Abstracts
University of Louisiana Lafayette

Oral Presentations

A Lesson in the Journey to Manhood: An Interpretation of Works by Ernest Gaines
Cassandra Busch

This presentation is going to be about three works written by Ernest J. Gaines, and how they are relevant to students today. I will be using *Bloodline, Of Love and Dust, and A Lesson Before Dying* and interpreting the common themes and ideas between the three novels. I will also be presenting a project that I created for the Ernest J. Gaines Center on behalf of the Louisiana Educate Program. This project is a tryptic poem and was completely inspired by the three novels and even uses specific lines from Gaines's stories.

<div align="right">Oral session 2A</div>

PV Module Shading
Andrew Gironda

Shading can cause significant reduction in power output of a solar power system. Vegetation, buildings, telephone poles, chimneys and other objects that block out a solar panel's ability to view the sun can cause shading. Photovoltaic modules have bypass diodes in them to keep generating power even if one or more solar cells are blocked. Solar system designers can accurately predict how shading will impact a new installation if they know how the percentage of a solar panel that is shaded impacts its overall performance. A rectangular opaque material will be used to induce shading on a solar panel. The piece will cover a percentage of the panel, with the percentage covered incrementally increased. This percentage covered will be from two ways, with the shading occurring from right to left and then from bottom to top. The output of the panel will be measured to see how the shading impacts the performance of the panel. IV curves made from the data will be compared, with the percentage shaded and the method of inducing shading being detailed. An IV curve is a visual representation of the relationship between the electric current and the voltage of a circuit. IV curves are useful in solar energy since they show the power output of the solar panel. The difference between the performance of shaded percentage will be visualized, allowing for system designers to plan systems better

<div align="right">Oral session 1A</div>

Social Media in Education
Marissa Hooker

The purpose of this study is to examine the correlation between social media and student academic performance. Social media usage has grown expeditiously since the rise of it in 2013 to now. Everything positive does have a negative effect and that's what this study focuses on. This study could help teachers and parents to understand what is going on with the child and how to help them improve in both school and home life. We are observing social media leads to cyberbullying, sleep deprivation and multimedia tasking which all negatively affect student grades.

<div align="right">Oral session 2C</div>

Understanding Bias in the Classroom
David Kessler
Faculty mentor: David Dore'

This project examines previous research related to bias in the classroom, specifically concerning standardized tests. Standardized testing has the potential to be culturally biased or even discriminatory toward certain groups. Tests such as the ACT may disadvantage some groups due to language barriers, cultural differences, and even low socio-economic status. Test items may be biased toward gender or race when they include stereotypical or biased language (Losen, D.J. 2016). Strategies to address such bias include eliminating specific language in test items pertaining to

cultural or gender-bias. Accommodations for English language learners must be provided if such students are to succeed in the classroom as well as on standardized tests. Perhaps those individuals developing the test can reduce unconscious bias in designing the test. Alternative assessments should be explored such as performance-based assessments or even portfolios which may be less susceptible to bias. Test preparation resources to include low-income families and diverse groups must be provided. Finally, test designers should update standardized tests to ensure they are free from bias which will assist in assessing students' potential and knowledge (Strauss, V. 2019). These strategies may help reduce bias on standardized tests but may never eliminate it. Continuous efforts to identify and address bias are needed to ensure students' knowledge and skills are accurately measured. By implementing these strategies and providing several test-taking practices, standardized tests can become more fair, accurate, and inclusive to accurately measure student achievement for all. Such practices will ensure all test-takers will have an equal opportunity to demonstrate their knowledge and skills, thus preventing systemic inequalities in education.

Oral session 3B

Hyperdimensional Computing as an Alternative to Conventional Machine Learning
Jonas Schmidt

The field of machine learning has seen tremendous progress in recent years, with conventional approaches such as neural networks and decision trees achieving remarkable performance on various tasks. However, these methods often suffer from limitations such as computational complexity, interpretability, and susceptibility to noise. In contrast, hyperdimensional computing (HDC) is an emerging paradigm that offers a promising alternative to conventional machine learning. HDC is inspired by the principles of high-dimensional geometry and cognitive science, and relies on the manipulation of high-dimensional vectors to represent and process information. In this presentation, we will introduce the basic concepts of HDC and highlight its advantages over conventional machine learning. We will discuss how HDC can overcome the limitations of traditional methods and provide a more efficient and interpretable approach to data analysis. We will also present some examples of HDC algorithms and demonstrate their performance on benchmark datasets.

Oral session 3C

Poster Presentations

The School to Prison Pipeline
Josie Blanchard & Abbey Poirier

Over the last few years, behavior in schools has become a major issue due to school policies and disciplinary actions that result in students going down the prison pipeline. The school to prison pipeline is a phenomenon that occurs when hundreds of school districts across America implement disciplinary policies that push students out of classrooms and into criminal systems. The majority of these students who are being affected are minorities and underrepresented groups such as students with disabilities, and low socioeconomic status. Factors contributing to the behavior of students to the point where law enforcement becomes involved may be outside the controls of teachers and administrators, which results in students being funneled from school into the prison pipeline. Law enforcement officials are trained to work with criminals rather than K-12 students. Can teachers enforce disciplinary rules instead? The main problems that cause this continuation of students being funneled into the prison pipeline are the expansion of zero tolerance policies, a change in policy from "rehabilitation" to "tough on crime" in juvenile detention centers, and a blur in disciplinary roles between our nation's secondary schools and juvenile detention centers. To reverse these effects, schools can implement restorative justice programs in schools to lower the negative impacts of the school to prison pipeline. This research can help teachers, administrators, and school systems realize that it is the school's responsibility to discipline students not local law enforcement agencies. A school's goal is to keep students engaged and motivated to high school completion and post-graduation career options not a prison system.

Poster session 1A

Fake News: An Empirical Definition
Ayush Deshpande

"Fake news" is defined by the *Oxford English Dictionary* as news that incorporates or conveys false, fabricated, or deliberately misleading information. However, there is little empirical evidence in the literature to suggest that this is an accurate description of what everyday people think the term means. This research attempts to discover a more accurate, empirical definition of the term "fake news." Data from 235 UL Lafayette students was analyzed. The participants were presented with a news story and were asked to rate the extent to which the term "fake news" could be used to describe it, how the story made them feel, what they thought the author's intention was, the story's truthfulness, how much they agreed with the information presented in the story, the extent to which they had seen similar stories, and whether they thought the story would go viral. Interestingly, we found that neither a participants' political affiliation nor the type of information presented in the news story had a significant effect on the extent to which participants thought a news story was "fake news." Information about their political affiliation was also collected. We concluded that an empirical definition of "fake news" for college students is a news story that makes the person feel unhappy, contains information that the person disagrees with, contains false information, was written by someone whose intention it was to be deceptive, and was likely written by either a politician or a person on the internet.

Poster session 2A

Mechanical Characterization of PLA/HA Composite Scaffolds Fabricated with FDM 3D Printer
Mynmayh Khamvongsa
Faculty mentor: Dr. Tanvir Faisal

Bone tissue engineering has gained popularity as a potential alternative in bone defect treatment, where the synthetic graft can be generated by a 3D biomaterial framework (scaffold) that yields shape and initial mechanical strength to facilitate cell bone formation. Biopolymer-based poly lactic acid (PLA)/hydroxyapatite (HA) scaffolds are believed to have an ability to offer similar structure, composition, and mechanical properties as natural bone. The objective of this work was to fabricate 3D scaffolds with PLA/HA composite using a low-cost fabrication process—fused deposition modeling (FDM). Using 3D printing technology, construction of a scaffold tailored to an individual's specific need in a controlled and customizable process can be easily realized. Therefore, the primary focus of this work was the synthesis and mechanical and morphological characterization of PLA/HA filament and 3D printed scaffolds. The fabricated 3D printed PLA/HA scaffolds had an interconnected and highly porous structure resembling natural bone. The addition of HA had a significant effect on the PLA/HA composites although there are no notable differences in mechanical properties between 10-15% PLA/HA composites. The microstructural morphology of the PLA and PLA/HA composites filaments observed under scanning electron microscope (SEM) showed our synthesis process able to create a relatively well-mixed and homogenous mixture. In addition, energy-dispersive X-ray spectroscopy (EDS) testing of the filaments' surface topography further substantiated well-mixed and mostly homogeneous presence of HA throughout.

Poster session 1B

Effects of Aerobic Exercise on Memory Retention in Zebrafish
Bella Patterson
Faculty mentor: Dr. Erika Caramillo-Hatch

Zebrafish serve as a model for studying Alzheimer's Disease (AD) due to their homologous brain structures and orthologous genome to humans (Fontana et al., 2018). AD is a neurodegenerative disease that causes dementia and reduced memory retention. Many AD related drugs and non-pharmaceutical therapies are studied in zebrafish (Echevarria et al., 2016). The effects of aerobic exercise, a non-pharmaceutical therapy, on memory and hippocampal volume in rodents and humans show positive effects, but no studies have examined the effects of aerobic exercise on memory using the zebrafish model (Erickson et al., 2011; van Praag et al., 2005). Zebrafish can be aerobically exercised by having them swim against a current of specific strengths (Palstra et al., 2010). The effects of aerobic exercise on memory retention will be measured using the Object Recognition Task (ORT). Because zebrafish exhibit novel object recognition memory, memory retention can be used for studying the effects of therapies and drugs developed for treating AD (May et al., 2016). ORT measures memory by tracking how long the zebrafish swim around a novel

object in comparison to a familiar object. Zebrafish exhibit memory retention if more time is spent exploring the novel object (May et al., 2016). We aim to observe that aerobic exercise will increase memory retention in zebrafish. Specifically, we hypothesize that exercised fish will exhibit increased memory retention in the ORT when compared to fish that have not been exercised.

<div align="right">Poster session 1A</div>

Adverse Childhood Experiences and Its Impact on Children
Kirstin Wilson

The research is a review of the literature on the impact of adverse childhood experiences (ACE) on student learning. ACE is defined as traumatizing and household dysfunctions encountered by children (Crouch et al. 2019). Students are impacted by these experiences which hinders their progress in school. Two major categories are abuse and household dysfunction. The childhood experiences that fall under the category of abuse are physical, sexual, emotional, and substance abuse. The childhood experiences that belong to the category of household dysfunction are mental illness, divorce or separation, domestic violence, and incarceration. These traumatic experiences can affect a student's ability to succeed in the classroom as well as in life. A possible solution could be a universal program that would inform the faculty and staff about ACEs and the effects it has on a child. Strategies to overcome the consequences of ACEs would also be taught as means to intervene in the child's life.

<div align="right">Poster session 2B</div>