RELATIONAL COORDINATION AND FLEXIBLE WORK ON INFORMAL CAREGIVERS IN THE WORKPLACE

MADISON WAMPLER
ALANKRITA PANDEY, FACULTY MENTOR
POSTER GROUP 3 / ROOM 310 / 2:45 P.M. - 4:15 P.M.

This study will explore the relationship between home and work demands on employed informal caregivers. The relationship between caregiving stress and immediate work outcomes, such as job affectivity, absenteeism, and flourishing, will be examined. Additionally, organizational support structures in the form of relational coordination, leadership, and flexible work practices will be studied. I have developed a framework using the conservation of resources theory (Hobfall et al., 2018) and the theory of relational coordination (Gittell, 2009; Bolton et al, 2021) to examine the impact of work and caregiving stress on work outcomes such as presenteeism, job affectivity, intent to leave, etc.

COLLEGE OF EDUCATION

SPECIAL EDUCATION & COMMUNICATION SCIENCES AND DISORDERS

INTEGRATION OF CERTIFIED THERAPY DOG TEAMS INTO SPECIAL EDUCATION: INSIGHTS OF VOLUNTEER HANDLERS

RANA AABED
JOHN PALLADINO, FACULTY MENTOR
POSTER GROUP 3 / ROOM 310 / 2:45 P.M. – 4:15 P.M.

The purpose of this study is to better understand how volunteer certified pet therapy dog-handler teams can add value to already existing special education interventions. Research has confirmed the overall impact dog therapy has on youths' psychological health. However, understanding how volunteer handlers modify the manner in which they have their dogs interact with individuals with disabilities is a present-day need that has otherwise not appeared in the literature. This poster will describe preliminary results of a qualitative, multiple-case investigation regarding the role of volunteer certified handlers and the dog therapy provisions they offer to special education populations.

LATE DISCOVERY: STUDENT EXPERIENCES WITH HIGH SCHOOL DISABILITY DIAGNOSES

MARGOT MOFFA
REBECCA LOUICK, FACULTY MENTOR
ORAL SESSION B / ROOM 320 / 11:15 A.M.

This study focuses on the experiences of students who were diagnosed with specific learning disabilities (SLD) in high school or college. While most students with SLD are identified at an earlier age, many individuals continue to be overlooked; since they remain unidentified, school becomes unnecessarily demanding for them. There is little existing data about these students' experiences. Through interviews conducted with a sampling of those in this unique population, the investigator will share the themes uncovered through qualitative analysis in order to bring awareness to this problem in our education system.

PRE-SERVICE TEACHERS' GOAL PLANNING FOR CULTURALLY RESPONSIVE TEACHING

REAGAN SEREMET
JOHN PALLADINO, FACULTY MENTOR
POSTER GROUP 3 / ROOM 310 / 2:45 P.M. – 4:15 P.M.

It is known throughout the special education literature that there is an overrepresentation of Black males, especially those with emotional impairments. The purpose of this quantitative survey project was to explore this phenomenon with preservice teachers. Respondents completed the *Implicit Association Test* and additional questions about their confidence with culturally responsive teaching practices. Findings and implications for teacher practice will be presented.

AN EXAMINATION OF ASSISTIVE TECHNOLOGY USED BY MICHIGAN SPECIAL EDUCATION TEACHERS

LAUREN SULAK
JACKIE MCGINNIS, FACULTY MENTOR
POSTER GROUP 3 / ROOM 310 / 2:45 P.M. – 4:15 P.M.

The purpose of this study was to learn what types of assistive technology (AT) Michigan special educators are using for specific learning, communication, and/or social skills development with students with disabilities. In this poster, the principal investigator will share particular AT supports that are most commonly used based on themes uncovered through Google surveys.

TEACHER EDUCATION

THE TRANSFORMATIVE IMPACT OF PLACE-BASED EDUCATION IN SOUTHEAST MICHIGAN SCHOOLS AND COMMUNITIES

EMMA BURGESS AND SKYLAR HOLCOMB
ETHAN LOWENSTEIN, FACULTY MENTOR
POSTER GROUP 3 / ROOM 310 / 2:45 P.M. – 4:15 P.M.

This study examines the transformative influence of place-based education (PBE) in schools and communities across southeast Michigan. Using experiential knowledge and interviews with local leaders in education, we inspect how PBE shapes not only student academic experience but also their relationship with the community as a whole. By exploring the intersection of local environments and learning, we seek to better understand how well PBE fosters a sense of community, engagement, and local awareness in students. Our study will illuminate the influence of PBE, offering key insights into the potential for more community-driven educational practices in southeast Michigan.

THE IMPACT OF IMPLICIT BIAS IN EARLY CHILDHOOD EDUCATION: CULTURAL, SOCIAL, GENDER, AND ECONOMIC BIASES

CAROLINE DEMOU
MARTHA BAIYEE, FACULTY MENTOR
ORAL SESSION B / ROOM 320 / 11:30 A.M.

This research details the impact that implicit bias (attitudes and predispositions that one is not consciously aware of that may influence decision making, actions, and manners) in early childhood education has on assessments, observation, and teacher-student/family relationships. Implicit biases are unique to each individual's experience and cannot be completely erased. However, when one's own implicit biases are recognized, they can be minimized. This is crucial in early childhood settings where each interaction between teacher and student has the potential to leave an impression on the student's development and learning. Ways to become aware of one's own implicit biases will be discussed.

THE POSITIVE IMPACT OF PRESCHOOL: EXPLORING SCHOOL AND LIFE OUTCOMES FOR YOUNG CHILDREN THAT ATTEND PRESCHOOL

ARNECIA PAUL
JESSICA GRIMONE-HOPKINS, FACULTY MENTOR
ORAL SESSION B / ROOM 320 / 11:00 A.M.

Early childhood is the most vital period in a child's life because the essential building blocks for lifelong learning are being developed. Early childhood education programs such as child care centers, preschools, and HeadStarts are important spaces where children's development can flourish. ECE programs are associated with academic, emotional, and well-being benefits. Unfortunately, many children don't have the opportunity to attend such programs due to various barriers. This literature review will explore the benefits of preschool, the detriments of not attending preschool, the barriers to attending preschool, and the effects of COVID-19 on preschool attendance in the United States.

CLASSROOM MANAGEMENT IN MICHIGAN SECOND-GRADE CLASSROOMS

ALYSSA PETERSON
MICHAEL MCVEY, FACULTY MENTOR
POSTER GROUP 3 / ROOM 310 / 2:45 P.M. - 4:15 P.M.

An important topic in elementary education is classroom management. I explored this topic through interviews and surveys with second-grade teachers around Michigan in order to learn more about the question: "What classroom management systems and strategies are being used in Michigan second-grade classrooms today and are they effective at creating a supportive learning environment?" I obtained an in-depth picture of seven different classrooms and the differing methods the teachers use to manage their classrooms. Emphasized elements in the majority of classrooms include flexibility, relationships with students, expectations and routines, and communication with families.

COLLEGE OF HEALTH AND HUMAN SERVICES

HEALTH PROMOTION AND HUMAN PERFORMANCE

RELATIONSHIPS BETWEEN PHYSICAL ACTIVITY, SLEEP, AND GRADE POINT AVERAGE AMONG EMU STUDENTS

MARIA BEYST
CATHERINE GAMMON, FACULTY MENTOR
POSTER GROUP 3 / ROOM 310 / 2:45 P.M. - 4:15 P.M.

It is well understood that the majority of college students experience a variety of challenges regarding their sleeping patterns and overall quality of sleep. This is troubling because sufficient sleep is associated with better academic performance among college students. Adequate amounts of physical activity (PA) are associated with improved sleep among adults, but there is limited research examining the relationship between sleep indicators and PA levels in college students. This presentation will discuss the relationships between sleep indicators, physical activity, and grade point average among EMU students.

OPTIMIZING REQUIRED RESOURCES FOR CREATING PART-TASK TRAINER AND PALPATION ACCURACY ASSESSMENT TOOL

ANNA FEDEL
FRANK FEDEL, FACULTY MENTOR
POSTER GROUP 3 / ROOM 310 / 2:45 P.M. - 4:15 P.M.

This project focused on optimizing resources necessary for creating a high-fidelity 3D model of the bones required for a Part-Task Trainer (PTT) and developing objective, standardized assessment tools for testing palpation skills. Pilot testing of AI-assisted segmentation was explored, resulting in the generation of sufficiently accurate 3D models of bones. Additionally, two software programs were successfully created and tested. Together they provide key functions for clinical instructors, including the ability to document and store points of interest marked on a PTT by students practicing palpation, and the ability to compare serial submissions of palpation attempts by students.

DOSE-RESPONSE RELATIONSHIP BETWEEN PHYSICAL ACTIVITY AND MENTAL HEALTH AMONG COLLEGE STUDENTS

ASHLEY WRIGHT AND SOFIA IVANKO
CATHERINE GAMMON, FACULTY MENTOR
ORAL SESSION C / ROOM 320 / 1:45 P.M.

The amount of physical activity (PA) to promote and maintain health has been researched for many years. Currently, there is a knowledge gap regarding the existence of a dose-response curve between PA and mental health in general, and specifically in college students. The purpose of this study was to examine if there is a dose-response relationship between PA and mental health in college students. A sample of 757 EMU students responded to an online survey about mental health and PA. We observed graphical evidence of a dose-response relationship between PA and mental health, although this was not consistently supported by statistically significant differences between PA doses.

HEALTH SCIENCES

UNDERSTANDING THE EFFECTS OF YERBA SANTA ON *STAPHYLOCOCCUS AUREUS*

ELIZABETH EGERER
LYNNE SHETRON-RAMA, FACULTY MENTOR
POSTER GROUP 1 / ROOM 310 / 9:00 A.M. – 10:30 A.M.

With the growing problem of antimicrobial resistance, there is a need for alternative ways to control bacterial infections. A plant extract from Yerba santa, a California mountain herb, was found in previous research to be effective at killing and inhibiting select gram-positive and gram-negative organisms. Several assays were utilized to examine how the Yerba Santa inhibited different microbes. These assays included disk diffusion, 30-minute time kills, and cell viability assays. The results begin to identify possibilities for how Yerba Santa could assist in the inhibition of antimicrobial resistant organisms.

FALL RISKS AND OUTCOMES FOR OLDER ADULTS WITH AND WITHOUT FOOD INSECURITY

GARRETT HERRINGTON
SARAH WALSH, FACULTY MENTOR
ORAL SESSION A / ROOM 320 / 9:45 A.M.

Previous studies indicate food insecurity in older adults is a predictor for increased fall risk, fear of falling, and hospitalization. The growing aging population within the United States means there is an increased number of people at risk. Using data from the National Health and Aging Trends Study, we compared risk statistics for older adults with food insecurity to community dwelling older adults. Among those with food insecurity, we explored fall-related outcomes for older adults who receive Meals on Wheels. Food insecurity is an important predictor of fall risk, yet few food insecure older adults receive nutrition interventions like Meals on Wheels.

ARABIC INFLUENCE ON SPANISH CULTURE AND CUISINE

CHRISTINA TROTTA
ANAHITA MISTRY, FACULTY MENTOR
POSTER GROUP 3 / ROOM 310 / 2:45 P.M. – 4:15 P.M.

From the 8th to the 15th century, the Islamic Empire established customs, traditions, and beliefs that transformed daily life in Spain. This study explored the role of Arabs in sculpting Spain's cultural identity, including historical context, religion, customs, architecture, and celebrations. Additionally, this research highlighted the Arab influence on Spanish cuisine. It unveiled how new ingredients such as almonds, citrus fruits, saffron, various spices, and culinary techniques introduced by the Arabs significantly shaped Spanish gastronomy. This Arab influence on Spanish cuisine is readily apparent in iconic Spanish dishes such as paella and gazpacho.

NURSING

NURSING STUDENTS' RESPONSE TO BULLYING: A SMALL-SCALE LITERATURE REVIEW

YI-FONG CHEN
KATHLEEN SEURYNCK, FACULTY MENTOR
POSTER GROUP 3 / ROOM 310 / 2:45 P.M. – 4:15 P.M.

Bullying experienced by nursing students is a worrisome phenomenon that leads to serious setbacks in their career development. To review the literature on nursing students' response to bullying, a search of peer-reviewed articles from 2018-2023 was done using CINAHL, MEDLINE, and PubMed databases. Inaction in reporting bullying was identified among nursing students due to disbelief in effective intervention. Most bullying incidents experienced by nursing students remained unaddressed. Further adjustments to education and strategies are required to improve the effectiveness of both bullying prevention and intervention.

PEDIATRAC™ 2.0 DATA ANALYZED TO IDENTIFY RISK FOR DEVELOPMENTAL DELAY IN INFANTS AND TODDLERS

SYDNEY EDWARDS
ANGELA LUKOMSKI, FACULTY MENTOR
POSTER GROUP 3 / ROOM 310 / 2:45 P.M. – 4:15 P.M.

PediaTrac™ is a tool that engages families in the gathering of longitudinal, real-time, and multi-domain data on infants so healthcare professionals can identify neurobehavioral disorders sooner than current measures. By using PediaTrac™, data is collected through longitudinal timeframes. A study was done to test PediaTrac™ validity, resulting in a large sample size N=571. To better identify this sample population, frequencies were run to illuminate the socio-demographic and general medical characteristics. Further, correlations between demographics and general medical variables and risk for neurobehavioral disorders were identified as well as correlations between predictors on the M-CHAT.

UNDERSTANDING FALL RISK FACTORS IN OLDER ADULTS AND NURSING INTERVENTIONS FOR PREVENTION

LANG LANG HUANG
FRANK SCHALLER, FACULTY MENTOR
POSTER GROUP 3 / ROOM 310 / 2:45 P.M. – 4:15 P.M.

Older people are more likely to fall, which can negatively affect their quality of life, economics, and shorten their lifespan. Identifying high fall risk factors in older people and effective implementation of nursing intervention is imperative. Select peer-reviewed articles from CINAHL were reviewed with keywords including, but not limited to, older adults, fall risk, fall prevention, and nursing. More research should be conducted in a hospital setting. The characteristics of the target population and place should be analyzed by researchers before designing their interventions. More discussions should be conducted on how nurses' specific contributions can be used to implement and enhance fall prevention programs.

EXPLORING THE IMPACTS OF STUDENT-NURSE RELATIONSHIPS

ELIZABETH JOFFE
VALERIE PAULI, FACULTY MENTOR
POSTER GROUP 3 / ROOM 310 / 2:45 P.M. - 4:15 P.M.

Student-nurse learning is impacted by interactions with staff nurses in clinical settings. This study looked to understand relationships between student and staff nurses and the impact on student learning. A sample of senior level baccalaureate nursing students from a Midwest university participated in interviews. Senior level student nurses expressed similar impacts to learning based on positive and negative interactions with staff nurses. Results contribute to limited literature looking at relationships between student and staff nurses.

INTERVENTIONS FOR NURSES TO IMPROVE THEIR MENTAL HEALTH: A SMALL-SCALE LITERATURE REVIEW

JO-YU LIANG
KATHRYN HUGHESDON, FACULTY MENTOR
POSTER GROUP 3 / ROOM 310 / 2:45 P.M. - 4:15 P.M.

Stress can impact an individual's productivity and their health. To review the literature on self-care interventions for nurses, the Arksey & O'Malley approach was used to conduct a small-scale literature review in the CINAHL database. Findings showed that meditation, visualization, social support, and mental disengagement can help improve nurses' well-being. Secondary findings identified having a heavy workload can contribute to nurses' stress levels. This review can let organizations and nursing staff know the importance of self-care and know how to use those materials to cope with high stress levels.

NURSES' END-OF-LIFE KNOWLEDGE AND COPING STRATEGIES FOR EMOTIONAL ADJUSTMENT AFTER PATIENT DEATH

YU-TING LIN (ELIZA)
MARGUERITE DEBELLO, FACULTY MENTOR
POSTER GROUP 3 / ROOM 310 / 2:45 P.M. - 4:15 P.M.

Nurses, pivotal in end-of-life care, face challenges in knowledge and emotional resilience. This literature review emphasizes the need for education, coping strategies, and government support to enhance nurses' capability in providing optimal care for terminally ill patients. Key aspects include managing physical symptoms, cultivating spiritual intelligence, and effective emotional management. Coping strategies, such as seeking support and engaging in activities, contribute to nurses' resilience. The review highlights the necessity for targeted government support to address nurses' needs in caring for individuals at the end of life.

SELF-CARE: ETOH USE?

ALYSSA K. MILLIMAN
CAROLINE M. PELTZ, PHD, RN, MSHSA, CNE, FACULTY MENTOR
POSTER GROUP 3 / ROOM 310 / 2:45 P.M. - 4:15 P.M.

Nursing students experience significant stress due to program rigor, peer pressure, and personal responsibilities. They have difficulty selecting appropriate self-care activities to help cope. The purpose of this literature review is to examine the use of alcohol amongst nursing students. Using search terms "Nursing Student", "Alcohol", and "Undergraduate", CINAHL and PubMed were searched (peer reviewed, last 5 yrs) and yielded 26 and 27 articles respectively. Although the review included inappropriate self-care activities (alcohol, e-cigarettes, and marijuana), there was no data on the use of alcohol as a coping mechanism for nursing students, identifying the need for further investigation.

E-CIG USE BY NURSING STUDENTS: LITERATURE REVIEW, IDENTIFIED GAP & FUTURE RESEARCH

ABIGAIL H. SHORE
CAROLINE M. PELTZ, FACULTY MENTOR
POSTER GROUP 3 / ROOM 310 / 2:45 P.M. - 4:15 P.M.

Electronic cigarette (e-cig) use is on the rise with young adults, as the use of this device has become very popular in the United States since 2010. A literature review was conducted to
identify why undergraduate nursing students use e-cigs, even though they are familiar with side effects. Peer reviewed articles on this topic were not found indicating a need for investigation. A qualitative research project (human subject training, development of research questions, IRB approval, informed consent, email to students) is being created to address this gap in preparation for presentation at a global nursing summit this spring.

SOLUTIONS TO REDUCE NURSE BURNOUT AND IMPROVE QUALITY OF LIFE SINCE COVID-19: A LITERATURE REVIEW

SHIH-PING WANG
FRANK SCHALLER, FACULTY MENTOR
POSTER GROUP 3 / ROOM 310 / 2:45 P.M. - 4:15 P.M.

Nursing burnout, exacerbated by the pandemic, is a persistent challenge leading to dissatisfaction and nurses leaving the profession. This literature review aims to propose two solutions: optimize nurse manager responsibilities and promote self-care. Utilizing CINAHL and PubMed, keywords related to nurses, burnout, COVID-19, workload, and self-care were used while searching for key articles. The analysis revealed the importance of supportive management and self-care, despite implementation challenges. Addressing burnout requires nurse managers to prioritize nurses' needs and create a positive work environment, while nursing education should integrate mindfulness lessons for tailored coping strategies and enhanced resilience.

SOCIAL WORK

APPLYING BIBLIOTHERAPEUTIC THEORY TO CREATE A RESOURCE FOR AVOIDANT/RESTRICTIVE FOOD INTAKE DISORDER

ERIDIAN ALEXANDER AND ERIDIAN ALEXANDER DEMPSEY
CHRISTINA MARSACK-TOPOLEWSKI, FACULTY MENTOR
CROSSING LINES DESIGN EXPO / ROOM 300 / 9:00 A.M. - 4:00 P.M.

Bibliotherapy is a therapeutic approach that is used for a wide variety of experiences across the lifespan. There are many bibliotherapeutic materials that address a wide range of issues impacting children; however, there are no resources for Avoidant/Restrictive Food Intake Disorder (ARFID). Through dedicated research to understand ARFID, along with research on developing children's bibliotherapy, the book "Sam Sleeps Over" was created. The story centers on the challenge of dinner at Sam's first sleepover, exploring Sam's diagnosis, treatment, worries, and successes.

THE CRIMINALIZATION OF BEING UNHOUSED IN AMERICA

H. B. WILLIAMS
JANET OKAGBUE-REAVES AND KRISTAL REYES, FACULTY MENTORS
ORAL SESSION A / ROOM 320 / 9:30 A.M.

This presentation will explore the social issue and ramifications of homelessness (what it is and who it affects) along with a brief history of events shaping how it is defined and perceived. It will be rooted in a social work, person-in-environment approach to homelessness and its contributing issues. Analysis of actions taken in the past to help those impacted by homelessness and what is being done today, along with the challenges and barriers to providing services and support for those affected by homelessness, will be presented. Next steps in how we can overcome homelessness together including the need for resources for friends, family and allies will also be explored.

GAMEABOVE COLLEGE OF ENGINEERING AND TECHNOLOGY

ENGINEERING

AN EXPLORATION INTO 3D SCANNING

KARA BISHOP, RAYENNA SUTTON, AND ELLA KEENA
LAMAR STEWART, FACULTY MENTOR
ORAL SESSION D / ROOM 352 / 3:45 P.M.

3D scanning is a breakthrough technology that has revolutionized the ability to reverse-engineer parts and verify measurements. The Faro arm is generally used to capture measurements of complex parts and tools by using a sophisticated laser-data collection system in Geomagic Design X. With our current research, by combining the Faro arm point-cloud collection abilities with solid modeling capabilities, we have innovated a methodology to recreate physical objects into CAD models. Within this investigation, we reverse-engineered mechanical components for vehicle research and development applications.

HORIZONTAL GARAGE DOOR

KARA BISHOP, RAYENNA SUTTON, ELLA KEENA, AND CAMRYN HUGHES
EMADEDDIN TANBOUR, FACULTY MENTOR
ORAL SESSION D / ROOM 352 / 3:00 P.M.

Garage doors are a common component to a suburban lifestyle, and this mundane concept is reimagined to fit an unusual type of outdoor garage. The project is provided by a private construction company for a pre-constructed house. The location is difficult to access, and the pre-standing structure cannot accommodate a standard garage door. To fulfill the requirements of this bid, a custom horizontal garage door is designed, tested, and a physical prototype is constructed for validity. Aesthetics, functionality, and durability are the main factors in the design process using core engineering concepts, technical analyses (including Internet of Things and smart systems), and creativity.

INFORMATION SECURITY AND APPLIED COMPUTING

UNVEILING THE DYNAMICS OF SOCIAL ENGINEERING IN CYBERSECURITY

FATIMA HASAN
BILQUIS FERDOUSI, FACULTY MENTOR
ORAL SESSION A / ROOM 352 / 9:15 A.M.

Social engineering, a manipulative tactic in human computer interaction, threatens cybersecurity in individuals and organizational levels. This presentation will focus on 1) the factors that motivate and contribute to social engineering, and 2) the strategies that can be taken to mitigate social engineering for ensuring cybersecurity. The social engineering techniques include pretexting, phishing, and impersonation: leveraging triggers such as trust manipulation. Motivations vary from financial gain to personal agendas, causing monetary loss, business disruption, and reputational harm. Protective measures such as education, security rules, multi-factor authentication, and a critical-thinking culture are crucial in tackling social engineering to ensure cybersecurity. Understanding social engineering mechanisms to enhance user awareness to reduce the challenge to cybersecurity associated with such attacks is important.

THE EQUIFAX DATA SECURITY BREACH

CIANA HOLLOWAY, JACK KEEN, KATHRYN KUS, AND WYNTON LOVE
BILQUIS FERDOUSI, FACULTY MENTOR
ORAL SESSION A / ROOM 352 / 9:00 A.M.

Research Abstract: In 2017, Equifax's data security breach compromised the personal data of 147 million people, exposing its weaknesses in protecting sensitive data. This security breach led to extensive legal and security penalties for Equifax – a leading credit monitor. This study analyzed the data breach, detailing the failure in patching the Apache Struts vulnerability and ensuing legal, fiscal, and regulatory results. It also examined the breach's wider implications on affected people's data and privacy. This presentation will emphasize the importance of data security risk assessment and how to respond to security breaches, stressing the need for robust cybersecurity policy and effective data management.

PROGRESS REPORT: BREACHING A CAR'S SECURITY TO DRIVE VIA GAMEPAD

ETHAN SOVA
TAUHEED KHAN MOHD, FACULTY MENTOR
CROSSING LINES DESIGN EXPO / ROOM 300 / 9:00 A.M. - 4:00 P.M.

The advent of autonomous vehicles (AVs) necessitates the exposure of a car to an open network. In order to ensure that a car can provide a safe journey, security of the electronic control units (ECUs) must be considered. This research considers the possibility of using a single device to gain complete control of a contemporary vehicle via the bypass of the car's pre-existing security measures. A discussion on how the aforementioned exploit would be undertaken, plus recommended security measures, will be explored.

CONNECTING MOBILE DEVICES TO VEHICLES: THE CONVERGENCE OF ATTACK SURFACES

ALLIE ZWIKER
TAUHEED KHAN MOHD, FACULTY MENTOR
POSTER GROUP 3 / ROOM 310 / 2:45 P.M. - 4:15 P.M.

In the 21st century, automotive companies stumbled into the midst of a revolution fueled by the evolution of technology. Demands for device connectivity prompted the supplementation of wireless innovations, yet integrating these features only increases attack surfaces. As contemporary vehicles advance without sign of deceleration, the reliance on these interfaces highlights the need to secure functionalities of vehicles. This project explores methods that facilitate unauthorized access to vehicle functions via mobile devices. The goal of evaluating weaknesses in these wireless interfaces is to promote the safety and security of automotive technologies as they grow in complexity.

TECHNOLOGY AND PROFESSIONAL SERVICES MANAGEMENT

IMMERSIVE SIMULATION TECHNOLOGIES IN EMU'S AVIATION PROGRAM

IBRAHIM ALDHAIBANI, FERRIS BENNETT, AND HAVEN NOLL
CHUYANG YANG, FACULTY MENTOR
POSTER GROUP 1 / ROOM 310 / 9:00 A.M. - 10:30 A.M.

High-fidelity simulation-based training is essential for an immersive and affordable learning environment for aviation flight students. Our research goal is to explore the factors shaping students' inclination to adopt Virtual Reality (VR) in dynamic learning settings and address the sampling methodology used in prior studies to include flight performance data based on two different simulation settings: VR-based and a traditional Frasca Aviation Training Device (ATD). Then, this study utilizes the modified Technology Acceptance Model (TAM) to interpret students' performance associated with their anonymous responses. In addition, this study also identifies gaps and offers recommendations.

LEVERAGE NEXTGEN TECHNOLOGIES TO ESTIMATE AIRCRAFT OPERATIONS NEAR EMU COMMUNITY

HAVEN NOLL, IBRAHIM ALDHAIBANI, AND FERRIS BENNET
CHUYANG YANG, FACULTY MENTOR
POSTER GROUP 1 / ROOM 310 / 9:00 A.M. - 10:30 A.M.

General Aviation is how most next-generation pilots train and build flight hours. Most general aviation airports do not have any air traffic control facilities, which means there is no accurate information for pilots to go off of. This study aims to apply artificial intelligence (AI) algorithms to predict aircraft operations at non-towered airports. A Raspberry Pi computer was installed at Roosevelt Hall to collect ADS-B data within 30 NM of the EMU campus. Then, the authors review and apply AI algorithms to predict and classify aircraft operations. Aviation stakeholders such as airport operators or managers will benefit from the improved aircraft operation predictions through this research.

THANK YOU

Our appreciation is extended to the following Eastern Michigan University offices and individuals who contribute annually to the success of the event:

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A special note of thanks to the Office of Graduate Studies and Research for their continued support of the event.

Finally, a thank you to the many colleagues, peers, and supporters who assisted us in bringing the 44th event to fruition.

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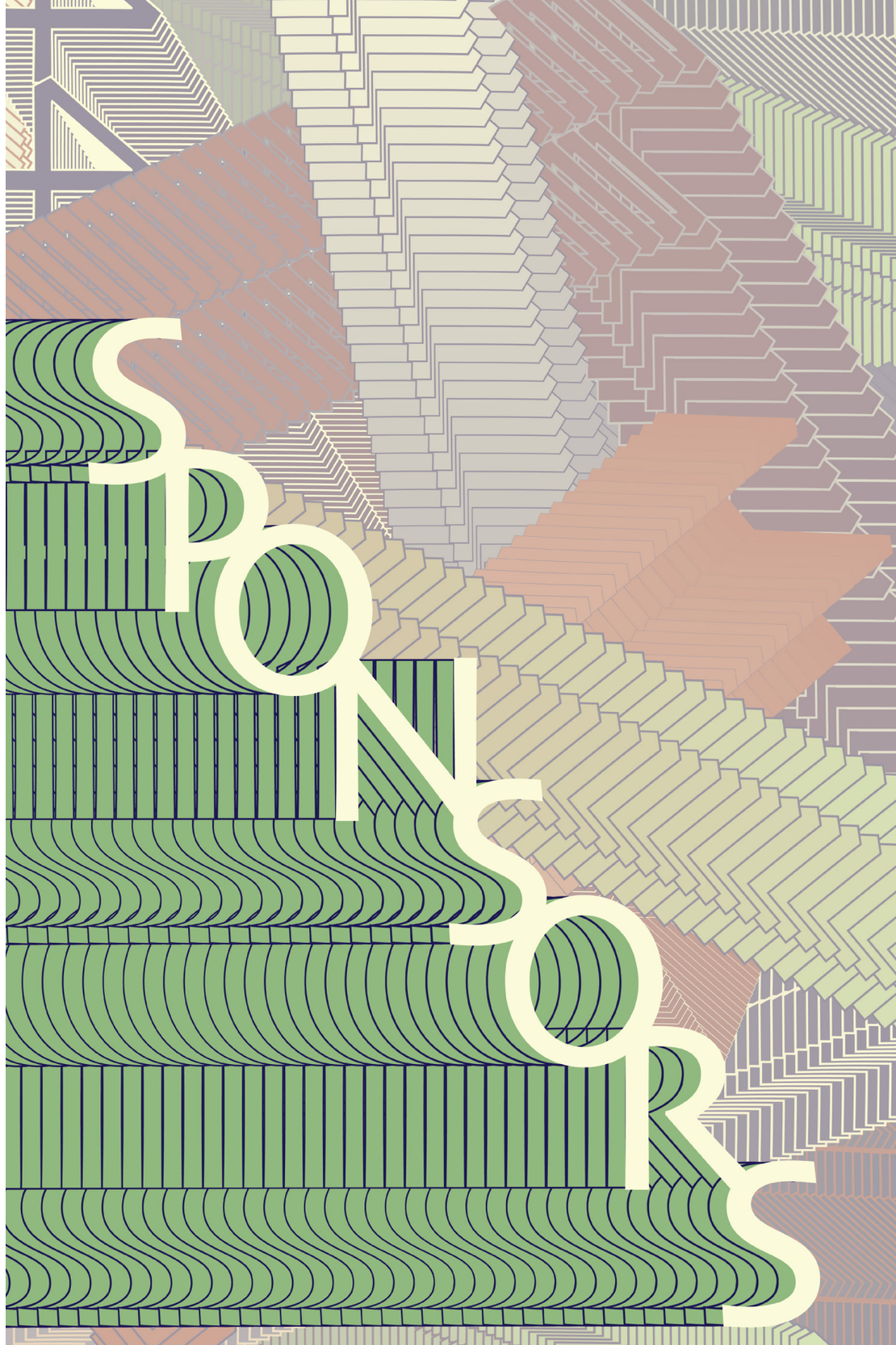

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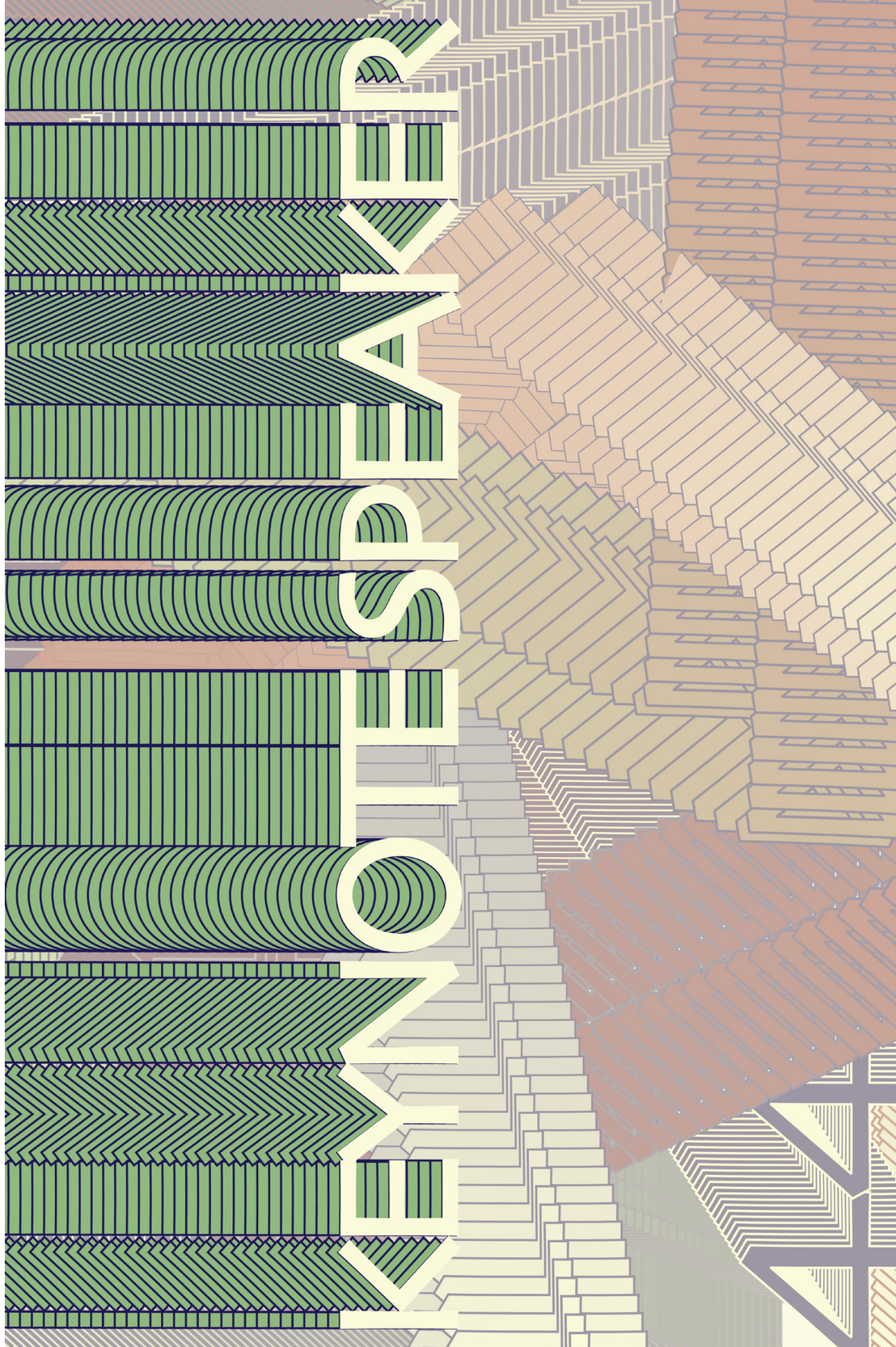


KEYNOTE SPEAKER

We are excited to welcome Dr. Dara Walker as our Dennis M. Beagen Keynote Speaker for the 44th annual Undergraduate Symposium.

Walker, who graduated from EMU in 2009 with a bachelor's degree in Africology and African American Studies and a minor in Social Science, is a two-time Symposium presenter.

An Assistant Professor of African American Studies, History, and Women's, Gender, and Sexuality Studies at Pennsylvania State University, Walker earned her PhD in History from Rutgers University.

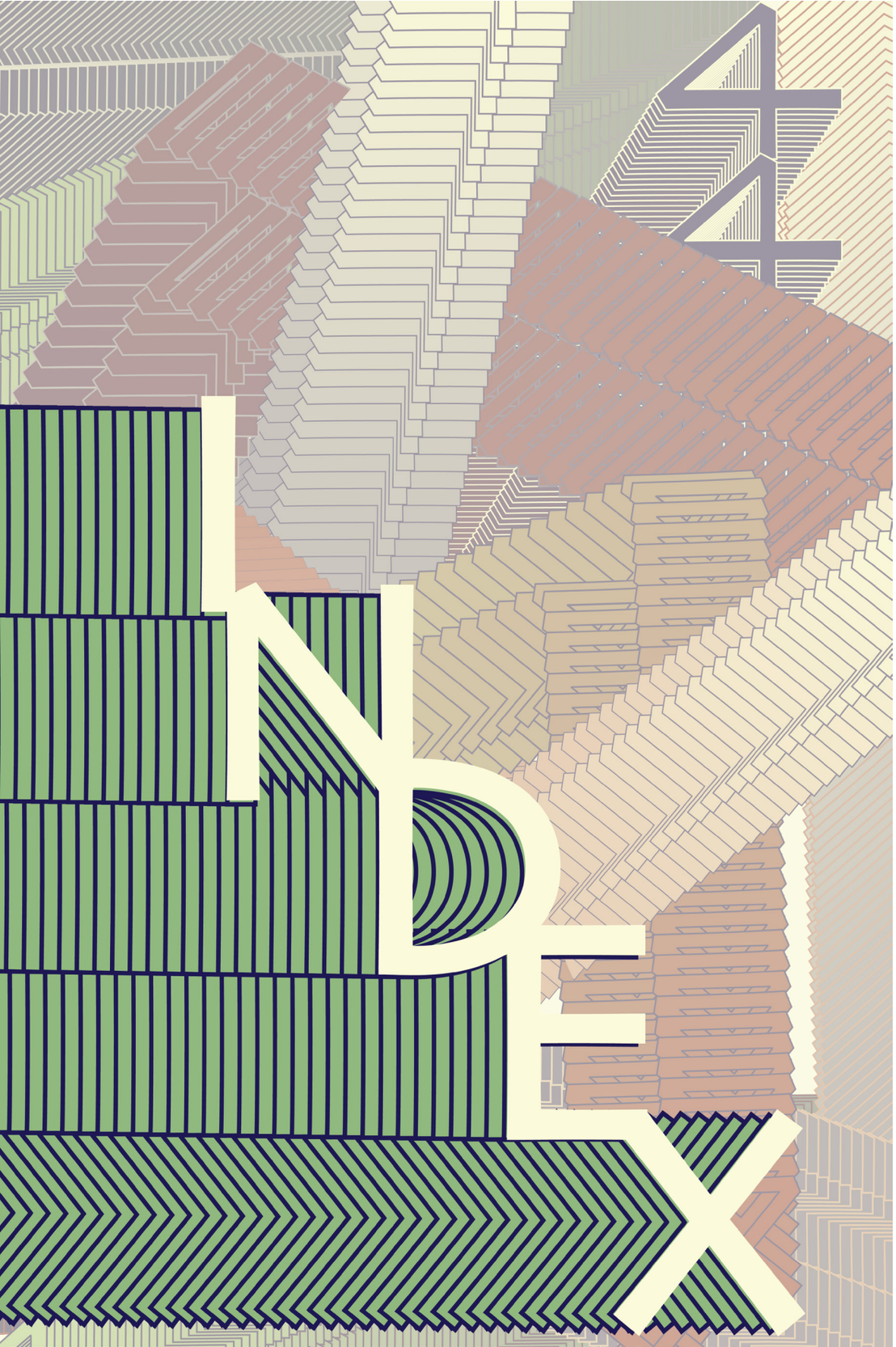
As a student in the Africology and African American Studies department at EMU, Walker became engaged in undergraduate research which allowed her to explore interests in African American and African diaspora history and culture, gender and sexuality, language and literature, and the Black radical tradition. Joining the EMU McNair Scholars Program and the Honors College supported her involvement in research. Dara's senior Honors thesis, We Were Fighting For Self-Determination and Power: Black High School Student Activism and the Black Power Movement, is still available in Digital Commons While writing her honors thesis, Walker also published "Report on Information Literacy and the Mic: Teaching Higher Education Students Critical Research Skills Using Hip Hop Lyricism" in the first volume of the McNair Research Journal.

Dr. Walker's research and teaching interests include African American history, urban history, the History of Education, and the history of childhood and youth. Dr. Walker is currently writing her first book, High School Rebels: Black Power, Education, and Youth Politics in the Motor City, 1966-1973, which examines the role of Black high school student organizing and political study in the development of Detroit's Black Power movement. She is also the author of "Moving Beyond the 'Dark Africa' Narrative: Black Girls, Black Power, and the Battle for a Culturally Relevant Curriculum" in The Global History of Black Girlhood by Corinne Field and LaKisha Simmons. Her research has been funded by the Ford Foundation, The Archives of Labor and Urban Affairs at Wayne State University, the National Academy of Education, and the Spencer Foundation. Dr. Walker's writing has appeared in The Washington Post, Black Perspectives, The Journal of African American History, and Feminist Studies. In 2024, two of her Organizing, Education, and the Politics of Urban Renewal in Detroit during the Black Power Era" which will be published in The Journal of Urban History and "Music That Moves Me': Preliminary Thoughts on Music Education in the Era of Black Power," which is a part of a special issue in The Black Scholar).

We are excited to host this outstanding EMU alum and allow her to celebrate both the Symposium and the academic success of its participants at the 44th event on Friday, March 22, 2024. The keynote address will be delivered during the private event luncheon which is hosted for students, faculty mentors, and invited guests.

Eastern Michigan University's 44th Undergraduate Symposium

For more information about the Symposium, please visit:
https://www.emich.edu/symposium/



71	Madison Wampler	Poster Group 3 / 310 A/B / 2:45 p.m. - 4:15 p.m.
79	Shih-Ping Wang	Poster Group 3 / 310 A/B / 2:45 p.m. - 4:15 p.m.
70	Mars Ward	Oral Session C / 320 / 2:00 p.m.
52	Joslynn Ward	Poster Group 3 / 310 A/B / 2:45 p.m. - 4:15 p.m.
37	Syed Wasiuddin	Poster Group 2 / 310 A/B / 11:00 a.m. - 11:45 a.m. & 1:30 p.m. - 2:15 p.m.
16	Alexxus Watson	Oral Session D / Aud / 3:45 p.m.
40	Sarah Webb	Design Expo / 300 / 9:00 a.m. - 4:00 p.m.
54	Ciara Wheeler	Oral Session D / 352 / 3:15 p.m.
80	Helena Williams	Oral Session A / 320 / 9:30 a.m.
37	Jaime Williams	Poster Group 1 / 310 A/B / 9:00 a.m. - 10:30 a.m.
30	Jaime Williams	Poster Group 2 / 310 A/B / 11:00 a.m. - 11:45 a.m. & 1:30 p.m. - 2:15 p.m.
69	Hermes Wilson	Poster Group 2 / 310 A/B / 11:00 a.m. - 11:45 a.m. & 1:30 p.m. - 2:15 p.m.
38	Patricia Woghiren	Poster Group 1 / 310 A/B / 9:00 a.m. - 10:30 a.m.
75	Ashley Wright	Oral Session C / 320 / 1:45 p.m.
46	Ella Yokom	Oral Session A / 320 / 9:00 a.m.
52	Tori Zremski	Oral Session B / 352 / 11:00 a.m.
29	Nicole Zuraw	Poster Group 2 / 310 A/B / 11:00 a.m. - 11:45 a.m. & 1:30 p.m. - 2:15 p.m.
83	Allie Zwiker	Poster Group 3 / 310 A/B / 2:45 p.m. - 4:15 p.m.

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