Cole Fuerth – Embedded C/C++

colefuerth.github.io | colefuerth | colefuerth@gmail.com | 519.300.2877

SKILLS

Languages : Python, C/C++, Java, Rust, Markdown, MATLAB, LaTeX, bash

Tools : NumPy, Pandas, Jupyter, Keras, SKLearn, Docker, PCB Fabrication, Battery Management Systems, Drive Inverters, Git, 3D Printing, Regex, Embedded Systems, Serial/I2C/UART/CAN, Arduino, Linux, PLC/Robotics, RF(433/2.4/BT), Data Acquisition

EXPERIENCE

Satcom Direct Avionics August 2023 – Present

Embedded Linux Software Developer Ottawa, ON

- Wrote an I2C driver for power management within the linux kernel.
- Worked on a fork of QEMU to emulate proprietary hardware for software testing.
- Created a code completion AI to be used internally, trained on company data.

University of Windsor Jan. 2022 – Apr. 2023

Research Assistant Windsor, ON

- Developed a cloud-based database and AI-powered SOC-estimation tool for Battery Management Systems using Python, as well as a fork of the LibreBMS firmware to collect data over MQTT and test the estimation tool.
- Made a dynamic interface between **I2C/UART** on **Arduino** and **Python** over USB using JSON packets, allowing for real-time data collection and analysis for thesis projects.

PROJECTS

NumpAI

- A hard-coded, from-scratch convolutional neural network that can recognize handwritten digits.
- Written in **Python** with **NumPy** to implement the neural network, which was a classifier on the MNIST dataset.

AI Battery Characterization

- A CNN built with **NumPy** and **Keras** that can characterize messy real-world battery data using the Combined+3 lithium model, an experimental way to estimate remaining charge in batteries.

Electric Motorcycle

- Programmed and assembled an electric dirt-bike.
- Assembled using an **Arduino Mega** for control with **C++**, a touchscreen display, custom aluminum panels, isolated inputs and outputs, and **all-custom power distribution and analog sensing**, mounted on a stripped frame.

Electric Long-boards

- Electronics enclosure designed and 3d printed, with custom wiring.
- Batteries are a **completely custom design**, built with 21700 Lithium cells.

EDUCATION

University of Windsor September 2020 - April 2023

BSc[H] Computer Science with Artificial Intelligence Specialization | Minor in Mathematics Windsor, ON

- Won first place at both CSGames 2023 for Emulators and WinHacks 2021 for Hardware.

St. Clair College September 2017 - April 2020

Electronics Engineering Technology, Associate Degree Windsor, ON