Evan Li

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SKILLS

Languages: C, C++, MATLAB, Python, RISC-V Assembly, Bash, Java, JavaScript, SQL, VHDL, Visual Basic

Firmware/Embedded: STM32, BeagleBone/Raspberry Pi, UART, CAN, I^2C, Bluetooth, FreeRTOS, Make, CMake

Other: Git, Linux, ROS2, Altium Designer, Oscilloscope, 3D Printing, SOLIDWORKS, OpenCV, Docker, AWS, Wireshark

EXPERIENCE

DSP Firmware Engineering Co-op — *Infinera* 🔗 Sept 2024 - Dec 2024

- Worked on **C++ firmware** and supporting scripts for the Tahoe DSP, which powers pluggable optical transceivers
- Developed a system for applying fractional delays and gains to **FIR filter** taps to test impairment compensation algorithms
- Used **MATLAB** to process factory calibration data into **SQLite** databases, ensuring backwards compatibility for older formats
- Implemented algorithms such as **DFTs** in **C++20** with the help of **lambdas**, **templates**, **OOP**, and the **standard library**
- Wrote **unit tests** for all pull requests, which were further reviewed by senior engineers to enforce good practice and correctness

Core Firmware Member — *UWaterloo Formula Electric FSAE Team* 🔗 Sept 2023 - Present

- Wrote **C** firmware for **I^2C** communication between BMI088 IMU and custom **STM32**-based telematics control unit
- Prototyped CAN message logging through **SDIO** to a microSD card, handling 1000+ messages per second
- Added circuitry and firmware to power distribution unit's **HIL testing** board to imitate DC-DC power supply toggling
- Fixed dashboard button detection and double-click issues in dashboard control unit firmware and **embedded Debian** UI scripts
- Implemented APPS/brake pedal plausibility check with **FreeRTOS** to ensure safety in case of accelerator pedal failure

AI/ML Engineering Co-op — *Eon Media* 🔗 Jan 2024 - Apr 2024

- Led backend development of AI journalism assistant from inception to prototype with **Flask**, **Selenium**, and fine-tuned **LLMs**
- Reduced runtime of **GPU-accelerated** newscast **video processing** pipeline on **distributed AWS EKS** cluster by **~26%**
- Automated code deployment, data preprocessing, and result validation using **Bash** and **Python** scripts
- Created and optimized video encoding, object detection, and text detection algorithms using **FFmpeg, OpenCV**, and **Torch**
- Containerized algorithms with **Docker** to facilitate debugging, cloud deployment, and reuse within pipelines

PROJECTS

Robotic Arm from Scratch — C, STM32, PWM, ROS2, RViz, FreeRTOS, UART, 3D Printing, Onshape 🔗

- Built fully custom 3D-printed **6-DoF arm** guided by **inverse kinematics** to follow paths or **IMU** and keyboard controls
- Handled position requests with **FreeRTOS** on an **STM32**, which receives instructions from a **ROS2** host through **UART**
- Designed 2-layer STM32 Nucleo shield PCB with **Altium Designer** to distribute servo power and route PWM signals

"HAZARD 2.0" Competitive Robot — PID Control, Motion Planning, Java, OpenCV, TensorFlow, Mechanical Design 🔗

- Founded and led team Devolotics to place **#1 in Ontario** in the FIRST Tech Challenge; competed in World Championships
- Wrote **autonomous** programs integrating 7 sensors, 15 motors, and a camera; used **PID** controllers for arms and linear slides
- Manufactured 6 robot iterations with commercial, 3D printed, and machined parts made of aluminum, PLA, and polycarbonate

EDUCATION

Bachelor of Applied Science in Computer Engineering — *University of Waterloo* Sept 2023 - Present

- **96.30%** cumulative GPA
- Relevant courses: ECE124 - Digital Circuits and Systems, ECE222 - Digital Computers, ECE240 - Electronic Circuits