

Shane Williams

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EDUCATION

Memorial University of Newfoundland

Bachelor of Computer Engineering; GPA: 4.00 / 95.2%

St. John's, Canada

2019 – 2024

EXPERIENCE

Tesla

Palo Alto, CA

Firmware Platforms Intern

Fall 2023

- Developed low-level firmware features for use on multi-core, multi-MCU vehicle controllers with an emphasis on firmware developer experience.
- Brought up new multi-MCU PCBs for use in upcoming vehicle programs.
- Developed firmware tooling in Python to automate initial board bringup and the generation of board-level drivers.

Firmware Integration Intern

Summer 2022

- Owned several firmware features, working with external suppliers and mechanical, electrical, firmware, regulatory and safety teams across Tesla to bring them into production.
- Wrote safety-critical user-facing vehicle firmware in C for Tesla vehicle interiors.
- Presented prototype vehicle features to company executives.

NVIDIA

Santa Clara, CA

Firmware Development Intern

Fall 2021

- Wrote U-Boot and embedded Linux firmware for an ARM Cortex-A processor on a PCIe device.
- Developed device drivers in C for a PCIe controller and PHY.
- Created kernel and userspace software for PCIe host and endpoint devices.

Kepler Communications

Toronto, Canada

Firmware Development Intern

Winter 2021

- Owned firmware development for a new cutting-edge satellite radio using C on a Cortex-M platform.
- Reviewed, brought up and debugged this PCB in a remote environment using my home lab.
- Wrote satellite flight computer firmware using C and FreeRTOS on a Cortex-R processor in an SOC.

Software Development Intern

Summer 2020

- Wrote a file system and ARQ protocol for satellite communications using C++ on a Linux platform, improving satellite throughput by 5-200%.

PROJECTS

Senior Capstone Project – Remotely Operated Quadcopter

2023 – 2024

- Designed one of two onboard drone PCBs, which included a microcontroller, digital radio, USB-PD sink, power regulation, GPS, video transmitter, and a Qi wireless charging sink.
- Wrote all onboard firmware, including PID controls, using FreeRTOS on a Cortex-M microcontroller.
- Created tooling in Python for generating peripheral drivers for the 10+ onboard ICs from YAML register maps.
- Wrote ground station software and a control terminal program using Python and React with gRPC.

Student Team – Killick-1 Cubesat

2020 – 2022

- Designed the software architecture for a scientific nanosatellite ground station and led a team of four students in its implementation.
- Wrote Python software for satellite tracking, communication and scheduling, telemetry database management, and data visualization.

SKILLS

Languages: C, C++, Python, Java, Rust, Javascript

Tools & Frameworks: Linux, U-Boot, FreeRTOS, Make, CMake, SCons, GDB, Git, Docker, OpenGL

Protocols: HDMI, PCIe, TCP, UDP, SPI, I2C, I2S, UART, CAN, LIN, LoRa

Hardware: PCB schematic & layout with KiCAD; LV system design; PCB bringup, rework, and lab skills