SAMUEL WHITLOCK

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EDUCATION

Iowa State University - B.S. in Mechanical Engineering Graduating December 2025

WORK EXPERIENCE

Manufacturing Lab Teaching Assistant - Iowa State University
- Taught over 100 students on the safe operation of heavy machinery and delivered classes on manufacturing best practices.
- Developed a curriculum for the robotics lab section to encourage a more hands-on activity and learning experience.
- Taught the following machinery/classes: TIG/MIG Welding, Robotic Welding, CNC Lathe and Mill, Manual Lathe and Mill, CMM, Casting Molds and Forging, 3D Printers, MASTERCAM, and Injection Molding.

Spaceflight Systems Engineering Intern - Axiom Space
- Applied model based systems engineering approach (MBSE) to the Axiom Mission Control Center to evaluate data, communication, and video requirements for Axiom Station.
- Developed a simulation environment for flight controllers to evaluate operational tools such as procedure viewers, telemetry displays, and timeline viewers in an integrated flight like environment.
- Led the design of the EVA handrails in Solidworks. Pushed product through SRR and PDR, prioritizing DFX and DFM. Utilized product data management for version control and collaboration.
- Analyzed multiple EVA worksites to ensure requirements were met for the safety of astronauts. Provided insight for other engineering teams into what changes could be made to meet requirements.
- Assisted in development of GNC rendezvous, proximity operations, and docking procedures for joint collaboration between vehicles.

Robotic Systems Intern - NASA Johnson Space Center
- Designed, prototyped, and manufactured edge key displays and mounting system for the lunar terrain vehicle.
- Created wire pass throughs on the vehicle that used EMF shielding to protect critical components from damage/data corruption due to high amperage running through the wires.
- Collaborated with machinists to create drawings and a manufacturing plan for both the pass throughs and the edge key displays.
- Machined the entire display out of 6061 aluminum. 3D printed wire pass throughs with carbon fiber reinforced PETG.
- Created ergonomic and human in the loop (HITL) test plans for NASA astronauts to test and evaluate the edgekey displays.

Mechanical and Thermal Analysis Intern - NASA Johnson Space Center
- Created novel controls system for augmented reality application utilizing cost-effective consumer electronics.
- Acted as project lead, managing engineers and providing monthly deliverables to present to stakeholders.
- Created testing procedures and acted as test director for a series of tests demonstrating the effectiveness of the prototype.

Avionics Systems Intern - NASA Johnson Space Center
- Designed VISION kit, a system for tracking and simulating EVA assets using a raspberry pi, GPS, IMU and Accelerometer, and integrated battery pack for an augmented reality heads up display in the space suit.
- Reviewed 32 proposals for the NASA SUITS Challenge, evaluating on key parameters such as design feasibility, ability to meet requirements, and creativity of the design. Down-selected to 10 proposals.
- Tested VISION kits at the JSC rock yard with 10 student teams accessing and pulling information from them.

PROJECTS

Project Manager - NASA L'SPACE NPWEE Project IRIS
- Wrote a winning proposal and secured $10,000 in NASA funding, demonstrating strong proposal writing and customer service skills.
- Collaborated with the Marshall Space Flight Center, showcasing effective interpersonal skills and teamwork.

Hardware Team Lead - NASA Micro Gravity NExT Challenge
- Led a multidisciplinary team to design and manufacture a lunar anchoring device based on given NASA requirements.
- Developed testing plans for evaluation of key design functionalities in the various environments to simulate use on the lunar surface.
- Wrote multiple large technical documents explaining use cases, design intention, and testing results.

Systems Team Lead - Robocup Global Search and Rescue Competition
- Led a systems and software team that developed and implemented a backend and frontend solution for rover mobility, dexterous manipulation of a robotic arm, cameras, and LIDAR.
- Made decisions on the system architecture to use ROS (Robotics Operating System) as an integration of all products.