Hewitt McGaughey

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EDUCATION

University of Waterloo **Sept. 2019 – May 2024**
Bachelor of Applied Science, Mechatronics Engineering *Waterloo, Ontario, Canada*
Computing Option
87% average (3.9 GPA)

SKILLS

Languages: C, Rust, Python, C++, MATLAB, ARM Assembly, Linkerscript, CMake
Tools: Git, Bash, Vim, VSCode, GDB, Eclipse, Wireshark, Hyperfine
Technologies/Frameworks: Linux, ROS, Vue, Pandas, NumPy, Tensorflow, Matplotlib, Qt, PostgreSQL

WORK EXPERIENCE

Applied Intuition **Mountain View, California, USA**
Firmware Engineer *September 2024 – Present*

- Developing performant, modular firmware for software-defined vehicles.

Tesla **Palo Alto, California, USA**
Firmware Engineering Intern (Body Controls) *May 2023 – August 2023*

- Wrote high-performance DMA UART firmware enabling Cybertruck lighting animations on all exterior lights.
- In C, implemented step tracking algorithm for SPI stepper motor driver removing all positional drift.
- Added performance metric reporting functionality to LIN driver; now deployed across all Tesla platforms.

Parallel Systems **Los Angeles, California, USA**
Software Engineering Intern *January 2023 – April 2023*

- Wrote Rust software running on an Nvidia Jetson Orin to govern the operation of a self-driving electric train.
- Wrote PID controller allowing for 5% increased range via restriction of charge current.
- Integrated LZ4 compression into TCP telemetry stream, leading to a 7x bandwidth reduction.

Splunk **Toronto, Ontario, Canada**
Software Engineering Intern *May 2022 – August 2022*

- In C, wrote firmware for a Nordic nRF52840 to report a variety of sensor readings over BLE.
- Wrote full-stack Python code for a Linux device to receive and store environmental sensor readings.
- Added redundancy to software update process, using MQTT to gracefully detect and handle failures.

onsemi **Waterloo, Ontario, Canada**
Firmware Developer Intern *September 2021 – December 2021*

- In C, wrote bare-metal I2C, ADC, GPIO, and Timer drivers for board bring-up of a Cortex-M0+-based device.

PROJECTS

Firefighter Air Quality Monitor (Engineering Capstone Project)

- Led firmware development for a wearable device performing wildfire toxin monitoring.
- In C, wrote RTOS task-based firmware for a Nordic nRF52840 to send readings from 5 sensors over BLE.
- Implemented BLE Mesh communication between devices to improve effective range.
- Wrote Python software to receive BLE packets and forward to backend using MQTT.

Firmware Subteam Project Lead, Midnight Sun Solar Car Team

- From 2019 to 2023, wrote C firmware to control a solar car using STM32F407 microcontrollers.
- Led firmware development for power selection and motor controller interface boards.
- Developed low-level drivers for various ICs, incl. MCP2515 CAN controller and BTS7200 load switch.