Evan Li

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SKILLS

Languages: C, C++, MATLAB, Python, Bash, Java, JavaScript, SQL, VHDL, VBA

Firmware/Embedded: STM32, BeagleBone, PCB Schematics, UART, CAN, I^2C, FreeRTOS, ROS

Other: Git, GitHub, Linux, Docker, AWS, OpenCV, TensorFlow, Torch, CMake, 3D Printing, SOLIDWORKS

EXPERIENCE

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

- Used **MATLAB** to convert raw calibration data into FIR filter taps stored in size-constrained **SQLite** databases
- Updated **concurrent tasks** to support warmboot and hitless firmware upgrades by saving/reading data to RAM with **C++**
- Created API's to safely abstract ASIC register access; wrote unit tests and configured them with **CTest** to ensure robustness
- Implemented 1024- and 2048-sample **FFT** and IFFT functions in **C++** as part of our math library for high-performance DSP

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 Mimic Arm — C, STM32, PWM, ROS, FreeRTOS, UART, 3D Printing, Onshape 🔗

- Built a 3D-printed **3-DoF robotic arm** that mimics hand movement tracked with an **IMU** using **inverse kinematics**
- Handled control and sensing with **FreeRTOS** on an **STM32**, which receives instructions from an **ROS** host through **UART**
- Future plans: Add a claw controlled by fingers with haptic feedback and 3 more DoF for claw orientation

"HAZARD 2.0" Competitive Robot — Motor control, Java, OpenCV, TensorFlow, Mechanical Design & Manufacturing 🔗

- 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, tracking objects with **OpenCV** and **TensorFlow**
- 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:** Digital Circuits and Systems, Fundamentals of Programming (C++), Linear Circuits