Student Research Conference
Friday, March 27, 2015

Co-Sponsored by the Office of Research and Sponsored Programs and the Office of Graduate Programs
Welcome Message from the Coordinators

It is our pleasure to welcome you to the 5th annual University of Michigan-Flint Student Research Conference! This conference focuses on recognizing and celebrating the significant contributions of UM-Flint students involved in research and creative activities. In an effort to affirm the value of student scholarship and faculty collaboration, this event has brought close to one-hundred fifty talented students (both undergraduate and graduate), faculty advisors, and guests together for a day of sharing, engaging, and learning. We are extremely excited to host another – in what we hope will be many – Student Research Conference!

This year’s event includes 49 oral and poster presentations. The conference starts with an early poster session. Immediately following that is an oral session; with presentations as closely categorized by theme as possible. A final poster session and a luncheon will conclude the day. All presentation details are included in this program.

Students who have made the decision to participate in this year’s conference truly represent the best and brightest scholars to be found on our campus. Not only have they demonstrated the initiative to rigorously explore complex ideas beyond those taught in the classroom, but they have also bravely accepted the challenge to share their work with the public. This is no easy task. So we offer our hearty congratulations to the students for their many accomplishments.

Faculty advisors are also to be commended for tirelessly working with our student scholars. In their capacity as advisors, our faculty have offered encouragement, expertise, criticism, and support to student researchers. Through this support, our faculty demonstrate their commitment to carrying on the intellectual traditions that have made this University what it is today. To recognize their efforts, faculty advisors are listed following the students’ names with each abstract.

On behalf of the Office of Research and Sponsored Programs, the Office of Graduate Programs, and the University at large, thank you for supporting this celebration of research!

Andre Louis, Office of Research  Mary Deibis, Office of Graduate Programs
Friday, March 27, 2015  
Riverfront Banquet Center

**SCHEDULE OF EVENTS**

8:30 am – 9:00 am  
Registration & Continental Breakfast  
Riverfront Lobby

9:00 am – 9:10 am  
Welcome & Opening Remarks  
Suite D  
*Dr. Vahid Lotfi, Senior Vice Provost and Dean of Graduate Programs  
Chris Waters, Associate Provost and Dean of Undergraduate Studies*

Announcements

9:15 am – 10:00 am  
*Poster Presentations A*  
Riverfront Lobby

10:15 am – 11:30 am  
*Oral Presentations*  
SOM Classrooms

11:45 am – 12:30 pm  
**Poster Presentations B**  
Riverfront Lobby

12:35 pm – 1:15 pm  
***Luncheon and Closing***  
Suite D

*Each oral presenter will have 20 minutes to present  
** Poster presenters will have 45 minutes to present.  
*** At the end of the luncheon, we will have a raffle drawing, where three student presenters will win a $50 Barnes and Noble gift card. *Winner must be present to redeem their prize.*
POSTER PRESENTATIONS A

(9:15 am – 10:00 am)

Riverfront Lobby

Abstract #3
Project Title: VIGILANTE
Presenter(s): Alicia Srda, Undergraduate student
Faculty Sponsor(s): Gergana Kodjebacheva, Public Health and Health Sciences
Easel 1

Abstract #5
Project Title: SAE Aero Design
Presenter(s): Connie Lam, Undergraduate student; Scott Sier, Undergraduate student; Justin Ladd, Undergraduate student; Qijun Tang, Undergraduate student; Morgaen Vauter, Undergraduate student
Faculty Sponsor(s): Quamrul Mazumder, Computer Science, Engineering, and Physics
Easel 2

Abstract #6
Project Title: Ethical Perceptions of Undergraduate Students Regarding Research Requirements
Presenter(s): Candice Mayer, Undergraduate student
Faculty Sponsor(s): William McKibbin, Psychology
Easel 3

Abstract #8
Project Title: Take Care of Us
Presenter(s): Amanda Ingmire, Undergraduate student
Faculty Sponsor(s): Jamie Koonmen, Nursing; Pam Anzicek, Nursing
Easel 4

Abstract #13
Project Title: Thermoregulation Patterns in Headstarted Blanding’s Turtles (Emydoidea blandingii) at Shiawassee National Wildlife Refuge, Saginaw, MI, USA.
Presenter(s): Melissa Szymanski, Graduate student; Mallorey Smith, Undergraduate student; Sasha Davis, Undergraduate student; William Gibala, Undergraduate student
Faculty Sponsor(s): Teresa Yoder-Nowak, Biology
Easel 5

Abstract #18
Project Title: Utilization of Measures of Cognition and Fall Risk in United States Physical Therapist Practice, A Descriptive Study
Presenter(s): Alison Martin, Graduate student
Faculty Sponsor(s): Jennifer Blackwood, Physical Therapy
Easel 6
Abstract #19
Project Title: Through My Eyes
Presenter(s): Alex Campbell, Undergraduate student; Alicia McNary, Undergraduate student; Nicole Malewska, Undergraduate student; Angela Cuppernoll, Undergraduate student
Faculty Sponsor(s): Maureen Tippen, Nursing
Easel 7

Abstract #21
Project Title: Physical Performance, Cognitive Decline, and Fall Risk in Community Dwelling Older Adults with Cardiovascular Disease, A Descriptive Study
Presenter(s): Michelle Baumgart, Graduate student
Faculty Sponsor(s): Jennifer Blackwood, Physical Therapy
Easel 8

Abstract #22
Project Title: “I don’t care”: The Effects of Misinterpreted Text Messages on Relationship Satisfaction
Presenter(s): Samantha Turner, Undergraduate student
Faculty Sponsor(s): Jeannette Stein, Psychology
Easel 9

Abstract #24
Project Title: Biases in Perceiving Neutral Faces
Presenter(s): Shytance Wren, Undergraduate student
Faculty Sponsor(s): Jeannette Stein, Psychology
Easel 10

Abstract #25
Project Title: International Student Success: The Relationship between Homesickness and Extraversion
Presenter(s): Anqi Hu, Undergraduate student
Faculty Sponsor(s): Jeannette Stein, Psychology
Easel 11

Abstract #29
Project Title: Spewing Black Holes: Outflows from the Biggest Black Holes in the Universe
Presenter(s): Justin Wisby, Undergraduate student, Hillary Sewell, Undergraduate student; Paul Manion, Undergraduate student; Aritra Chakrabarty, Undergraduate student; Bayarjavkhlan Batbaatar, Undergraduate student
Faculty Sponsor(s): Rajib Ganguly, Computer Science, Engineering, and Physics
Easel 12

Abstract #30
Project Title: Fishing and Augmented Reality
Presenter(s): Bryan Granger, Undergraduate student
Faculty Sponsor(s): Charlotte tang, Computer Science, Engineering, and Physics
Easel 13
Abstract #31
Project Title: ERP Research on Financials improvement for a Company
Presenter(s): Anvitha Akurathi, Graduate student
Faculty Sponsor(s): Amal Alhosban, Computer Science, Engineering, and Physics; Biswajit Panja, Computer Science, Engineering, and Physics
Easel 14
ORAL PRESENTATIONS
(10:15 am-11:30 am)

“Advances in Technology”
Room 2315: Riverfront

Abstract #36
Project Title: To Investigate How to Design Better Technologies to Support Group Collaboration
Presenter(s): Sriharsha Vemulapalli, Graduate student; Manoj Kumar Gali, Graduate student
Faculty Sponsor(s): Charlotte Tang, Computer Science, Engineering, and Physics

Abstract #34
Project Title: Mobile application for a customized tour in a museum setting.
Presenter(s): Daniel Misura, Undergraduate student; Hannah Freedman, Undergraduate student
Faculty Sponsor(s): Charlotte Tang, Computer Science, Engineering, and Physics

Abstract #35
Project Title: User Habituation in Touch Dynamics
Presenter(s): Nikhil Palaskar, Graduate student
Faculty Sponsor(s): Zahid Syed, Computer Science, Engineering, and Physics

“Space & Beyond”
Room 2317: Riverfront

Abstract #2
Project Title: The Hubble Space Telescope: A View Beyond the Milky Way
Presenter(s): Dalia Duzdar, Undergraduate student
Faculty Sponsor(s): Maureen Thum, English

Abstract #26
Project Title: Outflows from Growing Supermassive Black Holes: Peering Through the Dust Shroud
Presenter(s): Joseph Richmond, Undergraduate student
Faculty Sponsor(s): Rajib Ganguly, Computer Science, Engineering, and Physics

Abstract #27
Project Title: Building a Case for a UM-Flint Campus Observatory
Presenter(s): Daniel Agar, Undergraduate student
Faculty Sponsor(s): Rajib Ganguly, Computer Science, Engineering, and Physics

Abstract #28
Project Title: Spewing Black Holes: Computer Simulations of the Wind, by the Wind, for the Wind
Presenter(s): Patrick Ross, Undergraduate student
Faculty Sponsor(s): Rajib Ganguly, Computer Science, Engineering, and Physics
“Industrial and Environmental Issues”
Room 2319: Riverfront

Abstract #9
Project Title: Design and Development of a New Small-Scale Wind Turbine Blade
Presenter(s): Linsay Bartle, Undergraduate student; Zachary Stevenson, Undergraduate student; Nicholas Parks, Undergraduate student
Faculty Sponsor(s): Ulan Dakeev, Computer Science, Engineering, and Physics

Abstract #15
Project Title: Effect of Bend Radius on Magnitude and Location of Erosion in S-Bend
Presenter(s): Siwen Zhao, Undergraduate student; Shadik Mohammad Shaheen, Graduate student
Faculty Sponsor(s): Quamrul Mazumder, Computer Science, Engineering, and Physics

Abstract #16
Project Title: Microhabitat Use and Movement Patterns of Headstarted Blanding’s Turtles (Emydoidea blandingii) at Shiawassee National Wildlife Refuge, Saginaw, MI, USA.
Presenter(s): Melissa Szymanski, Graduate student
Faculty Sponsor(s): Teresa Yoder-Nowak, Biology

“High Impact Teaching Practices”
Room 2321: Riverfront

Abstract #1
Project Title: Science and Technology: CONNECT integration in Undergraduate Biology
Presenter(s): Karla Hammond, Graduate student
Faculty Sponsor(s): Pamela Ross-McClain, Education

Abstract #7
Project Title: A Comparative Study of Motivation and Learning Strategies between High School and University Students
Presenter(s): Linsay Bartle, Undergraduate student; Zachary Stevenson, Undergraduate student; Nicholas Parks, Undergraduate student
Faculty Sponsor(s): Ulan Dakeev, Computer Science, Engineering, and Physics

Abstract #10
Project Title: #Edcamp: For Teachers, By Teachers
Presenter(s): Marissa McCann, Undergraduate student
Faculty Sponsor(s): Annie Whitlock, Education
Abstract #11
Project Title: Motivation and Learning Strategies of Students in Turkey
Presenter(s): Linsay Bartle, Undergraduate student; Zachary Stevenson, Undergraduate student; Nicholas Parks, Undergraduate student
Faculty Sponsor(s): Ulan Dakeev, Computer Science, Engineering, and Physics

“Health and Well-Being”
Room 2325: Riverfront

Abstract #12
Project Title: An Alternative Perspective: Chinese Medicine and Autism
Presenter(s): Elena Sobrino, Undergraduate student
Faculty Sponsor(s): Maureen Thum, Honors

Abstract #4
Project Title: Self-Reported Balance Confidence Relates to Perceived Mobility Limitations in Older Cancer Survivors
Presenter(s): Austin Righter, Graduate student
Faculty Sponsor(s): Min-Hui Huang, Physical Therapy

Abstract #17
Project Title: Walking Speed, Cognitive Decline, and Fall History in Older Adults with Cardiovascular Disease
Presenter(s): Michelle Baumgart, Graduate student; Alison Martin, Graduate student
Faculty Sponsor(s): Jennifer Blackwood, Physical Therapy

Abstract #23
Project Title: Visuospatial Ability, Functional Mobility, and Fall Risk among Older Adults with Mild Cognitive Impairment
Presenter(s): Robert Sweeney, Undergraduate student
Faculty Sponsor(s): Jennifer Blackwood, Physical Therapy
“Culture, Politics, Business, and Society”
Room 2331: Riverfront

Abstract #14
Project Title: Motifs in Ancient Irish Art
Presenter(s): Jacquelyn Leary, Undergraduate student
Faculty Sponsor(s): Janet Lorch, Communications and Visual Arts

Abstract #20
Project Title: FIA Connect: Bridging Arts with Technology
Presenter(s): Tobi Adebisi, Undergraduate student
Faculty Sponsor(s): Charlotte Tang, Computer Science, Engineering, and Physics

Abstract #43
Project Title: Improving the American Electoral Process
Presenter(s): Christopher Schwartz, Undergraduate student
Faculty Sponsor(s): Kimberly Saks-McManaway, Political Science

Abstract #46
Project Title: Corporate Sustainability
Presenter(s): Larry Smith, Undergraduate student; Henry Beard, Undergraduate student
Faculty Sponsor(s): Dave Nelson, School of Management
Abstract #32
Project Title: What Peace Means to Children in an Urban Environment
Presenter(s): April Davis, Undergraduate student; Shea Draper, Undergraduate student; Elena Woodward, Undergraduate student; Jennifer Parks, Undergraduate student; Egypt Tramble, Undergraduate student
Faculty Sponsor(s): Elizabeth Collardey, Social Work
Easel 1

Abstract #33
Project Title: Gait improvements for Parkinson's patients using the Pedaling for Parkinson's program
Presenter(s): Matthew Davis, Undergraduate student
Faculty Sponsor(s): Nathaniel Miller, Psychology
Easel 2

Abstract #37
Project Title: Disparities of Incidence by Race and Ethnicity for Childhood Cancer in Michigan
Presenter(s): Jeremy Blankenship, Graduate student
Faculty Sponsor(s): Gregana Kodjebacheva, Public Health and Health Sciences
Easel 3

Abstract #38
Project Title: Show Versus Tell? Mating Context Effects on Women’s Memory
Presenter(s): Autumn Duehring, Undergraduate student; Sarah Dyszlewski, Undergraduate student; Brandon Taylor, Undergraduate student
Faculty Sponsor(s): Terrence Horgan, Psychology
Easel 4

Abstract #39
Project Title: Sexual Racism: Racial Preferences for Potential Dating Partners
Presenter(s): Amanda Shanesy, Undergraduate student
Faculty Sponsor(s): Jeannette Stein, Psychology
Easel 5

Abstract #40
Project Title: Solar Boat
Presenter(s): Daniel LeBlanc, Undergraduate student; Frank Hyde, Undergraduate student; Joe Jerisk, Undergraduate student; Conner Geml, Undergraduate student; Janet Xiong, Undergraduate student
Faculty Sponsor(s): Ulan Dakeev, Computer Science, Engineering and Physics
Easel 6
Abstract #41
Project Title: Interventions to Improve Child-Parent-Provider Communication
Presenter(s):
Faculty Sponsor(s): Gergana Kodjebacheva, Public Health and Health Sciences
Easel 7

Abstract #42
Project Title: Toggle Clamp
Presenter(s): Jianchao Zhong, Undergraduate student; Benjamin Jennings, Undergraduate student
Faculty Sponsor(s): Quamrul Mazumder, Computer Science, Engineering, and Physics
Easel 8

Abstract #44
Project Title: Robot for Relief
Presenter(s): Xiaoyi Ma, Undergraduate student; Kawshik Ahmed, Undergraduate student; Siwen Zhao, Undergraduate student; Olugbadebo Adeyemi, Undergraduate student
Faculty Sponsor(s): Quamrul Mazumder, Computer Science, Engineering, and Physics
Easel 9

Abstract #45
Project Title: Interhemispheric Interaction and Sexual Fluidity
Presenter(s): Derek Mohamedally, Undergraduate student
Faculty Sponsor(s): Jeannette Stein, Psychology
Easel 10

Abstract #47
Project Title: Female Mate Preferences in Short and Long Term Relationships
Presenter(s): Nicole Moffitt, Undergraduate student
Faculty Sponsor(s): Jeannette Stein, Psychology; William McKibbin, Psychology
Easel 11

Abstract #48
Project Title: Behavior and Occupancy of an Isolated Population of Six-Lined Racerunners (Aspidoscelis sexlineata) Prior to Habitat Modification
Presenter(s): Melanie Schott, Undergraduate student
Faculty Sponsor(s): Teresa Yoder-Nowak, Biology; Danielle Potts, Biology
Easel 12

Abstract #49
Project Title: An Affordable CNC Mill
Presenter(s): Jonathan Arcocha, Undergraduate student; Zhongchen Du, Undergraduate student; Jing Liu, Undergraduate student
Faculty Sponsor(s): Quamrul Mazumder, Computer Science, Engineering, and Physics
Easel 13
ABSTRACTS

#1
Project Title: Science and Technology: CONNECT integration in Undergraduate Biology
Presenter(s): Karla Hammond, Graduate student
Faculty Sponsor(s): Pamela Ross-McClain, Education

ABSTRACT: With the Internet being a part of undergraduate students daily lives with news feeds, social media, and online grades, isn’t it time to integrate online homework? It is if it is effective, and not just included because we can! Therefore, this research determined whether the supplemental CONNECT resource for Biology homework with adaptive online technology for remediation and self-reflection has been effective within the first couple semesters of use. CONNECT was incorporated into the science curriculum for increased student achievement, and this research explores particularly whether it has resulted in a ten percent increase in the average unit test in Biology 99 at Kellogg Community College (KCC).

#2
Project Title: The Hubble Space Telescope: A View Beyond the Milky Way
Presenter(s): Dalia Duzdar, Undergraduate student
Faculty Sponsor(s): Maureen Thum, English

ABSTRACT: As early as 1923, astronomers proposed the idea of launching telescopes into space in order to learn more about the universe. The first successful satellite launches were held in 1968 and 1972 (The History of the Space Telescope). The information that these satellites brought created an even stronger passion to launch a more powerful space telescope, and from this the Hubble Space Telescope was born. NASA selected a team of 60 scientists who were highly skilled to establish a basic design for a space telescope in 1977. These scientists worked tirelessly assembling the Hubble Space Telescope, which took around ten years (The History of the Hubble Space Telescope). Although there were some serious delays, the telescope was finally launched in 1990 during the Space Shuttle Discovery Mission. The Hubble Space Telescope has been a revolutionary force propelling the discipline of astronomy and providing scientists with critical information describing our universe.

#3
Project Title: VIGILANTE
Presenter(s): Alicia Srda, Undergraduate student
Faculty Sponsor(s): Gergana Kodjebacheva, Public Health and Health Sciences

ABSTRACT: V. I. G. I. L. A. N. T. E.; (Veterans Innate Guidance & Integration of Life Achievements Networking Together for Excellence) is a program initiative to decrease suicide rates in OEF/OIF Veterans (Veterans whom served in Afghanistan and Iraq). VIGILANTE targets the repercussions from the transition from military lifestyles to civilian lifestyles and the suicide risk factors of occupational dissatisfaction (Veteran unemployment), hopelessness, lack of belonging, and a sense of burden to loved ones/friends. VIGILANTE is a voluntary minimal risk program; consent will be given by each participant. / VIGILANTE
encompasses 52 weekly sessions for participants comprised of a team (unit) structure applicable in civilian life. Participants will achieve the program’s objectives through activities designed to eliminate suicide risk factors; coupled with challenges many Veterans face transitioning from military to civilian life. Recent reports from the Veteran’s administration indicate twenty two Veterans commit suicide per day; estimated as almost two-thousand per year. Our continued foreign diplomacy efforts compounded by thousands of Americans returning from war allows for Veteran suicide to rank among public health issues.

#4

Project Title: Self-Reported Balance Confidence Relates to Perceived Mobility Limitations in Older Cancer Survivors
Presenter(s): Austin Righter, Graduate student
Faculty Sponsor(s): Min-Hui Huang, Physical Therapy

ABSTRACT: Outcome measures based on patient’s self-report provide insights into the impact of disease or condition on many different areas of a patient’s life. This study was to analyze the relationships between the self-report of physical function with balance performance and balance confidence. Thirty-nine community-dwelling cancer survivors (age=67.8 ± 8.69 years) participated in the study. Balance confidence was assessed using the short version of the Activity-specific Balance Confidence scale (ABC-6). The Physical Function Scale of the SF-36v2 was used to assess the perceived restrictions and limitations of physical function as related to an individual’s health condition. Our results showed that scores of ABC-6 were significantly correlated with the ability of climbing several flights of stairs (p<.01), climbing one flight of stairs (p<.05), and walking more than one mile (p<.05). Lower scores of ABC-6 were significantly associated with reported limitations in mobility tasks of climbing several slights of stairs (odds ratio=1.17). Higher Functional Comorbidity Index was associated with perceived limitations in climbing several flights or one slight of stairs. The results demonstrate that in older cancer survivors a measurement of self-report of balance confidence during activities rather than performance-based balance tests are important predictors of functional mobility in older cancer survivors.

#5

Project Title: SAE Aero Design
Presenter(s): Connie Lam, Undergraduate student; Scott Sier, Undergraduate student; Justin Ladd, Undergraduate student; Qijun Tang, Undergraduate student; Morgaen Vauter, Undergraduate student
Faculty Sponsor(s): Quamrul Mazumder, Computer Science, Engineering, and Physics

ABSTRACT: SAE Aero Design is an RC plane that can lift as much weight as possible while observing the available power. The aircraft is limited to designs of a fixed wing with the maximum combined length, width, and height no more than 175 inches. The gross weight limit may not weigh more than fifty-five pounds with the payload and fuel. The aircraft system has no restrictions on the electric motor, only that it has a single motor configuration and is not allowed multiple motors. The battery is a 6 cell (22.2 volt) Lithium Polymer battery with a minimum of 3000 mAh and 25c. The payload on the aircraft has to be fully enclosed within the fuselage and consist of a support assembly and payload plates. The radio requirement is to use a 2.4 GHz and must utilize either a spinner or a rounded safety nut. The airfoil design was chosen based on the need for a heavy lift and low Reynolds number. Calculations were performed to verify that the airfoil and selected materials will work to support an RC airplane in flight. The computational simulations have concluded that the design is all within the desired factor of safety.
#6

Project Title: Ethical Perceptions of Undergraduate Students Regarding Research Requirements  
Presenter(s): Candice Mayer, Undergraduate student  
Faculty Sponsor(s): William McKibbin, Psychology

ABSTRACT: Introductory psychology courses often require students to participate in psychological research, or complete an alternative assignment. In this study, we investigate student’s perceptions of research participation requirements. Advanced psychology students’ training may lead them to perceive requirements differently than introductory students. Thus we hypothesize that advanced psychology students will perceive required research participation as less ethical than students currently enrolled in introductory psychology. We tested this hypothesis by using an online survey. Participants consisted of undergraduate psychology students from the University of Michigan-Flint. Participants were categorized as either introductory or advanced psychology students. We found that despite having knowledge of research ethics, advanced students in fact found research participation requirements as significantly more ethical than the introductory students. This difference is the opposite of what we predicted. Implications of the findings, limitations of this study, and suggestions for future research are provided.

#7

Project Title: A Comparative Study of Motivation and Learning Strategies between High School and University Students  
Presenter(s): Linsay Bartle, Undergraduate student; Zachary Stevenson, Undergraduate student; Nicholas Parks, Undergraduate student  
Faculty Sponsor(s): Ulan Dakeev, Computer Science, Engineering, and Physics

ABSTRACT: To compare the level of motivation and strategies used by high school and university students, a study was conducted between two groups of students. The high school students were dual enrolled in university courses and the other group was first year university students. Both groups were enrolled in similar courses with instructors using similar teaching methods and materials. The study used a motivated strategy learning questionnaire (MSLQ) that consists of 18 categories of which 6 of them are related to motivation and 9 are related to learning strategies. The participants include fifty two high school students and forty five university students. An independent sample t-test analyses were performed to compare the responses of these two groups of students. The analysis results showed a significant difference between the high school & College level (University of xxxx) students in multiple items of motivational strategy. Additionally, gender comparison (Males and Females) showed significant difference in both high school and college level students in a few of the motivational and learning strategies.

#8

Project Title: Take Care of Us  
Presenter(s): Amanda Ingmire, Undergraduate student  
Faculty Sponsor(s): Jamie Koonmen, Nursing; Pam Anzicek, Nursing

ABSTRACT: The purpose of my presentation is to address a group of low-income, cognitively challenged seniors who are at risk for heart disease. The presentation focus is to educate them on risk factors for hypertension modifications they can make to improve the treatment of hypertension. The participants in
this teaching presentation have significant limitations in their health care. In their urban community, there is very little access to health care, transportation, fresh groceries or safe recreation. The relationship between the undergraduate student and community members is a community outreach program. The greatest support that they have is their own neighborhood community. The method for this community teaching project is a combination of lecture, demonstration, print material and return feedback in the form of a quiz show poster board. The topics to be covered include the DASH diet for hypertensive patients, cardiac risk factors, exercise option for people with poor mobility and community services. A qualitative research study done on a similar population in the same city has shown that community support during implementation of lifestyle changes can improve outcomes in treating hypertension. This study provides the evidence to support the teaching plan.

#9

Project Title: Design and Development of a New Small-Scale Wind Turbine Blade
Presenter(s): Linsay Bartle, Undergraduate student; Zachary Stevenson, Undergraduate student; Nicholas Parks, Undergraduate student
Faculty Sponsor(s): Ulan Dakeev, Computer Science, Engineering, and Physics

ABSTRACT: The race for renewable energy resources is driving the evolution of the wind turbine. The objective of this work is to investigate, design and development of a new blade design for small scale wind turbines that will generate more power than the currently available designs. A modified cone shaped, flow directing device was designed and installed at upstream of the wind turbine to increase the approaching air velocity to the blades. Experiments were conducted with and without the above mentioned device to evaluate the power generated by the turbine. The experimental results demonstrated an increase in power output by 60% when the cone shaped device was used. A new blade was designed and constructed that will be able to utilize the downstream effect of the flow directing device. The new blade design was capable of generating 400 watts of power output when used in conjunction with the flow directing device. The number of blades, location, and surface area of the blades were considered during the design process.

#10

Project Title: #Edcamp: For Teachers, By Teachers
Presenter(s): Marissa McCann, Undergraduate student
Faculty Sponsor(s): Annie Whitlock, Education

ABSTRACT: Dr. Annie Whitlock and I conducted a research project focused on a new model of teacher professional development called Edcamps. Edcamps are also known as “un-conferences” because of how different they are from traditional school professional development. During the study we focused on the following questions: 1) What attracts educators to Edcamps? And 2) What do participants of Edcamps learn and how will this learning impact their classroom practice or their work in a related field? We attended two Edcamps in Michigan. We interviewed eight conference participants about what they valued about the Edcamp-style professional development. The participants interviewed represented a range of educators from many different grades, subject areas, and positions varying from third to eighth grade teachers, including one instructional technology consultant. We coded the interview responses and common themes emerged about what these educators valued about Edcamps.
Project Title: Motivation and Learning Strategies of Students in Turkey
Presenter(s): Linsay Bartle, Undergraduate student; Zachary Stevenson, Undergraduate student; Nicholas Parks, Undergraduate student
Faculty Sponsor(s): Ulan Dakeev, Computer Science, Engineering, and Physics

ABSTRACT: The purpose of the study is to compare the level of motivation and strategies on two different groups of students in Turkey. One group of students consists of all four level (freshmen to senior) in the public universities and all four level in the private universities. Random sampling was conducted concentrating on a total number of 152 freshmen, sophomore, junior, and senior students. The study used a motivated strategy learning questionnaire (MSLQ) with 18 categories. Six categories were motivation, and 9 learning strategy scales. The responses of students were analyzed based on an independent T-test and one-way ANOVA. The results indicated that there is a significant difference between the types of universities (public/private) in multiple items of motivational strategy. Additional comparisons such as gender (male vs female) and year level (freshmen and sophomore vs junior and senior) showed that a significant differences exist respectively. Results of this study may be used towards development of appropriate plan of actions to improve quality in higher education.

Project Title: An Alternative Perspective: Chinese Medicine and Autism
Presenter(s): Elena Sobrino, Undergraduate student
Faculty Sponsor(s): Maureen Thum, Honors

ABSTRACT: Biomedicine and alternative medicine hold distinct paradigms for understanding the human body and health, distinctions which raise thought-provoking questions when it comes to autism spectrum disorders (ASD). What shifts in thinking about wellbeing and normality take place when families use both biomedical and alternative methods to treat or manage a diagnosis of autism? To address this question, I turn to specific cases of how different forms of Traditional Chinese Medicine (TCM) are utilized by families, and how this particular approach is either different from or overlaps with forms of biomedical treatment. My main focus will be describing this variation, and exploring how contrasting treatments can illuminate new possibilities for interpreting the autistic condition. Examining these differences will also help us see how the body itself is both concrete and socially constructed. Because the spectrum of autism is so diverse, many different explanations and treatments can coexist and indeed enrich our imaginations and knowledge. In addition, the potential conflicts that may separate different perspectives can help us better understand how different forms of medical knowledge both diverge and overlap, and what the consequences are in everyday life.

Project Title: Thermoregulation Patterns in Headstarted Blanding’s Turtles (Emydoidea blandingii) at Shiawassee National Wildlife Refuge, Saginaw, MI, USA.
Presenter(s): Melissa Szymanski, Graduate student; Mallorey Smith, Undergraduate student; Sasha Davis, Undergraduate student; William Gibala, Undergraduate student
Faculty Sponsor(s): Teresa Yoder-Nowak, Biology
ABSTRACT: Blanding’s Turtles are a species of special concern in the state of Michigan and are listed as threatened or endangered throughout the rest of their geographic range. Two year old Blanding’s Turtles were headstarted by the Detroit Zoological Society as part of an ongoing conservation project with Shiawassee National Wildlife Refuge (SNWR). The goal of this project is to bolster population abundance in the refuge. One important factor to consider while making conservation and management plans for turtles is thermoregulation, as it affects many physiological processes. Little data has been collected on the thermoregulatory habits of headstarted juveniles. Thermochron iButtons were epoxied to six Blanding’s Turtles carapaces before being released at SNWR. Thermochron iButtons are data loggers which record temperature at set time intervals. Blanding’s Turtle carapace temperature data were recorded every 84 minutes to enable researchers to analyze daily thermoregulation patterns. Thermochron iButtons were also used to record water temperature at varying water depths from substrate to surface. Data will be presented on the preferred temperature ranges and basking tendencies of the headstarted Blanding’s Turtles. This research will help to provide information on thermoregulation patterns for this understudied age class to aid in future conservation and management efforts.

#14

Project Title: Motifs in Ancient Irish Art
Presenter(s): Jacqulyn Leary, Undergraduate student
Faculty Sponsor(s): Janet Lorch, Communications and Visual Arts

ABSTRACT: Ancient Ireland produced some of the most beautiful gold work in all of Europe during the Bronze Age. The intricately decorated works seem far too refined to be made over 3000 years ago and show craftsmanship that today seems that it can only be imitated by using machines. Each ornately designed piece has a history, which can be revealed by examining where it was found and what motifs are used in the piece.

#15

Project Title: Effect of Bend Radius on Magnitude and Location of Erosion in S-Bend
Presenter(s): Siwen Zhao, Undergraduate student; Shadik Mohammad Shaheen, Graduate student
Faculty Sponsor(s): Quamrul Mazumder, Computer Science, Engineering, and Physics

ABSTRACT: Solid particle erosion is a mechanical process that removes material by the impact of solid particles entrained in the flow. Erosion is a leading cause of failure of oil and gas pipelines and fittings in fluid handling industries. Different approaches have been used to control or minimize damage caused by erosion in particulated gas-solid or liquid-solid flows. S-bend geometry is widely used in different fluid handling equipment that may be susceptible to erosion damage. The results of a computational fluid dynamic (CFD) simulation of diluted gas-solid and liquid-solid flows in an S-bend are presented in this paper. In addition to particle impact velocity, the bend radius may have significant influence on the magnitude and the location of erosion.
#16

Project Title: Microhabitat Use and Movement Patterns of Headstarted Blanding’s Turtles (Emydoidea blandingii) at Shiawassee National Wildlife Refuge, Saginaw, MI, USA.
Presenter(s): Melissa Szymanski, Graduate student
Faculty Sponsor(s): Teresa Yoder-Nowak, Biology

ABSTRACT: Conservation of long lived reptiles (e.g., turtles) has many different management strategies, one of them being headstarting. For this study, turtle eggs were collected, hatched, and hatchlings were raised in captivity at the Detroit Zoological Society for a year before we released them into their native habitat within Shiawassee National Wildlife Refuge in Saginaw, MI, USA. Headstarted turtles benefit from being released in a suitable microhabitat within a wetland. Our research looked at different microhabitat factors within a protected wetland including distance from shore, water depth, vegetation, substrate depth, water temperature, and interspecies interactions to assess the efficacy of release locations by measuring movement patterns of one year old headstarted Blanding’s Turtles. GIS and ground truth data were used to investigate microhabitat factors and map turtle locations. Blanding’s Turtles were tracked for six months, as a part of an ongoing study, using radio telemetry to measure survival and to investigate the movements among microhabitats. Data from the turtles and their habitats were entered into GIS and analyzed spatially. Results of these analyses will be presented. This research will aid in making management decisions for this species which is a species of special concern in the state of Michigan.

#17

Project Title: Walking Speed, Cognitive Decline, and Fall History in Older Adults with Cardiovascular Disease
Presenter(s): Michelle Baumgart, Graduate student; Alison Martin, Graduate student
Faculty Sponsor(s): Jennifer Blackwood, Physical Therapy

ABSTRACT: Cardiovascular disease (CVD) is a major cause of death and disability in older adults and has been associated with impaired cognition, specifically higher order cognitive processes. Advanced cognitive processes may be required for adequate word recall or with serial 7’s subtraction, two items commonly screened on various cognitive measures. Cognitive deficits have reported to influence gait speed, and falls risk, however it is unknown if a relationship exists between walking speed, fall history and impaired word recall or serial 7’s subtraction in those with CVD. Data from the Health and Retirement Survey cohort 2010 (N=2346) will be analyzed. Correlations and group wise comparisons will be completed for all measures to describe the relationship between CVD, walking speed, falls history, and two areas of cognitive screening.

#18

Project Title: Utilization of Measures of Cognition and Fall Risk in United States Physical Therapist Practice, A Descriptive Study
Presenter(s): Alison Martin, Graduate student
Faculty Sponsor(s): Jennifer Blackwood, Physical Therapy

ABSTRACT: With the institution of direct access to physical therapy services in the United States, evidence based practice is essential to quality care in geriatrics. In geriatric practice, fall risk continues to be a
leading concern. Deficits in cognition, balance, gait, etc. have been associated with falls, and validated tools exist to screen these multiple aspects of fall risk. A random selection of 3667 licensed physical therapists (PTs) from an American Physical Therapy Association member database were asked to participate in the study. Descriptive data was analyzed with correlations performed between the variables of work setting, education level, and years licensed as a PT and performing fall risk or cognitive screening in PT practice. Over 93% of respondents reported using fall risk screening tools with older adults while only 40% reported using cognitive screening tools. The most common fall risk measure was the Timed Up and Go (82.7%). A measure of orientation, the Alert & Oriented test was the most commonly used cognitive screen (40.8%). The majority of physical therapists who work with older adults in the United States use valid tools to screen fall risk, however fewer use validated measures to screen cognitive deficits which may influence physical therapy outcomes.

#19

Project Title: Through My Eyes
Presenter(s): Alex Campbell, Undergraduate student; Alicia McNary, Undergraduate student; Nicole Malewska, Undergraduate student; Angela Cupernoll, Undergraduate student
Faculty Sponsor(s): Maureen Tippen, Nursing

ABSTRACT: Three classmates and I will be presenting a poster about our service learning experience in the Dominican Republic. Our poster will be a reflection of the immersion course and will include sections such as an introduction, an explanation of the need for care in the Dominican Republic, the experience through our eyes, and personal reflections on the week. Pictures will be incorporated to give the audience a feel for what we did for the people there and what we experienced. This poster will provide insight into another culture and health care system that is different from the one we see in the United States. Reflecting on a life changing experience is very important after returning home from studying abroad and this poster will allow us to do that while also sharing the experience with an audience.

#20

Project Title: FIA Connect: Bridging Arts with Technology
Presenter(s): Tobi Adebisi, Undergraduate student
Faculty Sponsor(s): Charlotte Tang, Computer Science, Engineering, and Physics

ABSTRACT: Designing computing technologies (mobile applications) for art galleries, Flint Institute of Arts in particular, continues to pose an uphill challenge because we do not currently have enough information on the art gallery visitors’ familiarity with technology, what information the visitors will like to get from the gallery, and how they most prefer to get such information. We perform an extensive survey to determine how technologies may be designed to improve art gallery visitor’s experiences including providing timely information about the exhibited pieces and allowing visitors to share their opinions towards the pieces with others. Our results indicate that visitors of the Flint Institute of art are of various age demographics with a lot of visitors well over 60 years of age, are very familiar with computing devices like smartphones, are generally new to the idea of QR codes, and are frequent users of social media channels like Facebook. We use these findings as a foundation for designing a mobile application for the Flint Institute of Arts.
Project Title: Physical Performance, Cognitive Decline, and Fall Risk in Community Dwelling Older Adults with Cardiovascular Disease, A Descriptive Study  
Presenter(s): Michelle Baumgart, Graduate student  
Faculty Sponsor(s): Jennifer Blackwood, Physical Therapy

ABSTRACT: Falls are a major health issue in older adults and older adults with decreased Executive Function have been found to have a greater incidence and severity of falls. Executive Function is a component of cognition that is used during daily tasks such as walking and planning. This study (n=35) examines the relationship between tests of Executive Function and commonly used fall risk measures in the patients diagnosed with cardiovascular disease. Results show a significant relationship between decreased performance on tests of Executive Function and decreased performance on various fall risk measures. Therefore, it is necessary to include cognitive screenings in Physical Therapy screenings for fall risk.

Project Title: “I don’t care”: The Effects of Misinterpreted Text Messages on Relationship Satisfaction  
Presenter(s): Samantha Turner, Undergraduate student  
Faculty Sponsor(s): Jeannette Stein, Psychology

ABSTRACT: Text messaging has become an increasingly popular mode of communication between romantic partners. Studies have shown that participants in romantic relationships prefer text messaging and that the primary reason for this was to express affection (Weisskirch 2012; Coyne, Stockdale, Busby, Iverson, & Grant 2011). Miller-Ott, Kelly, Duran (2012) found that participants experienced greater relationship satisfaction when text messaging was used because it provided constant communication with their significant other. The purpose of the study was to assess the relationship between relationship satisfaction and misinterpreted text messages. It was hypothesized that the more misinterpreted text messages there were the more likely participants were to report lower relationship satisfaction. 239 participants completed the “Relationship Assessment Scale (RAS)” (Hendrick, 1988) and half of “The Experiences in Close Relationships-Revised (ECR-R) Questionnaire” (Fraley et. al., 2011). Participants reported the frequency of misinterpreted text messages and demographic information. Data were submitted to Pearson’ r which revealed that misinterpreted text messages were significant predictors of decreased relationship satisfaction and increased levels of anxiety. Results suggest that misinterpreted text messages negatively impact relationship satisfaction and are related to increased levels of anxiety.

Project Title: Visuospatial Ability, Functional Mobility, and Fall Risk among Older Adults with Mild Cognitive Impairment  
Presenter(s): Robert Sweeney, Undergraduate student  
Faculty Sponsor(s): Jennifer Blackwood, Physical Therapy

ABSTRACT: Visuospatial ability is the capacity to interpret visual information and identify where objects are located in space. Intact visuospatial ability is believed to be an important component in self-regulation of gait and postural control. Older adults with impaired visuospatial ability may be more prone to lose
their balance when grasping for an object that is beyond their reach. These losses of balance due to poor spatial awareness are believed to be common causes of falling in older adults with cognitive impairment. Poor visuospatial ability has been identified as an antecedent to cognitive impairments in older adults with Mild Cognitive Impairment (MCI) and dementia. However, limited research has been conducted in attempt to identify poor visuospatial ability as a contributor of abnormal functional mobility, which may lead to an increased risk of falling among older adults. The purpose of this proposed study is to examine the relationships between visuospatial ability, functional mobility and falls in community dwelling older adults.

#24

Project Title: Biases in Perceiving Neutral Faces  
Presenter(s): Shytance Wren, Undergraduate student  
Faculty Sponsor(s): Jeannette Stein, Psychology

ABSTRACT: The emotional states contained in neutral faces are distinctively harder to interpret particularly when the observer is depressed. This could make evaluating certain situations difficult. The purpose of this study was to determine how gender and depression affect the reaction time to and perception of the neutral facial expressions in different contexts. Two hundred participants (Males=54, females=146) saw neutral faces of a male and female who were similar in facial features. Participants rated how likely those in the images would be to cooperate across a variety of situations. Ratings and reaction times were recorded. Participants also completed a 6-item assessment of depression and happiness (SHDS; Linley, Harwood, Lewis & McCollam, 2004). A multivariate analysis of variance was used to analyze the data. There were no significant differences in ratings or reaction times.

#25

Project Title: International Student Success: The Relationship between Homesickness and Extraversion  
Presenter(s): Anqi Hu, Undergraduate student  
Faculty Sponsor(s): Jeannette Stein, Psychology

ABSTRACT: Studying abroad is a unique and life-changing event for those fortunate enough to have the opportunity. Through complete cultural immersion, students experience new traditions, languages and life-styles that are different from their own. Although this experience is largely seen as valuable, culture shock may also result in distress. The overall purpose of this study was to determine if a relationship exists between 2nd language use, homesickness and extraversion within an international student population. Twenty-seven international students from the University of Michigan-Flint completed an online questionnaire. The results showed that increased time spent speaking English reduced homesickness and anxiety. International students with higher extraversion who communicate more in English were less likely to have homesickness or anxiety. When international students spoke more of their own native language, they were more likely to report homesickness. Students who speak primarily in their native language may not be making English speaking friends and may be thinking about their home countries more than others. Importantly, the results showed that more support decreases the likelihood of homesickness and anxiety.
#26

Project Title: Outflows from Growing Supermassive Black Holes: Peering Through the Dust Shroud
Presenter(s): Joseph Richmond, Undergraduate student
Faculty Sponsor(s): Rajib Ganguly, Computer Science, Engineering, and Physics

ABSTRACT: Quasars are point-like objects powered by accretion onto a supermassive black hole at the centers of galaxies. A mass outflow is observed to originate from the central regions of the accretion disk. It is important to understand these outflows as they potentially offer a means for the gas in the black-hole accretion disk to shed angular momentum allowing accretion to occur. Outflows may actually regulate the accretion process and affect changes in the host galaxy. Several crucial questions need to be addressed in understanding the physics behind outflows. How efficiently do the black holes have to accrete in order to see outflows? Do we see them at all efficiencies, or are they at one end of the distribution? Do we see outflows only in highly-ionized species where we can only detect them in X-ray through optical wavelengths, or do the outflows also occur in molecular species where we could see them in the infrared? Invariably, these would have to occur in very different locations. How do these regimes relate to each other? Are they related to the mass of the black hole, or how quickly they accrete?

#27

Project Title: Building a Case for a UM-Flint Campus Observatory
Presenter(s): Daniel Agar, Undergraduate student
Faculty Sponsor(s): Rajib Ganguly, Computer Science, Engineering, and Physics

ABSTRACT: A campus observatory can be an asset for student-led research projects, for experiential learning opportunities, for teaching purposes, as well as for public outreach and advertisement of our campus community. This project aims to lay groundwork for the potential establishment of a campus observatory through a three-phased approach. We present the results of a literature search regarding the establishment of campus observatories in the Flint area, in the University of Michigan system, and among the "Michigan 15." We assess the resources that already existing on campus: telescopes, and a CCD camera. Integrating these into a functioning system, we are characterizing the performance of the camera, in the hopes of establishing a pipeline for processing data/images. Finally, we plan to make use of the telescope/camera system to take and process images of Flint's night sky available from different places around campus to assess image qualities, and brightness limits. We further assess what additional resources are necessary (e.g., a dome) in order to establish more permanently a campus observatory.

#28

Project Title: Spewing Black Holes: Computer Simulations of the Wind, by the Wind, for the Wind
Presenter(s): Patrick Ross, Undergraduate student
Faculty Sponsor(s): Rajib Ganguly, Computer Science, Engineering, and Physics

ABSTRACT: Quasars are point-like objects powered by accretion onto a supermassive black hole at the centers of galaxies. A mass outflow is observed to originate from the central regions of the accretion disk. It is important to understand these outflows as they potentially offer a means for the gas in the black-hole accretion disk to shed angular momentum allowing accretion to occur. Outflows may actually regulate the accretion process and affect changes in the host galaxy. From our empirical explorations, it appears that
radiation pressure is likely the principal mechanism that drives outflows, but this is not the only factor. What are the parameters that can, in principle, affect the velocity of the flow? What role do the parameters that characterize the black hole itself (e.g., mass, spin) play? Using the open-source simulation code CLOUDY, we explore the conditions necessary for a radiation-driven flow that can reproduce the observational trends. We present the results of our exploration, and offer potential scenarios to describe the geometry of the outflows.

#29

Project Title: Spewing Black Holes: Outflows from the Biggest Black Holes in the Universe
Presenter(s): Justin Wisby, Undergraduate student; Hillary Sewell, Undergraduate student; Paul Manion, Undergraduate student; Aritra Chakrabarty, Undergraduate student; Bayarjavkhlan Batbaatar, Undergraduate student
Faculty Sponsor(s): Rajib Ganguly, Computer Science, Engineering, and Physics

ABSTRACT: Quasars are point-like objects powered by accretion onto a supermassive black hole at the centers of galaxies. A mass outflow is observed to originate from the central regions of the accretion disk. It is important to understand these outflows as they potentially offer a means for the gas in the black-hole accretion disk to shed angular momentum allowing accretion to occur. Outflows may actually regulate the accretion process and affect changes in the host galaxy. Using the large database of objects from the Sloan Digital Sky Survey, we are considering the observed form that these outflows take. Do they appear at all velocities, and all velocity widths? Or do the velocities/velocity widths require conditions special to particular subset of quasar? How ionized are the outflows? Does that ionization level correlate with the velocity profile(s)? Using measurements of the outflow properties and our classifications, we will search for clues through statistical analyses of how common these are as a function of quasar physical property.

#30

Project Title: Fishing and Augmented Reality
Presenter(s): Bryan Granger, Undergraduate student
Faculty Sponsor(s): Charlotte Tang, Computer Science, Engineering, and Physics

ABSTRACT: My project is a demonstration of GPS and Sonar meeting and creating an augmented reality. A tablet can show that Augmented Reality to a user and objects and depth can be seen under water.

#31

Project Title: ERP Research on Financials improvement for a Company
Presenter(s): Anvitha Akurathi, Graduate student
Faculty Sponsor(s): Amal Alhosban, Computer Science, Engineering, and Physics; Biswajit Panja, Computer Science, Engineering, and Physics

ABSTRACT: The project is a research based on Enterprise Resource Planning (ERP). The research deals with the challenges of ERP and then moves its focus slowly to one major challenge of ERP, then proposes a solution for the problem and discusses in detail on all these concepts.
#32

Project Title: What Peace Means to Children in an Urban Environment  
Presenter(s): April Davis, Undergraduate student; Shea Draper, Undergraduate student; Elena Woodward, Undergraduate student; Jennifer Parks, Undergraduate student; Egypt Tramble, Undergraduate student  
Faculty Sponsor(s): Elizabeth Collardey, Social Work

ABSTRACT: A qualitative phenomenological research team of five Bachelor of Social Work candidates from University of Michigan-Flint committed themselves to continuing the research from the past several years in the search for “What Peace Means to Children in an Urban Environment.” During a 10 week period, each member of the research team was paired with a “peace mentor” from the local urban Boys & Girls Club to better understand the mentors’ personal experiences with peace and to learn their peace language. The group of male and female mentors were aged 8 to 12 and each mentor was interviewed in a way that ignited their creativity. The researchers implemented pictures, drawings, storytelling, and games to engage and empower the children to reveal their personal definition of peace. The researchers then gathered data using grounded theory, which has led them to begin analyzing the data set to create an emerging theory that connected kinesthetic activities to how young children experience peace in their urban environment.

#33

Project Title: Gait improvements for Parkinson’s patients using the Pedaling for Parkinson's program  
Presenter(s): Matthew Davis, Undergraduate student  
Faculty Sponsor(s): Nathaniel Miller, Psychology

ABSTRACT: Parkinson’s disease (PD) is a neurodegenerative disorder characterized by motor symptoms, such as tremor and slow, shuffling walking (gait). Medications are the primary method to mitigate the motor symptoms of PD, but they are less effective for certain symptoms, like gait. Patients often seek alternative treatments to combat such symptoms; Pedaling for Parkinson’s® (PFP) is one example. PFP is a community-based exercise intervention that has patients ride a bicycle vigorously (60-80% above their maximum resting heart rate and 80-90 pedal rpms). This study tested the gait of patients before they began participating in PFP and continued to test them every 4 weeks during the program. Data were recorded while patients were ‘off’ their anti-Parkinsonian medications. Patients walked on a GAITRite® gait analysis mat that recorded gait parameters. Our preliminary results show that after 8 weeks of involvement in PFP, patients had substantial improvements in stride length and gait speed (normalized velocity), along with improved balance during the gait cycle (percent of gait cycle in single support). These findings suggest that PFP® might be a viable option to improve gait symptoms in PD patients.

#34

Project Title: Mobile application for a customized tour in a museum setting.  
Presenter(s): Daniel Misura, Undergraduate student; Hannah Freedman, Undergraduate student  
Faculty Sponsor(s): Charlotte Tang, Computer Science, Engineering, and Physics
ABSTRACT: In this paper, we are going to explore the conceptualization of a mobile-based application that offers a unique, customizable tour experience for the visitor in a museum (i.e., The Flint Institute of Arts). Providing guidance in an otherwise unfamiliar area is a service that expands across the globe. Many museums offer various methods to guide their visitors, ranging anywhere from personal guided tours to audio-assisted tours. Our means of creating and delivering the proposed application will be done through thorough observation of participants at the Flint Institute of Arts, survey data collection, and direct interviews with the employees at the FIA. This customizable tour will give visitors of varying age groups the ability to use their own mobile devices to familiarize themselves with the museum in their own personalized ways.

#35

Project Title: User Habituation in Touch Dynamics
Presenter(s): Nikhil Palaskar, Graduate student
Faculty Sponsor(s): Zahid Syed, Computer Science, Engineering, and Physics

ABSTRACT: This days most of the electronic systems are based on the touch mechanism. Now each user has his own style of using the device, which changes the touch profile with every user. Along with this each user's own style of using the device also changes over the time because user is getting more used to or habituated with the device. Further the response may also change as the device changes or user's posture while using that device, changes. But for the sake of this paper we will consider same posture and same device for all user. So it is very necessary to consider all this constraints while modeling the classifier which can basically detect whether the user is authentic or not. But the classifier performance is expected to change over the time as the user's response to that device is changing over the time. The goal of this paper is to see how the classifier performance is changing over the time based on some sampling technique and to see which classifier works well in general environment.

#36

Project Title: To Investigate How to Design Better Technologies to Support Group Collaboration
Presenter(s): Sriharsha Vemulapalli, Graduate student; Manoj Kumar Gali, Graduate student
Faculty Sponsor(s): Charlotte Tang, Computer Science, Engineering, and Physics

ABSTRACT: The work activity of groups of people was analyzed in order to understand collaborative work and to guide the development of tools to support it. Computers can provide active media for social group cognition where ideas grow through the interactions within groups of people; software functionality can manage group discourse that results in shared understandings, new meanings, and collaborative learning. Organizations increasingly depend on virtual teams, in which interaction and collaboration takes place among geographically-distributed, and often culturally-disparate individuals. Often these teams are globally dispersed, following the patterns created by multinational firms, global alliances, and international trade. Yet, it is by no means guaranteed that virtual teams will be a success, and participants often find the experience to be frustrating even when work is supported by sophisticated group collaboration technologies. This paper targeted at discovering how user requirements for collaboration are currently being met and uncovering areas requiring further development. This analysis identified specific features of collaborative work activity that raise design implications for collaborative technology: (1) Transitions between activities. (2) Transitions between personal and group work. (3) The use of technology mediated tools like Skype, Facebook, Hangouts, etc., in group work. (4) Flexible user
arrangements. (5) Simultaneous user interactions. A number of different schemata can be used to classify the wide variety of tools that support group collaboration. Group collaboration systems may primarily support synchronous (e.g. video conferencing, whiteboard, real time chat) or asynchronous interactions (e.g. newsgroups and mailing lists, collaborative writing systems, group calendars). Additionally, systems may be designed to impose or support more structured work processes (often called prescriptive systems) or unstructured group interactions (often called permissive systems). An example of the former includes group decision support systems (also often called electronic meeting systems), which lead groups through a series of steps designed to improve problem solving and decision making. These steps include, but are not limited to generating, exploring and organizing ideas, evaluating alternatives, voting, and producing reports, and often require experienced meeting facilitators. Another example of structured group support is a workflow system that determines the routing of documents through an organization. Permissive systems such as real time chat, video conferencing, or simple email, do not explicitly structure group interactions.

Method: The advantage of Web-based systems is that participants do not need to have any specific software installed on their computers, and can access group resources from anywhere they can connect to the Internet. Perhaps the most exciting new development in the area of tools for group support is the development of peer-to-peer group collaboration system. Systems such as can handle a number of communication and coordination tools into a client application, such as real time chat, voice over IP, email, message boards, follow me browsing (where each group member sees the web pages that one person has chosen to load), shared whiteboard, shared outliner, shared file system, and group calendar. The critical analysis also revealed several important directions for future research, including: comparative studies to determine the impact of communication media tools configurations on collaboration; and creation of a taxonomy of collaborative tasks to help determine which tasks and tools are suitable for collaboration.

#37

Project Title: Disparities of Incidence by Race and Ethnicity for Childhood Cancer in Michigan
Presenter(s): Jeremy Blankenship, Graduate student
Faculty Sponsor(s): Gregana Kodjebacheva, Public Health and Health Sciences

ABSTRACT: Michigan has experienced high poverty rates and has areas with factories that release pollutants. Racial and ethnic minorities are forced to live in these areas more often, which increases exposure. Such conditions may increase the risk of cancer. Limited epidemiological research on childhood and adolescent cancer is available in Michigan. This study investigated racial and ethnic differences in the incidence of cancer among youth in Michigan and the United States. The Center for Disease Control and Prevention, WONDER database was used to obtain data on cancer incidence rates among youth aged 0 to 19 years between 1999 and 2011 in Michigan and the United States. Whites in Michigan (189.6 per 1,000,000) and in the United States (180.9 per 1,000,000) have higher incidence rates for childhood cancer than Blacks in Michigan (132.3 per 1,000,000) and Blacks in the United States (127.1 per 1,000,000). Asian and Pacific Islanders have incidence rates similar to Blacks with rates of 113.5 per 1,000,000 in Michigan and 132.3 per 1,000,000 in the United States. American Indian/Alaskan Natives have a rate of 81.1 per 1,000,000 Michigan and 96.4 per 1,000,000 in the United States. American Indians/ Alaskan Natives have a rate of 81.1 per 1,000,000 Michigan and 96.4 per 1,000,000 in the United States. White non-Hispanics in Michigan (19.3 per 100,000) and in the United States (183 per 100,000 have significantly higher rates than White Hispanics in Michigan (144 per 100,000) and the United States (173 per 100,000).WONDER data is not available on Hispanic childhood cancer incidence for Blacks, Asian/Pacific Islanders, or American Indian/Alaskan Native. However, In the United States the Hispanic incidence rates are significantly higher for each racial/ethnic group. Differences in cultural norms, diet, physiology, and SES,
are potential contributors to racial/ethnic inequalities. More awareness on childhood cancer is needed in Michigan. Additional research on the reasons for and the interventions to decrease racial/ethnic differences in Michigan is proposed.

#38

Project Title: Show Versus Tell? Mating Context Effects on Women’s Memory
Presenter(s): Autumn Duehring, Undergraduate student; Sarah Dyszlewski, Undergraduate student; Brandon Taylor, Undergraduate student
Faculty Sponsor(s): Terrence Horgan, Psychology

ABSTRACT: Does women’s relative memory for a man’s physical features and verbal statements vary as a function of whether they are thinking about him as a short- versus long-term mate? Evolutionary psychology suggests that a man’s physical attributes might matter more to a woman seeking a short-term mate versus a long-term mate because these attributes can signal the quality of his genetic contributions to her potential offspring. In a laboratory experiment, female undergraduates watched a videotaped male introducing himself to them after they had been encouraged to think of him as either a short- or long-term mate. Women’s memory for his physical features and verbal statements was then tested. Compared to women in the long-term mating context, women in the short-term mating context were predicted and found to have better memory for his physical features and worse memory for his verbal statements. The implications of these findings for adaptive memory are discussed.

#39

Project Title: Sexual Racism: Racial Preferences for Potential Dating Partners
Presenter(s): Amanda Shanesy, Undergraduate student
Faculty Sponsor(s): Jeannette Stein, Psychology

ABSTRACT: Sexual racism is sexual discrimination based on race. Racial preferences in dating may be related to the country’s past and how continued oppression affects today’s population. While it has been established that people prefer to date those that are similar, prior research has failed to consider the racial demographics of an individual’s hometown and its effect on racial dating preferences. If a white individual lived in an environment with mostly minorities, there is a greater chance that they dated outside of the white race (Boutte, 2009), while a white individual in a predominately white community may have had less opportunity. I hypothesized that the racial demographics of an individual’s hometown will influence their racial preferences in choosing a partner. I found that lighter skin tones are rated as more attractive than medium or dark skin tones. There is a strong indication that women rate light skin tones as more attractive than other skin tones. People whose hometown was predominately mixed or predominately black rated lighter skin tones as more attractive than dark skin tones. People whose hometown is predominately white rated light skin tones as more attractive than medium or dark skin tones.
#40

Project Title: Solar Boat
Presenter(s): Daniel LeBlanc, Undergraduate student; Frank Hyde, Undergraduate student; Joe Jerisk, Undergraduate student; Conner Geml, Undergraduate student
Faculty Sponsor(s): Ulan Dakeev, Computer Science, Engineering and Physics

ABSTRACT: For our Mechanical Engineering Senior Design project, our group designed and built a solar boat. We completed this project following the guidelines presented to us by a national solar boat competition. Although we did not enter to compete in the competition this summer, we are very excited about the product we have produced.

#41

Project Title: Interventions to Improve Child-Parent-Provider Communication
Presenter(s): Janet Xiong, Undergraduate student
Faculty Sponsor(s): Gergana Kodjebacheva, Public Health and Health Sciences

ABSTRACT: Effective communication among children, parents, and providers in the medical settings helps improve adherence to medical recommendations. This study aims to identify strategies to improve effective communication among children, parents, and providers through conducting a systematic literature review of prior interventions. To the best of our knowledge, no prior systematic literature review focused on pediatric care. We identified 23 intervention studies in the PubMed, Cochrane, EMBASE, ERIC, and PsycINFO databases. The interventions mainly consisted of strategies such as role-playing sessions, seminars, and educational materials for medical providers. One example of a strategy for children was showing them a videotape of effective interaction between a physician and child. Few interventions targeted children. A majority of the interventions occurred in the United States. More interventions targeting children as active participants in the communication process are needed.

#42

Project Title: Toggle Clamp
Presenter(s): Jianchao Zhong, Undergraduate student; Benjamin Jennings, Undergraduate student
Faculty Sponsor(s): Quamrul Mazumder, Computer Science, Engineering, and Physics

ABSTRACT: A customer in the food production industry requires a solution for closing and fixing lids, doors, enclosures, and sliders in the open or closed position. Clamps of various configurations are often used, but the latching style clamp provides the most clamping force. A prospective customer has requested a solution which would allow them to replace their existing door latches with fewer clamps. These will be used to fix slider doors and chest lids closed in the food production industry.

#43

Project Title: Improving the American Electoral Process
Presenter(s): Christopher Schwartz, Undergraduate student
Faculty Sponsor(s): Kimberly Saks-McManaway, Political Science
ABSTRACT: The American Electoral Process can be improved in several ways to increase voter-turnout, responsiveness to the will of the electorate, and to make the electorate's will a more informed one. This presentation suggests improvements to increase voter-turnout including the creation of an automatic voter registry system, implementation of compulsory voting, replacement of our first-past-the-post election system with a form of proportional representation, employment of a stronger public campaign finance system, and memorializing Election Day as a public holiday. Additionally, proposed modifications to make the system more responsive to the will of the electorate and to make that will a more informed one politically include reforms going far beyond the ballot box such as creating a voter research service, making university education more widespread, expanding home rule by replacing Dillon’s Rule with the Cooley Doctrine for the legitimacy of local government, abolishing the Electoral College and replacing it with a Condorcet election method, and implementing some elements of direct democracy on the federal level.

#44

Project Title: Robot for Relief
Presenter(s): Xiaoyi Ma, Undergraduate student; Kawshik Ahmed, Undergraduate student; Siwen Zhao, Undergraduate student; Olugbadebo Adeyemi, Undergraduate student
Faculty Sponsor(s): Quamrul Mazumder, Computer Science, Engineering, and Physics

ABSTRACT: The robot for relief, built for an ASME competition, is a prototype of a robot built to aid relief efforts in disaster-prone areas by being able to traverse all sorts of terrains and also delivering aid, food, drugs and any other form safely. In these areas, it is tough for aid workers to reach the people affected due to the fact that the roads have been destroyed, therefore the paths are now of different terrains which may be muddy, completely water filled. Some areas may even be difficult to reach because the part of the paths have been completely broken, for example an earthquake destroying the road, therefore requiring a vehicle that can climb. This is the basis for this competition, creating a model of a real life problem and solving it with a prototype.

#45

Project Title: Interhemispheric Interaction and Sexual Fluidity
Presenter(s): Derek Mohamedally, Undergraduate student
Faculty Sponsor(s): Jeannette Stein, Psychology

ABSTRACT: Interhemispheric interaction (IHI) refers the extent to which the left and right hemispheres of the brain freely communicate with each other. An individual’s IHI may be observed through how much they prefer to use their dominant hand, versus the other. A stronger hand preference is associated with rigidity in thought (Prichard, Propper & Christman, 2013). The need for structure, or rigidity, is negatively correlated with sexual fluidity (SF) (Preciado & Peplau, 2012). SF is the amount of variance or flexibility in an individual’s sexual orientation. Therefore we hypothesize that people with more flexible handedness may express more flexible sexuality. To test this hypothesis, the relationship between IHI and SF was assessed using an online self-report measure. This study was IRB approved and all surveys were recorded through Qualtrics. The survey was a combination of the Edinburgh Handedness Inventory (Oldfield, 1971), to assess IHI based on strength of handedness; and the Epstein Sexual Orientation Inventory (Epstein, 2012), to assess SF. To clarify, it is not suggested that there is inherently more sexual fluidity in mixed handed people. However due to IHI, mixed handed people may be more likely to acknowledge and
incorporate more variations of their sexual experiences, fantasies, dreams and attractions into their self-concept of their sexuality.

#46

Project Title: Corporate Sustainability
Presenter(s): Larry Smith, Undergraduate student; Henry Beard, Undergraduate student
Faculty Sponsor(s): Dave Nelson, Business

ABSTRACT: Sustainability as a business practice is very important to manager-level and non-manager level employees. Performance, disclosure and external ratings success matter to current and prospective employees (1 One Report 2012: The Case for Corporate Responsibility Reporting: Valuing and Communicating the Intangibles...Janice Warren & Mark Thomsen) Henry Beard and Myself (Larry D. Smith) will present a PowerPoint highlighting the importance of sustainability.

#47

Project Title: Female Mate Preferences in Short and Long Term Relationships
Presenter(s): Nicole Moffitt, Undergraduate student
Faculty Sponsor(s): Jeannette Stein, Psychology; William McKibbin, Psychology

ABSTRACT: This study was conducted to see how the attractiveness of a hypothetical partner affects women’s other mate preferences (economic resources, social status, similarity, etc.) for short and long term relationships. Individuals who take part in short term relationships tend to have a strong preference for physically attractive partners (Lucas et al, 2011). Attractiveness is a sign of good genes. While a woman who engages in a short term relationship does not guarantee the economic resources from her partner, she could obtain good genes for any child that may result from the encounter, if her partner was attractive (Buss, 2008). Although women are selective of a mate at any level of commitment due to the possibility of pregnancy, I hypothesis that those who have a hypothetical partner who is less attractive then themselves, will rate the given characteristics as being more important than those with more attractive hypothetical partners. Additionally, these other characteristics will be seen as less important to those in short term relationships with more attractive partners, while they will be the most important to those in long term relationships with less attractive partners.

#48

Project Title: Behavior and Occupancy of an Isolated Population of Six-Lined Racerunners (Aspidoscelis sexlineata) Prior to Habitat Modification
Presenter(s): Melanie Schott, Undergraduate student
Faculty Sponsor(s): Teresa Yoder-Nowak, Biology; Danielle Potts, Biology

ABSTRACT: The six-lined racerunner (Aspidoscelis sexlineata) is a small whiptail lizard commonly found in most of the Midwest and Southeast portions of the United States as well as part of Mexico. However, only one known, isolated population exists in Michigan, estimated at 450 individuals and limited to 4.13 hectares of habitat in Murphy Lake State Game Area, Tuscola County, Michigan. Previous research suggests that this population is a glacial relict rather than an introduced population. Due to its limited habitat and possible native status, the six-lined racerunner was declared a Threatened Species in Michigan in 2009.
These lizards are known to benefit from habitat disturbance, so as part of an adaptive management project we are experimentally removing trees and brush from randomly selected plots in their habitat to improve and maintain habitat quality. During the summer of 2014, prior to habitat modification, behavioral and occupancy data were collected within the plots using focal animal surveys (FAS) and visual encounter surveys (VES). Percent canopy cover and percent brush cover for each plot were also recorded. Herbicidal treatment of woody vegetation in treatment plots was applied during the fall of 2014, removal of dead snags is planned for the spring of 2015, and post-modification data will be collected during the summer of 2015.

Project Title: An Affordable CNC Mill; Zhongchen Du, Undergraduate student
Presenter(s): Jonathan Arcocha, Undergraduate student; Jing Liu, Undergraduate student
Faculty Sponsor(s): Quamrul Mazumder, Computer Science, Engineering, and Physics

ABSTRACT: Our senior design group plans to build an affordable CNC Mill. The Computer Numerical Control (CNC) machine is undoubtedly one of the most important tools in the modern engineering and design industries. CNC machines operate through a set of numerical controls and a special language called G-code, through which the machine can control every aspect of a task, including feed rate, coordination, locations, and cutting speeds. CNC Machines have a lot of benefits for manufacturing, such as faster, more accurate work than manual machining, which means parts can be perfectly replicated virtually indefinitely. This allows for the machining of a wider variety of parts. However, good CNC machines are expensive; right now, the most popular solution to milling CNC parts at a reasonable cost is to outsource the work to large companies with CNC machines. But for small business owners, this is just a short-term solution to a long-term problem, as they will always need these parts milled, and will spend countless extra dollars by outsourcing. Our primary objective is to build a low cost CNC Mill for small business owners, schools or university, and households.
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<td>To Investigate How to Design Better Technologies to Support Group Collaboration</td>
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</table>
Thank You!

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Dr. Susan Borrego, Chancellor
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