Logan Shaffer

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EDUCATION

Embry-Riddle Aeronautical University **Daytona Beach, FL**
BS in **Engineering Physics**, Spacecraft Instrumentation Track Expected May 2026
Minors: Electrical and Computer Engineering, Astronomy and Astrophysics, Applied Mathematics

COMPUTER SKILLS

Languages: C/C++/C#, Python, MATLAB, Assembly, JavaScript/TypeScript, Java, HTML, CSS
Software: CATIA V5, Godot, Unity, Houdini SideFX, Renode, PuTTY, Microchip Studio, Fusion 360
Tools: Git/GitHub, Visual Studio Code, STMCubeMX/IDE, Arduino IDE

RESEARCH EXPERIENCE

Embry-Riddle Aeronautical University Daytona Beach, FL
NSF REU Intern - "A Versatile Synthesis of Self-Healing Polymers" **May 2024 – Jul 2024**

- Conducted mechanical characterization of self-healing PDMS-based polymers through tensile testing to evaluate healing efficiency, discovering a 30% increase in healing performance when alcohol was introduced during the repair process.
- Developed **Python** scripts to automate the analysis of force and distance data, saving over 10 hours weekly while improving accuracy in stress and strain calculations with repeatable tests
- Integrated a sensor and **Arduino microcontroller** into the tensile tester, enabling real-time distance measurement that improved strain rate precision by 15%

PROJECT EXPERIENCE

Embry-Riddle Aeronautical University Daytona Beach, FL
Project S.H.I.N.E. – Microcomputers & Electronics Final Project Jan 2025 – April 2025

- Built an environment sensing sun tracker using an AVR microcontroller coded in **C**, where a self-contained apparatus remotely monitors power, temperature, direction, and light levels to accurately swivel to track an artificial light source displaying data in real time to a ground station
- Constructed power and monitoring subsystems that precisely track all voltage and current levels

Junior Design Project - Ball Balancing Platform Jan 2025 – April 2025

- Programmed the **Inverse Kinematics** and **PID** algorithms to determine the direction the platform must and feedback loop for constant correction to center a ball on a platform in **C++** using **Arduino**
- Designed **CAD** models for structure and arms of the balancer along with electronics in **Fusion 360**

SparkJam 2025 – Tainted Blood Sept 2024 – Present

- Designed and programmed a top down dungeon crawler game in 42 hours using **GDScript** in **Godot**
- Created storyboards, level designs, prototypes, and 2D animated sprites, and cover art for the game
- Participated in design and code reviews, providing and receiving valuable feedback that improved game quality and **user experience**

IEEEXtreme Programming Competition Oct 2024

- Ranked in the top 37% of over 8,000 global teams in a 24-hour programming competition
- Collaborated to solve coding challenges, optimized algorithms for speed and efficient memory usage in **Python**, **C**, and **C++**

Differential Equations Honors Project Jan 2024 – May 2024

- Engineered a **Python** program that simulates the behavior of 10 unique mass-spring systems using **data visualization** libraries, providing graphical representations of second-order differential equations for future engineering students

NASA RASC-AL Competition Aug 2023 – Dec 2023

- Conducted collaborative research with a team of 50 students, focusing on design and innovative concepts aimed at enhancing human space exploration
- Computed and plotted the mission trajectories for launch, transfer orbit, reentry, and landing using **MATLAB**

Graphical Communications CATIA Final Project Aug 2023 – Dec 2023

- Designed a realistic **3D CAD** model of a toaster in **CATIA V5** with accurate dimensions
- Rendered the simulated model using **Houdini SideFX** and animated the moving components with lifelike textures and shaders

3D Multiplayer Minigame Jan 2022 – Aug 2022

- Developed a 4-player minigame in **C#** using **Unity Engine**, integrating open source libraries to create object physics interactions that enhanced user experience and increased player engagement
- Created a virtual environment by implementing detailed 3D models of trees, plants, and monuments with realistic shaders to enhance user immersion

TEACHING EXPERIENCE

Embry-Riddle Aeronautical University Daytona Beach, FL

Supplemental Instruction Leader, Teaching Assistant **Sept 2023 – Present**

- Boosted student pass rate by 9% in introductory physics courses over the course of a year
- Instruct up to 40 students at a time on core concepts and numerical questions with an emphasis on group engagement
- Collaborate with co-tutors to align sessions with course objectives, adjusting pacing and structure to optimize student learning outcomes

PRESENTATIONS

Investigating the Relationship of Molecular Attributes and Intrinsic Self-Healing Efficiency in PDMS Based Polymers With Application Towards Coatings in UAVs
AIAA SciTech Forum, January 8, 2025

Self-Healing Sensors for Advanced Health Monitoring
40th Southern Biomedical Engineering Conference, September 13-15, 2024

Determination of Self-healing Efficiency for PDMS Based Polymers
NSF-REU Embry-Riddle Aeronautical University Poster Presentations, July 17, 2024

HONORS & AWARDS

Embry-Riddle Aeronautical University **Daytona Beach, FL**
Spark Travel Grant Sept 2024 – Present
Honors Program May 2023 – Present
University Presidential Scholarship Mar 2023 – Present
Dean's List Dec 2022 – Present

LEADERSHIP & OUTREACH

Embry-Riddle Aeronautical University Daytona Beach, FL
Omicron Delta Kappa National Honor Society, *Vice President* **Apr 2024 – Present**

- Coordinate operations of society by organizing monthly meetings, setting clear goals for members, and planning leadership events that achieve 75% satisfaction rate

Student Union Advisory Board, *Point of Contact / Officer* **Nov 2022 – Present**

- Represent the 7000+ student body in decision-making processes to improve the Student Union by gathering feedback through tabling events and conducting surveys to enhance student experience
- Led proposal to acquire $10,000 to host the annual Super-Bowl Party event, seeing an improvement in student engagement of 60% for the event
- Compiled and summarized data from student survey results, displaying the data to stakeholders with graphs and charts that supported budgeting decisions for furniture purchases valued over $150,000
- Created an interactive website prioritizing user experience and interface design, leveraging custom HTML and CSS widgets, leading to increased survey responses and visitor engagement

PROFESSIONAL AFFILIATIONS

Tau Beta Pi Engineering Honor Society (TBP) Nov 2024 – Present
International Game Developers Association (IGDA) Nov 2024 – Present
Institute of Electrical and Electronics Engineers (IEEE) Oct 2024 – Present
Omicron Delta Kappa National Leadership Honor Society (ODK) Oct 2024 – Present
National Society of Physics Students (SPS) Dec 2023 – Present

PROFESSIONAL EXPERIENCE

Embry-Riddle Aeronautical University Daytona Beach, FL
Orientation Ambassador, *Professional Development Committee Lead* **Dec 2022 – Sept 2023**

- Welcomed over 3000 students and parents during 2023 orientation week, promoting a culture of inclusion and belonging
- Led the coordination of campus tours and activities for 40 incoming students, fostering a welcoming environment that enhanced student engagement through implementation of feedback-driven programs designed to meet student needs