

Travis Brown

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OBJECTIVE

Seeking an embedded/firmware engineering internship for Summer 2027.

EDUCATION

Rochester Institute of Technology

Bachelor of Science and Master of Science in Computer Science (Accelerated BS/MS Program)

GPA: 3.96

Rochester, NY

Expected: December 2027

SKILLS

Languages: C, C++, Python, Rust, JavaScript, MIPS Assembly

Embedded: STM32 / ESP32 microcontrollers, FreeRTOS / ThreadX RTOS, CAN/CANopen, Modbus, MQTT, SPI, I2C, UART, PWM, ADC, OpenOCD, J-Link Segger, logic analyzer, oscilloscope

Tools: Git, GitHub, GitLab, Linux, macOS, KiCad, Onshape, STM32 CubeMX / CubeIDE

WORK EXPERIENCE

Embedded Software Intern

GE Vernova

May 2026 – Present

- Built a full I/O subsystem from scratch for TransNEXT industrial radios on STM32F7, supporting digital in/out, analog input, PWM output, and interrupt-driven edge detection across three configurable I/O ports.
- Implemented Modbus TCP, RTU, and ASCII server support, including a full register map exposing diagnostics, I/O states, and network health.
- Integrated MQTT support over TCP, TLS, and MQTT-SN over UDP to TransNEXT firmware, with user-uploadable certificates for private brokers, enabling remote diagnostics and fleet-wide configuration.
- Diagnosed servo jitter blocking a customer demo, ruling out signal integrity and timing via oscilloscope and Saleae before tracing the fault to a defective servo, enabling the demo to proceed on schedule.

Software QA Automation Intern

Lockheed Martin

May 2025 – August 2025

- Developed a Python tool that cut QA review time by 75% (20 min → 5 min), automating 60%+ of manual validation checks across 100+ repositories; deployed as a mandatory GitLab CI gate on all merge requests.
- Collaborated with QA engineers to validate and refine the tool through multiple feedback rounds before deploying as a mandatory merge request gate.

Embedded Software Engineer

RIT Electric Vehicle Team

August 2023 – Present

- Engineered embedded C++ firmware for a custom STM32F446 PCB as the vehicle control unit (VCU) of an electric motorcycle; built board-level fault handling, drive-by-wire control, and a 300 Hz state machine within ThreadX RTOS for motor and power control.
- Established CAN/CANopen communication with the motor controller, power subsystem, and BMS across dual CAN buses; designed the VCU's CANopen object dictionary entries and CAN message formats from scratch.
- Delivered a custom GNSS driver over UART/NMEA 0183 for the Gateway Utility Board; implemented checksum generation, message filtering, and configurable output rate.
- Expanded our hardware-agnostic library with STM32F446 peripheral drivers (PWM, ADC, SPI, timers) using STM32 HAL.

PROJECTS

Autonomous Fixed-Wing Flight Controller

Personal Project

June 2026 – Present

- Programmed a custom flight controller from scratch on an ESP32S3 in C using FreeRTOS, implementing autonomous PID stabilization (roll and pitch), sensor fusion, GPS waypoint sequencing, and manual override.
- Created attitude and navigation SITL simulators; validated roll, pitch, and heading PID gains across 32 GPS approach scenarios (8 headings × 4 distances) ahead of flight testing.
- Designed a flight controller PCB in KiCad with dual onboard IMUs, onboard barometer, SPI/I2C/UART sensor buses, nine PWM outputs, MOSFET reverse polarity protection on both power inputs, and isolated actuator and logic supply rails.

Handheld Chip-8 Emulator

Personal Project

June 2025 – December 2025

- Wrote a Chip-8 emulator in Rust on a Raspberry Pi, including an SPI display driver for the SSD1309 OLED.
- Hand-soldered a keypad PCB designed in KiCad; modeled and 3D-printed an enclosure in Onshape.
- Extended the emulator with configurable cycle speed and per-ROM quirk flags; wrote a game-selection ROM in Octo assembly.