Owen Brake

Waterloo Mechatronics Engineering - Term 3B · **OwenBrake.com** · (647)548-5493 · obrake@uwaterloo.ca

Work Experience

Parallel Systems — Summer 2022
Hardware Engineer — Los Angeles, CA

- Designed HV PCBs in Altium and brought up RTOS firmware for said boards
- Worked extensively on bringing up isoSPI communication and working with LTC68XX chips
- Debugged critical HF and VHF communication systems including Gigabit Ethernet systems
- Developed HITL test boards for validating production system boards

Tesla — Fall 2021
Firmware - Drive Inverter Systems — Palo Alto, CA

- Developed highly-performant, resource constrained firmware for the Drive Inverter boards
- Developed and deployed mission-critical features for millions of production vehicles
- Developed firmware across multiple chip architectures to accommodate for 2020/2021 Semiconductor Shortage

Apple — Winter 2021
Embedded Firmware Engineer — Remote

- Specific features are currently redacted to preserve confidentiality

Ford Motor Company — Summer 2020
Software Engineer — Remote

- Worked on system to process vehicle core dump files into easily readable, accessible and shareable online formats using GDB and Java
- Rewrote permissions system to enable complex and nested conditions while maintaining performance on system with over 1 billion database records in Java and SQL

Groupdesk — Summer 2019
Full Stack Developer — Toronto, ON

- Developed CRUD services, using Angular to remove user dependence on technicians
- Automated front end QA using Go, Docker and Chromedp to increase release efficiency and stability

Liberty Metrics — Fall 2016
Data Entry — Mississauga, ON

- Online data mining and compiling of hotel booking data

Projects and Teams

Waterloo Formula Electric Team (Technical Lead) — September 2019 - Present

- Designed multi-stage precharge system for HV Battery to compensate for parasitic loads
- Designed and implemented firmware for ARM Cortex-M7 and M0 boards in FreeRTOS and C which communicate on the CAN bus
- Developed sensor analytics platform on Python for Beaglebone to measure and visualize live vehicle performance remotely
- Worked on drivers for the various sensors and external boards on the car like: LTC6812, ADE7913, LTC4110, etc.

Isidore, Custom Programming Language — December 2019 - July 2020

- Deployed JIT compiled, cross platform programming language built in LLVM using C++.
- Designed language to solve many of the runtime safety problems of C while retaining minimum overhead and lightning fast runtime performance

Skills

Electrical:	Soldering, Circuit Design, DMA, I^2C, SPI, isoSPI, Ethernet, UART, CAN, ARM Cortex-M
Software:	Altium, KiCAD, FreeRTOS, LLVM, Git, STM32CubeMX, PID, GDB/LLDB, MATLAB, SQL
Programming:	C, C++, Verilog, VHDL, ARM Assembly, Rust, Go, Python, Java, MERN/LAMP Stack