

Jack Hammerberg

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EDUCATION

University of Michigan

Bachelor of Science in Computer Engineering

Ann Arbor, MI

August 2023 - December 2027

WORK EXPERIENCE

Rocket Lab

Incoming Flight Software Intern

Long Beach, CA

February 2026 - April 2026

NASA Jet Propulsion Laboratory

Flight Software & Avionics Intern - High Performance Space Compute

Pasadena, CA

June 2025 - August 2025

- Developed a real-time control loop to demonstrate Time Sensitive Networking (TSN) integration with NASA's next-generation High Performance Space Compute (HPSC) platform.
- Optimized Linux GPIO performance using a custom C driver with DMA access on Raspberry Pi, reducing latency from 200–500 μ s to \sim 1 μ s, enabling microsecond-level precision control.
- Integrated gPTP (IEEE 802.1AS) on Microchip Gigabit switches to synchronize Linux endpoints to \sim 20 nanoseconds, enabling TSN demo traffic determinism across multiple nodes.
- Wrote a custom frame handler using Python and OpenCV for Gigabit Ethernet cameras to allow for video playback under intense packet loss and network traffic.
- Extensively documented all previously mentioned activities with AsciiDoc, Antora, and Markdown for engineers to reference when designing future missions to best utilize TSN technology.

RELEVANT EXPERIENCE

Michigan Aeronautical Science Association (MASA)

Flight Software & Avionics Firmware Lead

Ann Arbor, MI

August 2023 - January 2026

- Wrote custom device drivers for reading IMUs, ADCs, barometers, pressure transducers, and thermocouples as well as multi-mode valve control using SPI, I2C, and the STM32 HAL API in C.
- Implemented a custom telemetry and command packet encoding scheme over Ethernet using LWIP on STM microcontrollers, optimized for efficiency and overhead.
- Author of our automated control sequence for the launch of our rocket, controlling over 25 different components simultaneously and handling multiple changing abort procedures, verified prior to launch with custom simulations.

Avionics Subteam Director

August 2023 - May 2025

- Responsible engineer (RE) for our vehicle's modular avionics stack made of entirely custom PCBs and software for 50Hz live telemetry from 250+ analog and DIO channels over 100Base-T Ethernet.
- Created training and onboarding documentation for 20+ new members while collaborating with the Chief and Systems Engineers to establish project timelines, deadlines, and deliverables.
- Provided support for ground equipment and flight hardware for every major testing campaign, including live debugging of National Instruments DAQ hardware during our latest successful hotfire.

SKILLS

Software: Embedded Firmware, FreeRTOS, Zephyr, STM32, Communication Buses, 3D CAD, Linux Programming, Git, Raspberry Pi

Programming Languages: C, C++, Python, Go/Golang, JavaScript, HTML, CSS, Lua

Hardware: Microcontrollers, I2C & SPI, Circuit Prototyping, Oscilloscope, Logic Analyzer, Multimeter, Soldering, 3D Printing