Kilian O. Olen

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Education

Embry-Riddle Aeronautical University   **Anticipated May 2025**

Bachelor of Science in Aerospace Engineering | Concentration: Astronautics   GPA: 3.76/4.00

Bachelor of Science in Engineering Physics | Concentration: Spacecraft Systems   Honors Program

- Minors: Applied Mathematics & Computer-Aided Design/Manufacturing
- Academic Honors: Dean's List (All terms)

Broward Community College   **May 2020**

Associate of Arts in Engineering with Highest Honors   GPA: 3.87/4.00

- Academic Honors: President's List (3 terms), Dean's List (1 term)

Skills

Programming	MATLAB/Simulink, Python, C/C++, ROS, Arduino, Visual Studio Code
Design	CATIA V5, SOLIDWORKS, Autodesk Inventor, Ansys, Femap/Nastran, Blender
Manufacturing	FDM/SLA Printing, CNC Laser Cutting, Soldering, PCB Design, Rapid Prototyping
Languages	English (Native), Spanish (Conversational), French (Basic Proficiency)

Research & Professional Experience

Embry-Riddle Aeronautical University

Undergraduate Research Assistant | Dr. Aroh Barjatya | Space and Atmospheric Instrumentation Lab   **Feb. 2023 - Present**

- Developed a Python script to parse Ionogram readings from the Global Ionospheric Radio Observatory during the 2024 total solar eclipse, aiding in the analysis of data for the NASA APEP 2 mission.
- Integrated a Feather M0 microcontroller and 9DOF IMU to calculate RPM and angular acceleration of a rocket spin table for sensor deployment.
- Developed a wireless communication system using MATLAB and Arduino IDE to transmit live IMU readings across LoRa radio modules.
- Assisted in deploying and monitoring GPS receivers to assess the impact SpaceX's Falcon Heavy had on ionospheric wave propagation.
- Soldered and constructed several payloads for GPS radiosonde balloon satellite launches.

Engineering Sciences Tutor (CRLA Certified)   **Aug. 2022 - Present**

- Mentored **150+** students in foundational engineering subjects, including Statics, Dynamics, Solid Mechanics, MATLAB, and Computer-Aided Design, fostering a deeper understanding and practical application of key engineering principles.

Carnegie Mellon University

Robotics Institute Summer Scholar | Steven Willits | AirLab | [Poster, Video, Paper]   **May 2024 - Aug. 2024**

- Conducted preliminary design and feasibility analysis for a 3-year initiative to develop a semi-autonomous eVTOL emergency aircraft, with a personal focus on optimizing sizing, weight distribution, power and propulsion systems.
- Strengthening research communication skills through delivering a 3-Minute Research Talk presenting at a Poster Symposium, and preparing a research paper for publication.

NASA Glenn Research Center

OSTEM Intern | Dr. Herbert Schilling | Graphics and Visualization Lab   **Aug. 2023 - Dec. 2023**

- Created detailed models for the X-66A, an experimental aircraft by Boeing and NASA targeting net-zero aviation greenhouse gas emissions.
- Developed a virtual twin of the NASA Electric Aircraft Testbed and surrounding facilities to aid in the construction of a new testing facility.
- Volunteered at numerous outreach events, where I got the opportunity to both teach and inspire the public about the cutting-edge research and technology being explored at NASA.

Honeywell Aerospace

Electrical & Systems Engineering Intern   **May 2023 - Aug. 2023**

- Built upon my role in a research program by further refining and optimizing the design and implementation of a knowledge-based system.
- Arranged and conducted vital meetings with site engineers and technicians, providing valuable insights into the intricacies of the manufacturing process and ensuring a seamless alignment between the system's functionality and the manufacturing requirements.
- Presented the completed system to facility leaders, highlighting a projected annual labor cost reduction of **$250,000** for the eTALIN product line and establishing a framework for extending these savings to other product lines.

Student Researcher   **Nov. 2022 - May 2023**

- Volunteered for an industry research program to streamline the diagnosis and repair procedures for malfunctioning inertial navigation systems, addressing a pressing issue at Honeywell facilities.
- Organized weekly sessions to identify the prevalent failure modes in faulty units and developed effective diagnostic trees to resolve them.

Publications, Posters & Presentations

K. Olen, S. Willits, and S. Scherer, (**under review**), "Emergency Response Ambulance Drones: Feasibility in Design for the GoAERO Competition," *Robotics Institute Summer Scholars Working Papers Journal*, vol. 12. Available: <u>Paper</u>, <u>Poster</u>, <u>Video</u>

K. Olen. (**Jul. 2024**) "Designing a Compact eVTOL Passenger Drone for Enhanced Emergency Response." Presented at the SpeakUp! 2024 3-Minute Research Talk Symposium, Carnegie Mellon University, Pittsburgh, PA, USA. Available: <u>Video</u>

K. Olen and A. Barjatyta. (**Apr. 2024**) "Self-balancing wheeled robot for discontinuous terrains." Presented at the ERAU Discovery Day Student Research Conference, Embry-Riddle Aeronautical University, Daytona Beach, FL, USA. Available: <u>Poster</u>

Projects

Wheeled Biped for Discontinuous Terrains | Independent Research Project, Awarded Grant Funding   **Feb. 2024 - Present**
- Secured a **$1000** grant to develop a cost-effective jumping wheeled biped, serving not only as a platform for testing control algorithms, but also as an educational resource for students interested in robotics.
- Spearheading the mechanical design, sensor integration, and system simulations for the research project.
- Expected outcomes include an academic paper, a low-cost open-source prototype, and detailed video documentation that will allow students to follow along without any prior experience and learn how to design their own robots.

Buoyant Pneumatic Drone | Space Systems Capstone   **Jan. 2023 - May 2023**
- Designed a physical model to simulate satellite orbital adjustments in a 2D plane, implementing cold gas thrusters and autonomous control.
- Utilized parametric modeling principles to facilitate iterative design improvements while ensuring compliance with all design requirements.
- Developed a virtual model of the system in Matlab, enabling rapid evaluation and optimization of control algorithms.
- Presented the system to faculty and peers, incorporating feedback to drive further design refinements.

Balloon Satellite Sun Tracking Payload | Microcomputers & Electronics Capstone   **Jan. 2023 - May 2023**
- Engineered and prototyped a balloon satellite payload designed for sun orientation tracking and real-time transmission to a ground station.
- Led the development of power and monitoring subsystems, implementing signal conditioning circuits and embedded microcontroller code.
- Integrated all subsystems into a cohesive package, achieving reliable tracking performance and successful field test demonstrations.

Leadership

NASA Promoting Agency Cross-Center Connections (PAXC)

Glenn Research Center Chair   **Aug. 2023 - Dec. 2023**
- Served as the primary contact for Glenn Research Center within PAXC, organizing several collaborative events between NASA centers.
- Conducted an agency-wide presentation to showcase the achievements and ongoing research initiatives at the Glenn Research Center.

NASA Space Apps Challenge

VULCAN Team Lead | <u>Project Overview</u> | <u>Project Presentation</u> | <u>Awarded Global Nominee Recognition</u>   **Oct. 2023**
- Competed in a global NASA hackathon, where our team developed a machine learning algorithm using real-time Landsat data and the Fosberg Fire Weather Index to enhance wildfire identification and address fire monitoring challenges.
- Showcased a functional prototype to NASA judges, winning first place at the Glenn Research Center and receiving global nominee recognition.

Service & Outreach

United Way Summer Career Camps | Oil City, PA   **Aug. 2024**
- Speaker in a seminar series for rural middle school students, exploring the applications of robotics in agriculture, transportation, and hospitality, while highlighting available educational opportunities and inspiring students to explore beyond their immediate surroundings.

Arts Excursions Unlimited Workshops | Pittsburgh, PA   **Jun. 2024 - Aug. 2024**
- Mentored residents in an underserved community to develop a smart air quality sensor network, enabling them to monitor and address growing health concerns, while introducing them to STEM concepts in a hands-on, approachable manner.

AIAA Young Astronaut Day | Cleveland, OH   **Nov. 2023**
- Guided K-12 students in designing and programming Lego Mindstorm robots for a team competition, focusing on payload capture and delivery in simulated lunar missions.

Honors & Awards

Student Ambassador, JPL-ERAU Academic Exchange Program | *Selected representative for Embry-Riddle at NASA JPL*   **May 2024**
Spark Grant Recipient, ERAU Office of Undergraduate Research | *$1000 grant awarded to promising student researchers*   **Feb. 2024**
Hackathon Winner, NASA Space Apps Challenge (Glenn Research Center) | *First Place awarded by panel of NASA Judges*   **Oct. 2023**
Bright Futures Academic Scholar, Florida Department of Education | *Honored for academic excellence and service*   **Nov. 2020**
Visionary Scholar, American College Foundation | *Awarded for top paper out of thousands of nationwide submissions*   **Jun. 2020**
Commended Student, National Merit Scholarship Organization | *Recognized among the top 50,000 of 1.5 million SAT scores*   **Oct. 2019**