

Julian Louis Ruocco

(484) 800-2952 | julianruocco@gmail.com | <https://julianruocco.com/>

Executive Summary

Aerospace Engineering student with a robust background in space systems architecture and mission concepting. Proven experience leading cross-functional teams through hardware integration, rapid prototyping, and end-to-end space system development. Seeking a graduate-level space systems internship in the Washington D.C. metropolitan area.

Education

The Pennsylvania State University

B.S. Aerospace Engineering

Engineering Leadership Development Minor | Space Systems Engineering Certificate

May 2027

GPA 3.66/4.0

In Major GPA 3.82/4.0

Work Experience

Mission Concept Intern, Space Dynamics Laboratory, Albuquerque NM

May - July 2026

- Developed a mission concept for a 6U CubeSat to identify and geolocate ocean plastics in the Pacific Ocean.
- Simulated orbital parameters in STK to determine orbit optimization via imaging pass time and antenna downlink.
- Built a Python script to compress multi-spectral data into indices and used them to identify plastic signatures.
- Utilized System's Engineering methodology to iteratively define system requirements, authored and defended a PDR.
- Worked with NASA and AFRL engineers to continually iterate the design to increase mission feasibility and relevance.

Student Space Programs Laboratory, State College PA

Laboratory Lead

August 2025 - Present

- Designed a novel modular recycling system (RECLAIM) for lunar missions using high power microwaves.
- Integrated and tested RECLAIM under vacuum conditions and high temperatures with pressure and temperature readings gathered in LabView by pressure transducers and type K thermocouples.
- Directed laboratory initiatives, refined the training program, and taught 100+ student engineers systems engineering.

Chief Engineer, NASA's LunaRecycle Challenge (Phase 2)

August 2025 - May 2026

- **Led 20 student engineers to win \$50,000 in the Milestone Round and secure a seat in the finalist round.**
- Created a proof-of-concept microwave-assisted plastic pyrolysis system with less than 500\$ and lab equipment.
- Set the foundation for the design of RECLAIM through defining system requirements down to subsystem level.

Research Lead, NASA's LunaRecycle Challenge (Phase 1)

December 2024 - May 2025

- Directed the research team for NASA's LunaRecycle Challenge (Phase 1), authoring key proposal sections.
- Created a MATLAB heat transfer model to gauge system temperature, improving energy efficiency by ~15%.

Member, Student Training Program

August 2023 - November 2024

- Applied systems engineering to design and build an atmospheric volatile gas detection payload for a suborbital rocket.

Research

Space Systems Researcher, Space Propulsion and Environments Laboratory, State College PA

May - August 2025

- Researched high power microwave systems for use on future long term lunar missions.
- Developed a technical proposal for a lunar recycling system which would fit within a centralized microwave network.
- Engineered systems requirements and design, leveraged catalysts to recycle plastic into rocket propellant precursors.

Skills

- **Software & Simulation:** MATLAB, Python, HTML, SolidWorks, AutoCAD, STK, COMSOL, KiCad, LabView
- **Hardware & Fabrication:** Control Systems, High Power Microwave Systems, Hardware Integration