SOURCE 2019
Award Winners

James and Katie Gaudino Award, Creative Expression
Four Corners Quartet: Evan Hagen, Sophie Mortensen, Sam Spicer, and Ian Monahan
Mentor: Jeffrey Snedeker, Music

James and Katie Gaudino Award, Scholarly Research
Rowdy Sanford
Mentor: Greg Lyman, Engineering Technologies, Safety & Construction

Graduate Student of the Year Award
Co-awardees: Mireille Gonzalez and Alan Bergman
Mentor: Kara Gabriel, Psychology

Mentor of the Year Award
Jessica Mayhew, Assistant Professor Anthropology and Museum Studies

OUTSTANDING PRESENTATIONS

COLLEGE OF BUSINESS

Outstanding Oral Presentation

Presenter:	Gregory Gadow
Mentor:	Chad Wassell
Department:	Economics
Title:	Ample Provision
Abstract:	How to allocate scarce resources for an optimal outcome is of keen interest to those who set the budgets in public education. Simply throwing money at schools is not enough: it is important that money is spent where it will do the most good. This study looks at Washington State public school districts and examines how per-student expenditures in eleven budget categories relates to on-time high school graduation rates. It is an investigative study, exploring whether there is enough evidence to merit further, more in-depth research. Using budget and graduation information from academic years 1997-98 through 2016-17 for a representative sample 63 districts, I simulate several dynamic panel models. From these I identify which budget categories most heavily impact graduation rates, and over what time horizon the impacts are apparent.

Outstanding Poster Presentation
Presenter: Jasmine Leapfrot

Mentor: William Provaznik
Department: Management
Project Title: Downtown Ellensburg Business Development

Abstract: The Ellensburg Business Development Authority (EBDA) began looking into the development of businesses in Ellensburg in 2018. As the city of Ellensburg continues to grow in population, businesses grow along with it succeeding and failing. In this project I will further examine the economic development of businesses from the point of view of the actual members in the community. Ellensburg is known for its local businesses and how much these businesses invest in the community. For this research project I will be going door to door to 30-50 businesses and collecting data from the point of view of the actual business members. It is hoped that the qualitative and quantitative research from this project will help gain a better understanding of how Ellensburg's economy can grow locally and why some businesses are successful while others are not.

COLLEGE OF ARTS & HUMANITIES

Outstanding Oral Presentation

Presenter: Jordan Hughes
Mentor: Marji Morgan
Department: History
Title: That Dam Newsletter: Print Media's Influence on Safety Habits at the Grand Coulee Dam

Abstract: The Great Depression of the 1930s caused massive unemployment and many U.S. businesses to shut their doors. To combat this economic disaster, the Roosevelt Administration created public works projects like the Grand Coulee Dam. Construction conditions at the dam site were dangerous, so many workers were injured and some even died. To date, no research has been done on how employers encouraged safety at New Deal Era construction sites. This study finds that during construction of the Grand Coulee Dam, the Mason-Walsh-Atkinson-Kier Company implemented a number of strategies to promote safety at the work site. The main strategy to promote safety was the "Columbian," a newsletter sent to employees of the dam. The goal of the "Columbian" was to influence the habits of employees, to ensure that employees followed safe practices while at work. This paper argues that the newsletter influenced readers by appealing to their masculinity, playing on their fear and guilt, and demonizing all unsafe work practices. These tactics provide an insight into how companies running New Deal projects attempted to prevent workplace accidents. Just as commercial advertisers were playing on fears and guilt generated by the Great Depression, so too did companies involved in non-commercial activities exploit these sentiments in their employees to get the message of safety across.

Outstanding Oral Presentation

Presenters: Natalie Melendez, Taylor Kelly, Grey Caoilli and Sammy Miyake

Mentor: Emily DuPlessis
Department: Communications
Project Title: Curriculum contributes to cultural competency- a meta analysis of accredited public relations degree programs

Abstract: Despite public relations known global reach, there is a lack of cultural diversity in the workforce. This shortcoming is revealed through close analysis of undergraduate PR programs in the US which lack curriculum relating to diversity. From an outsider's perspective, many PR programs appear inept in this area; especially from the standpoint of digital natives who are researching undergraduate programs online. This research investigates and rates PR programs using an evaluation rating tool designed by the research team. This research examines criterion such as: programs offering a study abroad experience, or if the faculty reflects cultural diversity. The analysis will reflect how many culturally centric classes the program offers, if a cultural experience is required for degree seeking students, if the faculty appears culturally diverse and if the program reveals language that matches cultural inclusivity. Our findings will be presented to CWU SOURCE and regional universities with PR programs.

Outstanding Creative Expression Presentation/Performance

Presenter: Jessica Graham,
Mentors: Gabrielle McNeillie & Therese Young
Title: Bring the arts together

Abstract: Art is such a huge and impactful part of society, it sparks creativity, joy, and wonder into the lives of everyone. Art is categorized into different groups: Performing, Visual, Music and writing. What if we combined these four to create a beautiful message and work of art? The four genres of art were brought together, to produce one cohesive work of art. With movement and music inspired by a photograph and a poem, the poetry was brought to life. This powerful piece will convey the story behind the poetry in visual manner.

Outstanding Poster Presentation

Presenter: Olivia Bode
Mentor: Roxanne Easley
Department: Department of History
Project Title: An Examination of Russian Orthodox Iconography

Abstract: This poster examines five religious icons from the collection of the Central Washington University Museum of Culture and Environment. There was little information about the icons in the museum records except they were presumed to be of Russian or Slavic origin. Most museums have numerous objects in their collections that have little to no information known about them. This is inherently problematic because it is a museum's job to preserve cultural history through objects, which cannot be done if there is no information about the object within museum records. Providing historical background for objects in museum collections addresses the common issue of objects without provenance and cultural context. It was my goal to provide historic and cultural background information through completing catalog and condition reports on the objects and

conducting research on Russian iconography. I also analyzed the images to find their religious meaning and received translations of the inscriptions on the objects to provide cultural context. Through my research I found that four of the five icons are reflective of Russian Orthodox iconographic styles and the other icon requires further research.

Outstanding Poster Presentation
Presenter: Darlene Salcado
Mentors: Jamie Gilbert and Nelson Pichardo
Department: Communications
Title: The Disproportionate Effect of Seattle's Urban Development on Social Welfare

Abstract: Urban growth of a city would seem to portray nothing but progress and success- but does it really? Many have recognized the drastic urban growth that has taken place in the Seattle metropolitan area over the past thirty years and applaud its achievements- but the increase in its flaws seems to lack the recognition it needs. The prominent social issues that Seattle currently face are due to the fact that its urban growth has been heavily focused on the increase of economic activity while the progression amongst social welfare faces a shortcoming. Over time, the economic and social environment of the Seattle metropolitan area has begun to accommodate and serve the needs of corporations and the wealthy while perpetuating many forms of marginalization and gentrification amongst minority groups. In this presentation, a review of the current literature will be provided, along with a recommendation to future researchers including a discussion on how a future study with a qualitative analysis could be developed to further assess the relationship between the increase in economic growth and the decrease in social welfare across the Seattle metropolitan area.

COLLEGE OF EDUCATION & PROFFESSIONAL STUDIES

Outstanding Oral Presentation
Presenter: Chelsea Rivas
Mentor: Naomi Petersen
Department: Accessibility Studies
Project Title: Evacuation Policies and Procedures for Minor-Aged Public School Students with Mobility Impairments in Multistory School Building

Abstract: All minor-aged public school students have an equal right to exit a school building during an emergency--or do they? Working in concert with one another, the Americans with Disabilities Act (ADA), the International Building Code (IBC) and the National Fire Protection Agency (NFPA) set forth codes, standards, and requirements for all public buildings, which should mean that yes, all children have an equal right to exit a school during an emergency. This study, however, demonstrates that in practice, ADA, IBC, and NFPA requirements inadvertently cause and support discriminatory evacuation policies and procedures in multistory public school buildings, privileging the evacuation of non-mobility-impaired students while placing mobility-impaired students at greater risk of injury or

death. This study includes an analysis of a local school district's multistory buildings as well as its emergency policies and procedures. Interviews with teachers and staff reveal levels of training received regarding the evacuation of students with mobility impairments (upon HSRC approval). Other data collection includes measurements of the time and distance of the evacuation of mobility impaired students, measurements of the time and distance of the evacuation of non-mobility-impaired students, emergency services response times to the various schools, and etc. Moreover, additional quantitative data taken from an aggregate of publicly-available information and news sources will reveal that this issue is not specific to one district, but rather a systemic problem across the U.S. directly caused and supported by public policy at the federal level. The study concludes with recommendations for policy and facility updates.

Outstanding Poster Presentation

Presenter: Leanna Shymanski
Mentor: Susana Flores
Department: Educational Foundations & Curriculum
Project Title: An analysis of bias in 10 elementary education instructional materials

Abstract: There has been a recent demographic shift in public schools in the United States. Schools are becoming much more diverse while majority of teachers are white. This has created a cultural divide between students and teachers in our schools today. One major problem is the achievement gap which is defined as the disparity in test scores between White student and their counterparts (Howe & Lisi, 2017). It is important for students to have an example to look to in their teachers that represent their cultures and backgrounds. Through this project I will analyze ten elementary education instructional materials and determine the biases within them. Recommendations will be made to teachers, parents, and librarians about purchasing and adopting books and instructional materials that are inclusive of the student's experiences. Annotated bibliographies will be distributed so that other teachers can begin to conduct their own original research with respect to biases in existing instructional materials. Through this process, teachers will be able to become more culturally literate and aware.

Outstanding Poster Presentation

Presenter: Lane Wilkinson
Mentor: Susana Flores
Department: Educational Foundations & Curriculum
Project Title: Analysis of Music Educators in the United States

Abstract: In the field of music there is an enormous gap between the diversity of students and the diversity of the conductors of the students. Over time, the student population has become increasingly more diverse, moving away from an all-white classroom. However, with progress being made with students, the diversity of band directors has continued to be a white-male dominated field. There is a cultural mismatch in the schools. Another major problem is the achievement gap which is defined as the disparity in test scores between White student and their counterparts (Howe & Lisi, 2017). Students need to see themselves reflected in

their teachers but also in the curriculum. Much of the current curriculum for music education reflects Eurocentric traditions of music. What is left out is much of the musical traditions and aspects of African, Asian, Hispanic and other nations' cultures. Through this project, I will do an analysis of race and bias of music directors in the United States to see the genres and cultures of music that are being taught. Recommendations will be made to teachers, parents, and school executives about the importance of having diverse music educators; as well as the benefits to the students when they are introduced and immersed with cultural music from around the world. Using the Washington Models for the Evaluation of Bias (2009) I will look for patterns and practices broadly used in popular instructional resources for the music classroom.

Outstanding Creative Works
Presenter: Paige Foggin, Apparel, Textiles and Merchandising
Mentor: Andrea Eklund
Project Title: Lovesome
Abstract: Lovesome; lovely and lovable, two words that perfectly describe the young woman who would wear this garment. Inspired by trips abroad, along with the youthful and flirtatious spirits, this simple white dress allows the vibrant colors of spring to compliment the innocence and beauty of the look. A fun and care free touch is presented through the ruffles along the bodice of the dress, while the back cutout adds a touch of sex appeal. The fitted silhouette of the dress is figure flattering and gives a balance to the cascading ruffles along the bodice of the dress. The color white was chosen as a symbol of innocence and youth. The color also provides a clean and versatile look to every wardrobe and can be worn to many different occasions. The garment was draped, patterned and constructed by hand. Once the exterior and lining of the dress was constructed, they were carefully hand sewn together with a technique where all the stitches are inside the seams and not visible from the exterior or interior. The garment, Madi, was named after the model wearing the piece; this idea was inspired by wedding dress designer, Hayley Paige, who names each of her dresses, as it makes them more personal and meaningful. This is one in a line of three garments.

Outstanding Creative Works
Presenter: Abbey Obernberger
Mentor: Andrea Eklund
Department: Family and Consumer Sciences
Project Title: Periwinkle Perfect
Abstract: Periwinkle is a color in the blue and violet family and the name is derived from the lesser periwinkle or myrtle herb, which bears flowers of the same color. The purpose of this garment was to make women feel empowered and beautiful. I wanted to mix vintage style with some more modern elements. A lot of my inspiration for this garment came from the Audrey Hepburn wedding dress in the movie *Funny Face*. I loved the look of a full tulle skirt and a fitted bodice. The garment was modest but still made Hepburn look sexy. The original look was a pristine white; however, the garment I designed is a beautiful periwinkle that

gives the garment a much lighter and airy feel. The shape and fitting of the garment was intended to give the model a flattering figure as well as make her feel confident and elegant. This garment is intended for young women who are very active in the social scene, or even girls who attend dances such as prom and homecoming. The fullness of the tulle and the fitted bodice gives a younger vibe, and the color does this as well. Tulle was a material I had never used before and really wanted to experiment with, seeing that it is a more difficult textile to design with. I ended up using tulle for the skirt and chiffon for the bodice. I really enjoyed this experience and the learning process of experimenting with different textiles.

Outstanding Poster Presentation

Presenter: Christian Barrett
Mentor: Matt Burvee
Department: Engineering Technologies, Safety & Construction
Project Title: A More Ergonomic Ultrasound Probe

Abstract: The current ultrasound probes used in hospitals today use the same design produced in the mid 90s. Ultrasound probes consist of a transducer at the end of a handle. To perform an exam, an ultrasound technician (sonographers) must manipulate the probe at the wrist. To produce a clear image, the technician must apply pressure against the patient at different angles. Due to the extensive rotational movement and pressure the wrist takes when scanning a patient with an ultrasound probe, there is a high rate of carpal tunnel and other wrist injuries in sonographers. This new ultrasound probe will take the rotational movement out of the technicians wrist and isolate the rotational movement to the probe. This rotational movement is achieved by a swiveling transducer head. The majority of the construction was conducted using the machine shop as well as the Senior Project Lab in Hogue Hall at Central Washington University. The probe must withstand up to 40 pounds of vertical force from the grip to the head of the probe. The head must also perform the full range of movement in less than 2 seconds. Different sized pulley wheels and programed speeds are tested to achieve these operation standards.

COLLEGE OF THE SCIENCES

Outstanding Oral Presentation

Presenter: Patrizia Chirco,
Mentor: Mary Radeke
Department: Psychology
Title: Immigrant or Expatriate? How skin color and country of origin affect social categorization

Abstract: Research in the fields of sociology and psychology provides definitions of the terms *expatriates* and *immigrants* and addresses the distinctions between the two in normative terms. Little research has been conducted on how migrants are categorized by participants in the public discourse in their host country. This pilot

study examined how people categorize as expatriates or immigrants individuals in the USA based on their country of origin and skin color. 165 participants, recruited through the Sona system, were randomly assigned to see photos of either light-skinned or dark-skinned individuals in the conditions Mexico, Germany, or no country and asked to rate the likelihood of that individual being either an expatriate or an immigrant. Preliminary data of two factorial ANOVAs suggest that while country of origin did not influence the likelihood of an individual being categorized as either immigrant or expatriate, skin color did. The present findings may suggest that people with darker skin tones are more often categorized as immigrants than are people with light skin tones. When people with darker skin tones are wrongly categorized as immigrants, the consequences on the individual may be more or less serious. Tougher immigration enforcement and racial profiling are disrupting the daily routines of U.S. citizens and legal residents. American citizens of darker skin tone are regularly mistaken for potentially unauthorized immigrants; as a consequence, they are developing higher degrees of anxiety, stress, and depression due to fear of being arrested for illegal immigration.

Outstanding Oral Presentation

Presenter: Anna Gomez
Mentor: Roger Schaefer
Department: Law and Justice
Project Title: Gendered Disparities in Educational and Vocational Programming in America's Prisons

Abstract: Female inmates in America's prisons have been exposed to gender-stereotyped rehabilitative programs and have faced a limitation in educational and vocational programming compared to male inmates. Dating back to earlier 1970s, literature has highlighted disparities in educational and vocational programs between female and male prisons and a rise in female incarceration rates. This study identifies female and male inmate educational and vocational programming across the US; and examines whether gendered disparities continue to exist between inmate programming as documented in past research. Data for this study were collected by examining publicly available sources such as Department of Correction websites and public records for all fifty states. Specific measures were gathered and analyzed for this study including: program counts and descriptions, inmate populations, and facility-specific characteristics. Through a mixed methods approach and analyzation of descriptive data, this research will serve as a basis for identifying gendered disparities. This will expose a reality which can impede female offenders during the transition from prison to the community known as reintegration. Study findings will add to the literature by providing current information on the contemporary status of the gendered disparities regarding inmate programming.

Outstanding Oral Presentation

Presenters: Steven Copenhaver, Jose Luis Alonso, Francisco Gontes, Amanda Hoesman-Foley, Andrew Dunn, and Thomas Jaszczult
Mentor: Szilard Vajda
Department: Computer Science
Title: K.C. Cab Client-Side Mobile Application

Abstract: K.C. Cab is a local cab company owned by Stephen Jennings here in Ellensburg. Being a small business, Mr. Jennings is always looking for ways to expand his business and compete with larger companies such as Uber and Lyft. One of the biggest hurdles for K.C. Cab has been reaching out to his younger customers who expect smart phone applications such as those provided by the previously mentioned companies. Being a part of the Ellensburg community, the CWU Computer Science department seeks out potential senior projects that can benefit community various community members. Thus, the K.C. Cab Client Mobile Application project and was created. We are the KCCoders development team composed of six CWU undergraduates, and we wish to talk about our development process, successes and failures, and the difficulties we had to overcome. Mr. Jennings wanted a mobile application for modern smart phones with basic functions similar to those found in the Uber and Lyft mobile apps. These features included the ability to request a cab to your location, get live GPS tracking of both the client and cab driver, an embedded google map displaying those positions, and various pages for user and company information. To accommodate these features, a central database server and additional driver side app development team were also required. Focusing on the client side app, the KCCoders team had to learn many new modern technologies and skills to successfully complete the project, including Facebook's new React Native mobile framework, Javascript ES6, and the Android/iOS development kits.

Outstanding Oral Presentation

Presenters: Angela Quach, Hailey Dhanens, Casey Chen, Derek Vaughan and Matt Harker
Mentors: Donald Davendra and Szilárd Vajda
Department: Computer Science
Title: Human-Robot Interaction Using the NAO Robot

Abstract:

The NAO robot, developed by SoftBank Robotics (formerly Aldebaran Robotics), is an autonomous and fully programmable humanoid robot that is capable of interacting with humans by means of verbal and physical communication. Its potential capabilities can also extend to performing strenuous physical movements, i.e., dancing, and accessing the Internet through HTTP requests to provide advanced, "on-the-fly" information. This robot was used in AriGato Robotics Team's 2018-2019 Computer Science Capstone Project, where they were tasked with developing new programs for the NAO robot. These new programs were to be different and vastly more exciting than the robot's default behaviors; the programs, also known as modules, improve the user experience when interacting with NAO and make the overall interaction experience much more memorable and interesting. Users can trigger NAO's various modules with verbal commands and/or questions to execute activities such as pushups, guessing the user's age using facial analysis, and providi

ng information about movies. Otherbehaviors include activities such as dancing to Beyoncé's "Single Ladies", recommending an outfit based upon the weather of N AO's current location, talking about Central's offered Computer Science courses, a nd more! Given the growing abundance of robots and artificialintelligence in today 's society, the NAO robot project bridges embedded systems and the software deve lopment lifecycle to better understand how users may interact and benefit from robotics technology

Outstanding Oral Presentation

Presenters: Darby Wedekind and Michael Riley
Mentor: Eric Foss
Department: Craft Brewery
Title: Development of Procedures for Modifying Variables in the Brewing Process Using Sensory Analysis

Abstract: In the beer industry scientific methods and best practices for recipe and process development are rarely shared due to the investment individual companies have in their product. As craft brewing has gained more scientific attention, the industry has the opportunity to experiment more thoroughly on the direct effects of recipe modification. Our experiments serve the purpose of broadening the public understanding of these modifications, and examining the effect on the final product using sensory analysis. Impacts on beer flavor and aroma may be able to be traced back to these specific modifications, therefore through our project we aim to find their direct causes. After preliminary research concerning yeast strain modification, our experiments begin with investigating the effects of variation in fermentation temperatures. For these purposes a single beer is brewed and separated into fermentation vessels to be pitched with yeast of the same strain and amount, while held at different temperatures during fermentation. Upon completion the three variations are evaluated using traditional sensory analysis methods by a panel of students for significant differences in the finished product. Our results will not only indicate whether yeast temperature modification is a viable method of control of beer flavor, but also help us establish processes to improve future brewing ventures. Further experiments will include modifications to the recipe and other processes of brewing. Through collaboration and data analysis we will increase the efficacy and public knowledge of recipe and process development in brewing.

Outstanding Poster Presentation

Presenters: Grayson Long and Jadvir Gill
Mentor: Tonya Buchanan and Joshua Buchanan
Department: Psychology
Title: Understanding nudge interventions: Assessing the impact of fit between context and source of default recommendation in shaping decision-making and perceptions of default options

Abstract: Default options have a powerful impact on decision-making outcomes ranging from the vital (e.g., organ donation) to the banal (e.g., shipping options). While decision-makers may assume default choices represent recommendations, perceptions of the

source of this recommendation is not well understood and may change as a function of task or context. For example, decision-makers may assume defaults represent experts' opinions for complex or technical decisions, but the popular option for social decisions. In the current study (data collection ongoing), participants were presented with decisions described as being complex or social. The defaults included either matched (i.e., default options described as being selected by an expert in the complex situation or the most popular options in the social situation) or mismatched the decision context. An additional subset of participants was given no explanation as to how the defaults were chosen. We measured both the number of times the default option was selected and participants' perceptions of what the default options represented. This design allowed us to examine both the impact of fit between the decision context and source of default, and how people spontaneously make inferences about what information the default conveys. We hypothesized that the effectiveness of a default option will increase as a function of fit between the context and the explanation of the source of the default. Further, we hypothesized that participants' will be more likely to view the default as representing an expert's opinion in the complex context, and the most popular option in the social context.

Outstanding Oral Presentation

Presenters: Jennifer Magana and Silvia Gutierrez
Mentor: April Binder
Department: Biological Sciences
Title: The Phenotypic Effects of Dihydrotestosterone in the Development of Polycystic Ovarian Syndrome in a Post-natal Mouse Model
Abstract: Polycystic ovarian syndrome (PCOS) is one of the most common causes of infertility in women of reproductive age. It is an endocrine disorder that is characterized by hyperandrogenism (excess testosterone), lack of ovulation, and the presence of cysts within the ovary. Hyperandrogenism is thought to be the lead cause for PCOS by disrupting hormonal balance and ovarian function. A 90-day dihydrotestosterone (DHT) treatment showed high expression of two Claudin genes, Cldn 3 and 11. These genes are normally expressed in the brain and the testis. The aim of this study was to induce PCOS over several different time periods in order to better understand the phenotypes and expression of these Cldn genes during the development of PCOS in mice. Treatment times included 10, 21, 35, and 49 days where animals were treated with DHT or placebo controls. In addition to Cldn gene expression the age of vaginal opening (measure of puberty), anal genital distance, body weight and estrus cycle were recorded. Quantitative Real Time PCR (qRT-PCR) was used to analyze Cldn gene expression within the ovary, and estrous cycle was observed daily and classified between diestrus, proestrus, estrus, and metaestrus. Ovaries were collected at the end of each treatment time, fixed, and stained to observe morphological features. Observations between DHT treated mice and placebo mice suggest that prolonged treatment alters ovarian function and reproductive phenotypes. These observations can be used to further understand the development of PCOS.

Outstanding Poster Presentation

Presenter: Johnnise Moore
Mentor: Nelson Pichardo
Department: Sociology
Title: The experience of racial microaggressions on CWU's campus.

Abstract: The purpose of this study is to develop a scale examining the occurrence and discomfort caused by incidents of racial microaggressions. Racial microaggressions are brief, subtle, slights directed towards people of color, intentionally or unintentionally, that occur, verbally, behaviorally, and environmentally, on a frequent basis. The scale items were developed using themes identified in the qualitative literature. This scale will allow me to examine the impact of racial microaggressions on people of color on campus. This research involves recruiting black members of the CWU community (students, faculty, and staff) to respond to an online survey regarding their experience of microaggressions on campus. Students will be recruited through their association with various African American student organizations (BSU, ABS, Athletic Teams, etc.) and recruiting students currently enrolled in sociology classrooms. The data collected will undergo to the statistical analysis (ANOVA). The survey will take less then 10 minutes to complete.

Outstanding Poster Presentation

Presenter: Morgan Rodriguez
Mentor: Timothy Beng
Department: Chemistry
Title: Modular Regio-, Chemo-, and Stereoselective Access to trans-[n,6]-Fused Lactam-Halolactones

Abstract: Both lactam and lactone structures result in a plethora of bioactivities such as anti-Alzheimer, anti-anxiety, and more. Fusion of the two unlocks more bioactivities with the most classic of which being anti-bacterial, as seen in penicillin. However, synthesis of such structures is limited to β- or γ-lactones fused in a cis manner. In this embodiment, an unprecedented approach to trans-fusion of Δ-halolactones to lactams is described, paving the way for new biochemical exploration. The low-cost and high-yield method is highly chemo-, regio-, and stereoselective and is achieved through one-pot halolactonizations of γ-alkenoic lactamoyl acids resourcefully prepared from cheap feedstock chemicals. The approach is highly amenable to late-stage diversification and high throughput screening studies. It is anticipated that the uniquely meritorious methodology will attract interest in the medicinal and synthesis communities.

Outstanding Poster Presentation

Presenters: Victoria Capellin, Kaitlin Crook, Nik Harkins
Mentor: Patrick Lubinski
Department: Anthropology & Museum Studies
Title: Testing 3D Scanning & Printing for Making Reference Bone Specimens from Faunal Remains

Abstract: Comparative faunal collections are important for both research and learning, but being used as learning tools puts faunal remains at greater risk of damage. To help make elements from comparative collections available for research and education, we examine if 3D scanning and printing are yet precise enough to generate comparable models of faunal remains. For such materials to be useful, they must be accurate to the original element, quick and cheap to make, and easily shared. By using online services to host scans, faunal remains become accessible to people all over the world who may not otherwise have certain specimens in their own comparative collections. Using an inexpensive 3D scanner, we generated scans of the stylohyoid bones of a domestic cattle and domestic sheep and assorted carpal bones (magnums and unciforms) of a domestic cattle, mountain goat, bighorn sheep, pronghorn, and mule deer. These scans were meshed to create a 3D model of each element, which were then printed using two different 3D printing methods. Bone measurements were taken to help quantify the accuracy of the prints to the original elements and test which features became most distorted in the scanning and printing process. We found that the scanner and printers used were not able to create sufficiently detailed replicas of faunal remains. After analyzing the inter-observer error with the metrics, dimensions of prints were often over 10% larger or smaller than the original elements, resulting in loss of shape and distinctive features comparable to the original faunal elements.

Outstanding Poster Presentation

Presenter: Leni Halaapiapi
Mentors: Donald Davendra
Department: Computer Science
Title: A Chaotic Implementation of Two Meta-Heuristic Algorithms

Abstract: Within the field of Computer Science, there exists a category called Optimization. Optimization can be viewed as an algorithmic design problem where the objective is to be more efficient in terms of resources. One of the key facets of algorithm design is to reduce computational time. Modern optimization algorithms allows us to meet this objective. This research compares two modern optimization algorithms of the Firefly Algorithm proposed by Dr. Xin-She Yang and the Grasshopper algorithm developed by Dr. Seyedali Mirjalili. Both of these algorithms are meta-heuristics, which means they are based off of the real-life behavior of living creatures. The Firefly Algorithm is based off of the swarming behavior of fireflies while the Grasshopper Optimization Algorithm is based off of the swarming behavior of grasshoppers. These algorithms are used to find the global optima of a given mathematical function. The global optima in this case is either the minimum or maximum value output from a function. These problems can become intractable when the dimensionality of the problems increases. These

multi-dimensional calculations are very resource heavy as they use up a lot of time and memory. The objective is to reduce the amount of resources these algorithms use through optimization. The research includes a significant amount of numerical experimentations and its analysis on standard benchmark suites from literature. Additionally, chaotic randomization will be implemented to improve the algorithms.

Outstanding Oral Presentation

Presenter: Christiana Hopson
Mentor: Teresa Divine
Department: Law & Justice
Title: Drawing Us Out

Abstract: Gerrymandering is the act of changing the lines of political districts in order to give one political party a partisan advantage, a practice generally frowned upon. In Lamone v. Benisek, the Maryland-based plaintiff alleges that the political district in which they resided was gerrymandered in retaliation for their political views. Under the First Amendment, a person's choice to vote is protected free speech. The Supreme Court must decide the question of whether this instance of gerrymandering violates the First Amendment. There are currently no amendments in the United States Constitution that prohibit gerrymandering. I will be discussing whether the act was legal and if the plaintiff's rights were violated. Furthermore, I will examine in detail the disadvantages faced by communities when their geopolitical boundaries are unjustly altered.

Outstanding Poster Presentation

Presenter: Taylor Parton
Mentor: Michael Mulcahy
Department: Sociology
Title: Racial and Ethnic Segregation of School Teachers and its Impact on Exclusionary School Discipline

Abstract: Policies that have been made in an effort to make schools safer over time have done just the opposite. Instead of creating a more supportive environment, zero tolerance policies have contributed to a disproportionate rate of discipline towards students of color. Exclusionary school discipline (ESD), including suspensions and expulsions, disproportionately denies students of color a supportive learning environment where they can create an equal path to success. While previous research has found that exclusionary school discipline leads to less engagement and higher rates of dropout and juvenile delinquency in students, there has been no research on the affect that segregation of educators has had on the use of exclusionary school discipline. This research will look to identify the racial and ethnic segregation of teachers at a district level, and how it affects the use of exclusionary school discipline within the district. Data will be collected using OSPI resources to identify if there is a relationship between racial and ethnic segregation of teachers and exclusionary school discipline.

SCHOOL OF GRADUATE STUDIES AND RESEARCH

Outstanding Poster Presentation

Presenter: Katherine St John
Mentor: David Gee, Tafere Belay, and Dominic Klyve
Department: Nutrition, Exercise & Health Science
Title: Diet Quality Inversely Associated with Depression: NHANES 2011-2014

Abstract: Depression, also called major depressive disorder (MDD), major depression, or clinical depression, is a mood disorder known to cause decreased role functioning and quality of life. In a given year, an estimated 16 million U.S. adults experience a depressive episode. Less is known about the effect of diet quality and depressive symptoms. The purpose of the present study was to assess the relationship between diet quality and self-reported depressive symptoms in a nationally representative sample of the U.S. population. Data for diet quality was based from self-reported 24-hour diet recalls obtained from trained interviewers using the United States Department of Agriculture (USDA) Automated Multiple Pass Method (AMPM). Diet quality was measured using the USDA's Healthy Eating Index (HEI)-2015. Symptoms of depression were assessed by trained interviewers using the Patient Health Questionnaire-9 (PHQ-9). Survey logistic regression models determined whether HEI-2015 scores differed between depressed and non-depressed adults after controlling for age, gender, poverty income ratio (PIR), and body mass index (BMI). Additional models examined the role of diet components. A total of 8,448 adults over the age of 20 were included in this study. The overall prevalence of depression in this sample was 9.27%. Compared to non-depressed adults (n=7,665), depressed adults (n=783) had a lower total HEI-2015 score, and a significant relationship was found between HEI-2015 and PHQ-9 scores. These results were significant even after adjusting for age, gender, BMI, and socioeconomic status.

Outstanding Oral Presentation

Presenters: Hermann Yepdjio Nkouanga, Shivika Dewan, and Chao Huang Lin
Mentor: Razvan Andonie
Department: Computer Science
Title: Sentiment Analysis Using Machine Learning

Abstract: Sentiment analysis is the process of computationally evaluating spoken or written language to determine if the message that is being conveyed yields a positive, negative or neutral opinion. It is really important because nowadays, companies receive a massive amount of reviews about their products, brands, websites, customer service etc... and the way this information is handled can be critical for their success. They therefore, must find a way to process this information quickly and accurately so that they can respond to customers' needs on time. Having this in mind, we developed a software using machine learning tools, that is able to predict if a text will have a positive or negative impact on the reader. We used the TF-IDF (term's frequency-Inverse Document frequency) technique to pre-process the input text (convert it to numbers) and the MLP (multilayer-perceptron) to classify the reviews. We obtained a sample of 25000 movie reviews from the IMDB website, trained our model using 75% of them and tested it with the

rest(25%). Following this process, we were able to correctly classify 91% of the reviews that were used for testing. The software is written in Python using the machine learning library "Scikit-Learn." It is ready to be used and is able to classify a large amount of reviews in a short period of time.

Outstanding Oral Presentation

Presenter: Adam Robertson
Mentor: Daniel Herman
Department: History
Title: "Some other soldiers will watch us": A Private's Perspective of the Chattanooga Campaign, Sep. 20 - Nov. 25, 1863
Abstract: Cassius Marcellus Hibbard was a private in the Union Army and served during the Civil War from 1862-1865. As a member of the Army of the Cumberland he fought in the Battle of Chickamauga, lived through the Siege of Chattanooga, and fought in the Battle of Missionary Ridge. Some 34 years later, he wrote a memoir of his experiences from September 20, 1863 through November 25, 1863 as an infantryman during this crucial period of the American Civil War. This memoir, previously unexamined, provides a window into the dangers and deprivation of the life of a common soldier and gives a personal account and allows a unique historical perspective on the Chattanooga Campaign of 1863. By analyzing this memoir and putting it into context with other sources, I complicate the dry narrative of traditional history as told from the perspective of the commanders with the gritty, lived experiences of a foot soldier, including the decisive and impetuous charge led by enlisted men at Chattanooga.

Outstanding Poster Presentation

Presenters: Mackenzie Hughes, Dennis Wilson, Nik Harkins, and Mallory Triplett
Mentor: Patrick McCutcheon
Department: Cultural & Environmental Resource Management
Title: Preliminary Analysis of a Non-Professionally Assembled Lithic Collection Using Morphological Classification
Abstract: With a growing number of lithic artifact collections accumulating from throughout the northern Great Basin, identifying what first steps to take in collections management is becoming increasingly crucial. Though new excavations continue, it is necessary to develop an initial paradigmatic classification scheme if non-professionally assembled lithic collections are to be studied for scientific purpose. The objective of this research is to develop a general lithic classification scheme to encompass the traits and variability encountered in some Great Basic lithic artifacts, including projectile points. The Wild/Clymer stone tool collection includes 4, 461 stone tool artifacts, many of which are highly variable, including stemmed points, crescents, and overshot flakes. High resolution provenience is lacking, but general geography is present. Before attempting to determine provenience of a subset of these artifacts labeled from Frenchglen, OR (n=1052), we found it necessary to develop a classification scheme to identify shared characteristics in the collection. This allows us to proceed with typological classification and develop future research questions.

Outstanding Poster Presentation

Presenter: Alan Bergman

Mentor: Kara Gabriel

Department: Psychology, Primate Behavior and Ecology

Title: The zoo visitor experience and its connection to behavior in western lowland gorillas (*Gorilla g. gorilla*)

Abstract: Most zoos have missions to provide high-quality care for their animals and an enjoyable and educational experience for visitors. The present study was conducted to investigate the relationship between visitors and gorillas in a zoo environment. The effect of gorilla proximity to the visitor viewing areas on visitor attentiveness was examined in an indoor and outdoor gorilla exhibit. Visitor experience surveys were conducted for visitors exiting the outdoor exhibit. Stepwise multiple regressions revealed group and individual gorilla proximity effects on visitor attentiveness. For the majority of analyses, visitor attentiveness increased as the gorillas got closer to the viewing area, but proximity of two individual gorillas caused decreased attentiveness. Only one individual gorilla, a silverback in a family group, consistently changed positions in response to increases in visitor attentiveness, positioning himself farther away from the viewing area. Visitors answered more positively to survey items concerning their perception of the zoo's gorillas when they also reported witnessing more active gorilla behaviors, and also showed increased concern about gorilla conservation efforts when they spoke to an employee or volunteer about gorillas. Zoos can use this information to design enclosures that promote more active behaviors in their gorillas and to provide volunteers or employees that can discuss gorillas and conservation issues. This can allow visitors to have more enriching experiences while still limiting any negative effects on the gorillas.