# Andrew Trefry

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## Education

**University of Central Florida**, BS in Aerospace Engineering — Aug 2022 – Dec 2026

- GPA: 3.49

## Professional Experience

**Rocket Lab Corp**, *Turbomachinery Engineering Intern* – Long Beach, CA — Feb 2025 – May 2025

- Analyzed fuel pump transient operation in Starccm+ to calculate head losses, axial thrust, and mass flow. Simulation was within 5% of benchmark models and test data.
- Imported CFD pressure and Thermal data into ANSYS mechanical, developed meshes, and structural model setups for fatigue and creep analysis in line with NASA-STD-5012 standards.
- Created secondary flow path turbopump models in NASA GFSSP to assist in failure analysis for steady state and transient test cases.
- Coded MATLAB signal processing scripts to analyze turbopump test data for bearing and rotor dynamic fault analysis.
- Documented older pump builds in flame to assist manufacturing engineers in streamlining turbopump assembly and archive older builds.

**Space Resource Tech.**, *Manufacturing Engineering Intern* – Orlando, FL — Aug 2024 – Jan 2025

- Assisted in packaging and distributing simulated regolith for JAXA, NASA, ISRO and MIT for experimental research.
- Developed, maintained, and optimized standard work instructions/SOPs for use by operators and workers.
- Assisted in the design of custom manufacturing machinery and integrating measurement laboratory tools for optimizing material usage.
- Optimized floor layouts to maximize efficiency and to increase volume production and maximum number of users on production floor.

**Experimental Fluid Mechanics Lab**, *Wind Tunnel Lead* – Orlando, FL — Jan 2024 – Sept 2025

- Assisted Postdoctoral researchers with the optimization of airfoils for turbine inlet vanes utilizing Starccm+ parameter sweeps.
- Expanded previous designs to elevate quality, and durability for turbine components in high pressure, and high velocity conditions.
- Led the construction of an industry grade wind tunnel utilizing Barlow's Wind tunnel handbook to design flow conditioning screens and to build an acrylic test section.
- Designed and simulated metal table in ANSYS Mechanical to support a seven-hundred-pound wind tunnel fan.
- Used tools like LabVIEW and lasers to help run PIV simulations to observe the aerodynamics of perching birds in flight by modeling the wings as airfoils.

**Jones Edmunds**, *Engineer Intern* – Gainesville, FL — May 2023 – Aug 2023, May 2022 – Aug 2022

- Worked on As-Built site plan documents in both infrastructure and solid waste departments utilizing Auto-Cad skills to assist Professional engineers and Cad-technicians.
- Worked on NASA wetland restoration project repairing archived documents from over ten years ago. Edited and redesigned site plans based on engineers desired specifications.
- Visited NASA with senior engineers to meet and consult with the NASA engineers about renovations to coastline project. Visited coastline sites to check on the artificial wake barriers structural integrity.
- Performed tasks usually done by field technicians such as water quality checks and water pump calculations.
- Co-Authored article in Solid Waste Association of Florida about Lithium-Ion batteries storage in landfills.

## Extracurriculars

**Combustion Team Lead**, JAS Turbojet – Orlando, FL — November 2023 – Current

- Currently Leading the Combustion team for an inline turbojet engine focusing on combustor design, thermal and fluid analysis, and structural design/FEA.
- Strengthened integration between the electrical, combustion, and turbomachinery teams to improve cooperation and streamline development through effective communication with other team leaders.
- Leading the development of a numerical combustion tool to simulate annular combustor performance in python utilizing Cantera. Designing for turbine inlet conditions of 1000K.
- Used Excel to develop annular combustor geometry including flow swirlers, Z-slot cooling holes and dilution hole patterns.

**Telemetry Team Member**, KXR NASA Student Launch – Orlando, FL — September 2022 – May 2023

- Utilized ANSYS FEA to validate specific aero-structures components would sustain structural integrity during flight with a safety factor of 1.5.

## Skills

**Software:** SolidWorks, Autodesk Inventor, CREO (basic), AutoCAD - Industry Certified, Simulink, JIRA, Flame, GFSSP, ANSYS Fluent (Basic), CFX, StarCCM+, ANSYS Mechanical, Microsoft Office

**Programming:** C, Python, MATLAB