

# 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

**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

**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**

**IEEEExtreme 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

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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

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*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*

40<sup>th</sup> 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

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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

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Embry-Riddle Aeronautical University	Daytona Beach, FL
<b>Omicron Delta Kappa National Honor Society, <i>Vice President</i></b>	<b>Apr 2024 – Present</b>
<ul style="list-style-type: none"><li>• Coordinate operations of society by organizing monthly meetings, setting clear goals for members, and planning leadership events that achieve 75% satisfaction rate</li></ul>	

<b>Student Union Advisory Board, <i>Point of Contact / Officer</i></b>	<b>Nov 2022 – Present</b>
<ul style="list-style-type: none"><li>• 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</li><li>• 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</li><li>• 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</li><li>• Created an interactive website prioritizing user experience and interface design, leveraging custom HTML and CSS widgets, leading to increased survey responses and visitor engagement</li></ul>	

## PROFESSIONAL AFFILIATIONS

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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

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Embry-Riddle Aeronautical University	Daytona Beach, FL
<b>Orientation Ambassador, <i>Professional Development Committee Lead</i></b>	<b>Dec 2022 – Sept 2023</b>
<ul style="list-style-type: none"><li>• Welcomed over 3000 students and parents during 2023 orientation week, promoting a culture of inclusion and belonging</li><li>• 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</li></ul>	