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Book of Abstracts

Compiled by the editor, Dr. Dmitriy Beznosko[1*]
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Abstract. This is a compilation of the abstracts of works presented at the 5th annual College of STEM Symposium on Clayton State University campus at the Athletic Center's Loch and Mason Barfield Court. The event took place on March 25-26, 2026. The 2026 theme, "Think Fast, Think Deep: STEM Insights for a Changing World," reflects the college's continued focus on innovation and real-world application across science, technology, engineering, and mathematics disciplines.

1 Update on Calibration Activities and Construction of DUCK

Presentation type: poster
Presented by: Minh Tran
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Additional names or collaboration: D.U.C.K. Collaboration[†]

The update includes the information on the calibration, design, construction and deployment of core modules of DUCK (Detector system of Unusual Cosmic-ray casKades), a cosmic-rays detector system aimed to study the Extensive Air Shower disk thickness as compared to CORSIKA simulations, to join the efforts in the search for the Cosmic Ray Ensembles and to further study the latest advances in the cosmic-rays field, like studying the multi-modal cosmic ray events. The project involves computer simulation activities, design and construction, data acquisition system design, data collection and analysis, allowing participation of students pursuing not only physics but also other STEM fields, such as Chemistry, Engineering and Computer Science.

2 Characterization and Antimicrobial Resistance Profiling of Freshwater Bacterial Isolates

Presentation type: poster
Presented by: Anistasia Keoseng, Maria Marinez-Villavicenico, Jovaughn Redley
Corresponding author: vivianpadin-irizarry@clayton.edu
Additional names or collaboration: Clint E. Edmunds, Paul D. Melvin, Vivian Padin-Irizarry

Freshwater environments often contain bacteria with pathogenic characteristics or intrinsic antimicrobial resistance, posing threats to both human and ecosystem health (Cabral, 2010). In this study, bacterial isolates were collected from a freshwater site at Reynolds Nature Preserve and were examined using standard microbiological techniques, including aseptic techniques, streak plating, Gram staining, and a series of biochemical assays. Antibiotic susceptibility will be evaluated using the Kirby-Bauer disk diffusion method, with interpretations based on Clinical and Laboratory Standards Institute (CLSI) guidelines. Several Gram-negative environmental isolates were preliminary identified, each displaying distinct resistance patterns (Khan et al., 2019). The main goal of this research is to extract the bacterial DNA in order sequence the DNA and to accurately identify the bacteria by genus and species, and to assess their resistance profile.

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3 Characterizing Natural Antibiotic Resistance in Bacterial Isolates from Reynolds Nature Preserve

Presentation type: poster
Presented by: Tyler Zihlmann
Corresponding author: vivianpadin-irizarry@clayton.edu
Additional names or collaboration: Clint E. Edmunds, Paul D. Melvin, Vivian Padin-Irizarry

Clean drinking water is a fundamental human right, yet access remains a global health challenge not only in terms of distribution but also in the quality of source water. Natural freshwater sources can harbor bacteria with pathogenic traits and intrinsic antimicrobial resistance, posing risks to both public and ecological health. In this study, bacterial isolates from a freshwater site at Reynolds Nature Preserve were characterized using classical microbiological methods, including aseptic sampling, streak plating, Gram staining, and biochemical testing. Antibiotic susceptibility was assessed using the Kirby-Bauer disk diffusion method, with results interpreted according to Clinical and Laboratory Standards Institute guidelines. Several Gram-negative environmental isolates were identified, exhibiting varied resistance profiles.

4 Evaluating Cardiovascular Responses to Differing Meditation Techniques

Presentation type: poster
Presented by: Nour'yacine Coulibaly
Corresponding author: ncoulibaly1@student.clayton.edu
Additional names or collaboration: Clint E. Edmunds

Meditation has been shown to impact the autonomic nervous system by stress reduction and promotion of emotional regulation. This study compared the effects of breath focused meditation and loving kindness meditation on heart rate to determine whether one method produces greater physiological relaxation. Four female participants (n = 4) completed both meditation conditions while ECG data were recorded before and after each session. A one-way ANOVA revealed no significant difference in mean BPM between meditation types ($P > 0.05$), indicating that neither approach produced a distinctly greater reduction in heart rate. The lack of significance may be attributed to a small sample size and limited demographic diversity. These findings suggest that multiple meditation strategies may activate similar relaxation mechanisms, and their effectiveness may be context dependent. Additional research with larger, randomized samples is required to better identify how different meditation practices may influence cardiovascular responses.

5 Preliminary Assessment of Water Quality Parameters at Reynolds Nature Preserve

Presentation type: poster
Presented by: Clint E. Edmunds
Corresponding author: cedmunds@clayton.edu
Additional names or collaboration: Paul D. Melvin, Vivian Padin-Irizarry

Freshwater quality in the United States is taken for granted compared to many regions worldwide. This study evaluated key water quality parameters in a freshwater stream at Reynolds Nature Preserve in Morrow, Georgia. Using a commercial testing kit, researchers analyzed 17 parameters across four treatments (n = 3/treatment): stream water from two locations along the stream, distilled water (control), and tap water. Significant differences were detected among treatments in water hardness, NaCl concentration, total alkalinity, and total dissolved solids ($P < 0.05$). These findings highlight measurable variation in basic water chemistry across common freshwater sources. Future work will incorporate larger sample sizes to improve analytical robustness and will examine how these chemical parameters correlate with microbiological data collected from the same site.

6 Assessment of Antimicrobial Resistance in Environmental Water Sources: A Case Study from Reynolds Nature Preserve

Presentation type: poster
Presented by: Elizabeth Suraty

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Additional names or collaboration: Clint E. Edmunds, Paul D. Melvin, Vivian Padin-Irizarry

Access to clean drinking water remains a global challenge, particularly in ensuring it is free from microbial threats that compromise public health. Natural water sources can harbor bacteria capable of causing disease and exhibiting intrinsic antimicrobial resistance, posing risks to both public and ecological health. This study characterized bacterial isolates from a freshwater site at Reynolds Nature Preserve using classical microbiological techniques, including aseptic sampling, streak plating, Gram staining, and biochemical assays. Antibiotic susceptibility was evaluated using the Kirby-Bauer disc diffusion method and interpreted according to CLSI standards. Multiple Gram-negative environmental isolates were identified, each showing distinct resistance profiles.

7 Real-Time Fairness & Compliance Monitoring for High-Stakes AI Systems

Presentation type: oral
Presented by: Gonzalo La Chica Maldonado, Md Sazidul Islam
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Additional names or collaboration: Ken Nguyen

Artificial intelligence is increasingly used in high-stakes domains such as criminal justice, lending, and healthcare, where biased decisions can lead to legal, ethical, and societal risks. This study presents a real-time AI bias detection framework designed to evaluate machine learning predictions against federal fairness standards, including the EEOC Four-Fifths Rule. Using publicly available datasets across multiple domains, supervised models were assessed with key fairness metrics such as Disparate Impact, Statistical Parity, and Equal Opportunity. Results reveal that significant bias persists in two of the three evaluated domains. To address this challenge, an interactive dashboard was developed to visualize bias, assess compliance, and generate audit-ready outputs. The framework demonstrates how fairness monitoring can support responsible AI governance and deployment.

8 LEGO Robot

Presentation type: poster
Presented by: Adebola Adesiyan
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Additional names or collaboration: Chris Morgan

This project explores the design and development of an interactive LEGO-based robot that combines mechanical motion, electronic control, and basic human-robot communication. The robot uses a microcontroller and sensor inputs to control movement and system behavior in real time. To support interaction, the system integrates audio input and output so the robot can detect sound and respond with speech. The project demonstrates how low-cost components such as microphones, speakers, and servo motors can be integrated into a compact robotic platform. The final prototype highlights the engineering process of building a functional robot, including wiring, programming, and mechanical assembly. This work serves as a learning-focused example of robotics and embedded systems for student makers.

9 Local AI with RAG usage for the generation of course materials and OER

Presentation type: poster
Presented by: Dmitriy Beznosko
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Additional names or collaboration: Tatiana Krivosheev, Alexander Iakovlev

AI is a new tool that has firmly entered education. While it is convenient to use, there are concerns - the safety of students' data and the AI lack of the specific knowledge used in a given course. The data safety can be addressed by using a locally run large language models model using a framework similar Ollama, a free tool that gives user the ability to run various LLM models locally on your system. This way, no data leaves the PC. The use of the Retrieval Augmented Generation embeds the user data as a context for the generation of the AI response, making it useful for the educational materials as well as homework

and quiz assignments. Brief background, installation and configuration highlights with performance and use examples are presented in this work.

10 Refining Mortality Predictions: A Metro Atlanta Study Using the Lee-Carter Model

Presentation type: poster
Presented by: Evan Castillo, Zachelus Xatkin, Yulisa Govea-Morales
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Additional names or collaboration: Keith Driscoll

The goal is to build a Lee-Carter model that can accurately predict future mortality rates for differing age groups. We aim to focus on a granular data set with the goal of localizing the predictive capabilities to the Metro Atlanta population. Our predictions will be based on data collected from the CDC WONDER database. The data set includes county-level mortality data for the years 1979-2016.

11 Effect of Drought Stress on Marigolds' Early Development

Presentation type: poster
Presented by: Brittany Dickhute
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Additional names or collaboration: Jere Boudell

The effect of drought stress on Calendula officinalis early development is important to understand the impact on the plant once it has matured. Drought is a threat to the flourishment of plants. Interestingly, C. officinalis, also known as English Marigolds, are considered drought tolerant. Three different amounts of distilled water were the treatments that were applied each week. The plants grew for eleven weeks, and then the stems were measured. One leaf from each pot was cut and traced to calculate the surface area. The results from the ANOVA test for both data sets indicated that there was not a significant difference. This could potentially mean the water treatment was not reduced enough to threaten their drought response.

12 Magic Lobsters

Presentation type: poster
Presented by: Spencer Roberson
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Additional names or collaboration: Christopher Raridan, Elliot Krop

Caterpillars are tree graphs such that removing the leaves produces a path, and a lobster is such that removing the leaves produces a caterpillar. It is known that paths and caterpillars can be labeled - total edge magic, where an edge and two incidence vertices have the same sum across all adjacencies. For lobsters, however, the same cannot be said yet. Current progress shows there is a magic lobster with any number of vertices yet not applied to all possibilities.

13 Using AI to Develop Simulations for Biology Courses

Presentation type: oral
Presented by: Stephen Burnett
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Many biological phenomena cannot be observed in the classroom for a variety of reasons (limited time, lack of appropriate facilities, etc.). When these phenomena are needed to understand the course concepts, faculty need methods to be able to explain them successfully. Computer simulations have been used in the classroom for decades, but finding ones that are suited to the instructor's need without incurring significant costs is often a major limitation. I will discuss the use of AI tools to develop simulations quickly. These tools allow the instructor to specify the parameters precisely, producing a simulation that

is more useful with limited investment of time and money. I will also address pitfalls and issues with using these tools and ways that science faculty can get the greatest benefit from them.

14 Web Integrity Against AI

Presentation type: poster
Presented by: Bernice Santana, Melissa Mendoza-Mora, Daniela Echeverria, Kayla Walters
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Additional names or collaboration: Ken Nguyen

This project addresses the ethical and security risks that arise as AI systems increasingly operate on e-commerce platforms, particularly in pricing automation, chatbot interactions, and data-driven decision-making. While AI tools, such as chatbots, pricing algorithms, and recommendation systems, have improved efficiency and personalization, existing approaches often lack sufficient transparency, bias control, and administrative oversight. To address this deficiency, we designed a controlled e-commerce environment that integrates an AI chatbot (ChatBase), structured APIs, and secure deployment tools (Docker, HTTPS, Synology), supported by client and administrator interfaces. Our solution prioritizes encryption, human review, and system monitoring to prevent bias, misuse, and data manipulation in AI-driven transactions. This research is relevant because AI is transforming digital commerce on a massive scale. Establishing responsible design guidelines ensures that innovation does not compromise fairness, safety, or consumer trust, ultimately promoting safer and more ethical online marketplaces.

15 Bridging the Gap: RAG-Enhanced LLMs for Academic Excellence

Presentation type: poster
Presented by: Melissa Seng
Corresponding author: mseng@student.clayton.edu
Additional names or collaboration: Junfeng Qu

The Clayton State University website has a lot of information available for students; however, the amount of information could be overwhelming to find specific information. The problem I am trying to solve is the navigation tool for the Clayton State University website. The institution website does have a search tool but would load up only several webpages of relevant information. Therefore, my solution is to create a no-code academic support chatbot designed specifically to guide Clayton State University students to campus resources that promote academic success. By creating this chatbot as a navigation tool on the university website, it simplifies how students can find support services and academic resources, which can influence students' performance. It is also especially beneficial for first-generation college students as they can quickly find accurate information on their own and receive support early, which strengthens their sense of belonging within the university environment.

16 LAKERNEST

Presentation type: oral
Presented by: Latevi Josue Lawson
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Additional names or collaboration: Jillian Morgan

This project introduces a dedicated social media platform designed exclusively for Clayton State University students to enhance campus communication and foster meaningful connections. The application addresses the challenge of fragmented information channels by creating a centralized hub where students can interact, share updates, and stay informed about campus life. Two innovative features distinguish this platform: an AI Smart Search capability that allows students to ask natural language questions such as "what events are happening today?" and receive instant, accurate responses, and a Hyper-Local Alerts system that delivers real-time notifications about relevant campus activities tailored to each user's interests. By combining social networking functionality with intelligent search and personalized notifications, the platform aims to improve student engagement, reduce information overload, and strengthen the Clayton State community. This solution represents a modern approach to campus communication that prioritizes accessibility, relevance, and user experience.

17 FarmBot: Innovating Agriculture Through Tech

Presentation type: oral
Presented by: Alexandra Tengue, Kossi Sessou
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Additional names or collaboration: Ebrahim Khosravi

Agriculture is increasingly turning to robotics to improve efficiency and reduce labor demands, but many current systems still rely heavily on human control. We're trying to overcome the limitations of a remote-controlled FarmBot by enabling it to autonomously navigate, avoid obstacles, and build a map of its environment so it can operate without constant human control. Existing solutions like FarmBot use a web-connected, open-source CNC farming robot that plants, waters, and tends crops through pre-programmed sequences and remote control. Our solution adds real-time autonomous exploration, simultaneous localization and mapping (SLAM), and on-the-fly path planning to the FarmBot platform using 2D LiDAR and motor control. An autonomous FarmBot can reduce manual labor, increase farming efficiency and precision, and ultimately boost crop yields and sustainability while lowering costs.

18 Conceptual Design of a Hydrogen-Coupled Electrochemical Hybrid Battery Integrating Electrolysis for Vehicle Applications

Presentation type: oral
Presented by: Tyler Zihlmann
Corresponding author: tzihlmann1@student.clayton.edu

Growing global concern for environmental sustainability has increased demand for scalable clean transportation. Battery electric and hydrogen-powered vehicles have advanced significantly, yet both face limitations in energy storage, charging efficiency, and reliance on external fueling systems. Although research has improved battery chemistry and hydrogen production through water electrolysis, these technologies are typically developed as separate systems rather than as an integrated energy architecture. This project proposes a conceptual Hydrogen-Coupled Hybrid Battery (HCHB), a unified electrochemical system that integrates water electrolysis and redox reactions directly into rechargeable battery operation. Hydrogen is generated internally during charging and discharging, functioning as an in situ energy pathway instead of requiring external fuel supply. By reducing infrastructure dependence and increasing energy flexibility within a compact design, this model offers a systems-level framework for sustainable vehicle energy innovation and supports long-term low-carbon mobility transitions.

19 Generative AI and instructional design in a flipped anatomy and physiology classroom

Presentation type: oral
Presented by: David Murray-Stoker
Corresponding author: DavidMurray-Stoker@clayton.edu

I present a pedagogical workflow for designing activities for a flipped anatomy and physiology classroom. Using generative AI to assist instructional design, activities are aligned to learning objectives and scaffolded by Bloom's taxonomy. Activities vary in format (individual, pairs, small groups, whole) and require minimal preparation, generating a bank of 7-15 potential activities for each lecture. Student performance on pre-class quizzes guides the selection of activities during flipped sessions, allowing targeted clarification of misunderstandings and reinforcement of comprehension. With the aid of generative AI, the benefits of a flipped classroom are amplified by building student-centered learning into each class session.

20 Scorbot Modernization

Presentation type: poster
Presented by: Angelina Panamthottam, Aunesty Moreland
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Additional names or collaboration: Ebrahim Khosravi

The Scorbot-ER-V Plus is a robotic arm with six degrees of freedom that has become functionally obsolete due to a lack of documentation and the absence of its proprietary "black box" controller. While earlier projects figured out how to wire the robot's main connector, they were only able to make the motors move one at a time in a jerky, limited fashion. This project solves this by replacing the outdated hardware with a custom control system built from scratch using Raspberry Pi microcomputers. By using modern motor drivers and MicroPython code, we have created a "translator" that allows this decade-old machine to understand modern commands. This upgrade moves the robot beyond simple motor movements and transforms it into a smooth, fully automated system. This research provides a scalable framework for giving industrial-grade legacy robots a fresh lease on life through efficient, open-source controllers. We would be extending the lifecycle of high-quality equipment, creating sustainability for future research.

21 Synthesis and characterization of an iridium(III) complex with cytotoxic potential

Presentation type: poster
Presented by: Samuel Bradford
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Additional names or collaboration: John Meyers

The present study focused on the synthesis and characterization of an iridium(III) complex. Iridium complexes have been investigated for their potential to selectively target cancer cells; a major limitation associated with some existing metal-based anti-cancer drugs. Non-targeting cytotoxicity can lead to damage in healthy cells and undesirable symptoms in patients. Iridium's ability to cycle through multiple oxidative states and form strong multi-ligand scaffolds suggests that iridium(III) complexes could potentially trigger apoptosis in cancer cells with reduced off-target impacts. This research aims to expand the current library of iridium(III) complexes by synthetically incorporating an isocyanide ligand into an iridium(III) cyclopentadienyl dimer. Initial characterization via nuclear magnetic resonance (NMR) and infrared (IR) spectroscopies confirmed the successful synthesis of an iridium(III)-isocyanide complex.

22 Energy Efficient AI with Quantum Computing

Presentation type: poster
Presented by: Dave Mastin, Ingrid Guzman, Nahima Nahima Laguerre
Corresponding author: DaveMastin@clayton.edu
Additional names or collaboration: Tomas Almazan Macedo, Jasmine Heath

This presentation explores the energy challenge behind modern AI and asks whether quantum computing, especially in hybrid AI + quantum workflows, can realistically reduce computing energy use. Drawing on published findings and platform examples, we compare classical AI, quantum approaches, and hybrid models to evaluate where efficiency gains are real versus still theoretical. Key results include faster calibration reported in IBM contexts (reducing runtime and therefore energy), hybrid training approaches that may cut training cycles by 10%-20%, and evidence from quantum annealing showing that energy use can rise sharply as problem size scales. This highlights that quantum hardware is not consistently energy-efficient today.

23 Sampling Microbial Diversity of Clayton State University Waterways Through Winogradsky Columns

Presentation type: poster
Presented by: Mahir Cheema, Arianne Cook, Angie Cruz, Emily Nuno, Isaiah Prince-Oyakhire, Mekelle Watson
Corresponding author: StephenKlusza@clayton.edu
Additional names or collaboration: Stephen Klusza

The Clayton State University campus is an exemplary location for studying riparian/urban ecology, environmental science, and microbiology. In addition to the interconnected ponds, lakes, and irrigation paths on campus, Clayton State University is also adjacent to the Reynold's Nature Preserve and is in the vicinity of watersheds close to the airport, providing a wealth of research opportunities for faculty and students alike. As a first step to cataloging the microbial diversity of the campus, the SoS Coke Scholars retrieved samples of mud and water from several locations and assembled Winogradsky columns for the

purpose of establishing self-sustaining microbial communities using accessible materials. We will then take samples from these columns for cryopreservation and future microbiological studies. The long-term goal of this research project is to establish a repository of microbial samples to track changes in the dynamic aquatic microbiomes in response to changing weather patterns and environmental pollution.

24 AI's Impact on Jobs and the Future of Hiring

Presentation type: poster
Presented by: Kokou Eklou Agnide, Nguyen Luc
Corresponding author: keklouagnide@student.clayton.edu
Additional names or collaboration: Malick N'Dow, Grace Babajide

Artificial intelligence is rapidly transforming the labor market, with studies showing accelerated adoption of AI systems in logistics, customer service, and data processing since 2020, threatening over 100 million U.S. jobs. Workers most at risk include women in clerical roles, individuals with lower education levels, and underrepresented minorities, particularly in high-risk metropolitan areas like Tampa, Miami, and New York. This research examines the dual impact of AI-driven job displacement on both employment and tax revenues, analyzing how automation reduces the payroll tax base while exploring potential "robot tax" policies as compensation. These findings highlight critical policy considerations for protecting vulnerable workers and maintaining public revenue streams as AI reshapes the American workforce.

25 Impact of Nutrient Intake on Copulation Duration in Male Bean Beetles

Presentation type: poster
Presented by: Runde' McFarland
Corresponding author: Runde'McFarland@clayton.edu
Additional names or collaboration: Jorge Carmago-Cruz, Tamyra Gibson, Sean Lewis, Clint E. Edmunds

This study investigated whether nutrient type influences copulation time in male bean beetles (Callosobruchus maculatus). Male beetles were provided one of three nutrient treatments: plain water, iodized salt water, or diluted clover honey, before pairing with females. Copulation duration was recorded for each treatment group. Contrary to our prediction that salt water would reduce mating duration, males that consumed salt water exhibited the longest copulation times, outperforming both water and honey treated beetles. Honey treated beetles showed rapid feeding behavior, though one mortality resulted from contact with viscous honey. Statistical analysis (Shapiro-Wilk and Kruskal-Wallis tests) indicated differences among treatments ($P < 0.05$), suggesting that sodium intake may enhance mating performance, consistent with findings in other insect species. These results highlight the potential role of nutrient composition (particularly sodium) in influencing reproductive behavior in bean beetles. Additional data would be necessary for any further conclusions or application.

26 Using Parthenogenesis to Study the Effect of Diabetic Male Contribution to Ovulation in Drosophila melanogaster Fruit Flies

Presentation type: poster
Presented by: Alexis Freeman
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Additional names or collaboration: Stephen Klusza

A single female fruit fly can lay an average of 500 fertilized eggs after successful insemination by a male. However, there are many factors that can both positively and negatively influence ovulation and the actual number of eggs laid, such as: genetic diversity, dietary effects, and environmental stress. Successful ovulation also requires functional male seminal fluid to aid sperm in maintaining viability and successful navigation of the female reproductive system. In an effort to directly assess the role of dietary-induced diabetes on male seminal fluid contribution to female ovulation, we will use a special cross scheme that allows females to reproduce asexually (parthenogenesis) when mated with a male-sterile strain that can only contribute functional male seminal fluid. We are using the Open Science Framework to document our experimental design and exploration in the effects of diet on reproductive outcomes.

27 Exploration of Minimal Surfaces

Presentation type: poster
Presented by: Amiah Pierre
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Additional names or collaboration: Cathrine Matos

In civil engineering, it is essential to optimize the use of resources while ensuring longevity and sustainability in structural buildings. Through exploration of structures that locally minimize surface area while evenly distributing surface tension, we can make minimal surfaces efficient and structurally stable. In civil engineering, it is essential to optimize the use of resources while ensuring the longevity and sustainability of structural buildings. Through the exploration of structures that locally minimize surface area while evenly distributing surface tension, we can create efficient and structurally stable minimal surfaces. Developing a numerical model of minimal surfaces using MATLAB to analyze how these mathematical principles can be applied to real-world engineering problems. Through the modeling of these surfaces, we can design structures that maximize strength and durability while minimizing material usage, which improves sustainable engineering practices.

28 At A Glance: Establishing a Research Ecosystem in the School of Sciences

Presentation type: poster
Presented by: Stephen Klusza
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For the past few years, Clayton State University has made excellent progress on the mission of "social mobility" through empowering our students, faculty, and surrounding communities with strong initiatives and developing new pathways to success. Likewise, the School of Sciences is also hard at work establishing a sustainable research ecosystem that will enhance student and faculty success through increasing research capacity and opportunities as part of the College of STEM. Here, we will highlight the research being done in the School of Sciences and our current connections to the greater Atlanta area through public outreach and partnerships. We will also touch upon potential initiatives and ideas for the future with the goal of inviting discussion and possible collaborations with interested parties.

29 ECC-IDS

Presentation type: poster
Presented by: Zion Clery
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Additional names or collaboration: Armani Allen

ECC-IDS is a two-layer security system that checks network traffic to make sure data is both built correctly and sent in the proper order. Traditional intrusion detection systems often rely heavily on pattern matching or machine learning predictions, which can struggle to clearly explain why behavior is flagged as suspicious. ECC-IDS addresses this problem by combining structural validation with behavioral sequence checking, creating a more dependable method of detecting threats. This approach matters because as cyberattacks become more sophisticated, organizations need security systems that are accurate, explainable and trustworthy.

30 Nutritional Impact on Early Embryonic Survival of Drosophila melanogaster

Presentation type: poster
Presented by: Stephanie Iris Ortega Mendoza
Corresponding author: sortegamendoza@student.clayton.edu
Additional names or collaboration: Stephen Klusza

Early development in Drosophila melanogaster relies on maternal gene products that are placed into the egg during oogenesis before the embryo's own genome becomes active. One important gene in this process is decapentaplegic (dpp), which is required for embryos to develop and survive. When dpp activity is reduced, embryos often fail to develop correctly and do

not survive. This experiment uses a genetic system to lower dpp expression and to examine how changes in food nutrient levels may influence early embryo survival. Two types of food, cornmeal agar and potato flakes, are used to represent different levels of nutritional richness. Nutrition has been shown to play an essential role in fly development and metabolism, emphasizing the need for standardized diets in experimental research. By comparing embryo hatching rates across these food types, this study aims to explore the connection between gene regulation and nutrition in shaping early development in fruit flies.

31 Clayton State University's Arboretum Tour App

Presentation type: poster
Presented by: Juan Ramos
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Additional names or collaboration: Jillian Morgan, Jere Boudell

Clayton State University's old Arboretum app is no longer in working condition. With signs dominating the Arboretum experience, there is no modern way for students or visitors to interact with it. The CSU Arboretum Tour modernizes the original while preserving its core NFC scanning feature. Although plant ID applications exist off campus, they don't focus specifically on CSU's Arboretum. In the app, users scan an NFC tag to view plant information, take interactive quizzes, and use an AI assistant for questions about plants. This renovation makes the Arboretum a self-guided learning tool that can be updated over time. By using plant information, practice questions, and hands-on interactions, it teaches biology and environmental science. I hope this app inspires other students to create projects that will make our school an even more interesting and interactive place to learn.

32 Laker's Navi-Gator

Presentation type: poster
Presented by: Kien Dinh
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Additional names or collaboration: Muhammad Rahman

Laker's Navi-Gator is a campus navigation application that will help students and visitors easily find their way to their classrooms and other locations on the campus. This navigation app focuses on improving accessibility and reducing confusion between rooms and landmarks. It uses AR (Augmented Reality) and map API technology to find the best possible route to a selected destination. This project demonstrates how "Laker's Navi-Gator" enhances student's experiences and improves navigation across the campus.

33 On Vukman-type functional identities

Presentation type: poster
Presented by: Janiah Leavens
Corresponding author: JaniahLeavens@clayton.edu
Additional names or collaboration: Louisa Catalano, Tomas Merchan Rodriguez

In this project, it is established that in the context of division rings with characteristic different from 2 and 3, the zero maps are the only additive maps satisfying either of the functional identities $f(x)\,x^{(-1)} + x^2\,g\left(x^{(-1)}\right) = 0$ or $f(x)x^{-1} + x3gx - 1 = 0$. This result has recently been published in the Journal of Algebra and its Applications.

34 Laker STEM Sisters

Presentation type: poster
Presented by: Harlie Brown, Nicole Essien
Corresponding author: NicoleEssien@clayton.edu

Additional names or collaboration: Janiah Leavens, Amiah Pierre, Harlie Brown, Shontia Price, Amariah Knight, Nicole Essien, Melissa Seng, Louisa Catalano, Vivian Padín-Irizarry

"The Laker STEM Sisters (LSTEMS) organization at Clayton State University is dedicated to fostering an inclusive and supportive environment that promotes the academic success, professional development, and personal growth of women pursuing careers in science, technology, engineering, and mathematics (STEM). This poster highlights LSTEMS' multifaceted approach to empowerment through mentorship initiatives, community outreach, academic programming, and leadership development opportunities. We present an overview of the organization's structure, signature events, and measurable impacts, including increased member engagement, expanded professional networking opportunities, and outreach efforts that serve local students and underrepresented communities. Through workshops, collaborative study spaces, and service activities, LSTEMS aims to reduce barriers to STEM persistence while cultivating a strong sense of belonging."