Ryan Jing

: r5jing@uwaterloo.ca
: (647) 972 1223

Portfolio | LinkedIn | GitHub

Skills

- **Software**: C, C++, Python, MATLAB, FreeRTOS, CMake, CppUTest, UML, ESP-IDF
- **Tools**: Git, GitHub Actions, Linux, Jira (Agile), Altium, KiCad, LTSPICE, Coverity, Jama, VSCode, Eclipse, SolidWorks
- **Hardware**: PCB Design/Bring-Up, Soldering, Oscilloscope, Logic Analyzer, Spectral Analyzer, DMM, ESP32, Arduino, Jetson

Experience

Embedded Engineer
Jan - Aug 2025

OtO
Toronto, ON

- Designed electrical schematics and PCBs in Altium; designed PCB bring-up testing suite for hardware debugging/validation
- Built prototype PCBs using OpenPNP; validated performance using oscilloscopes, spectral analyzers, logic analyzers, DMMs
- Reduced device sleep current by 34%, boosted charging speed by 47%, and implemented new battery-failure operation features
- Developed firmware features for ESP32; temperature-controlled charging, I2C motor controllers, integrating new ICs, bugfixes
- Implemented CI workflows with hardware emulation, unit tests, and static code analysis for improved code robustness
- Established Doxygen documentation workflows, enhancing code sustainability and future developer onboarding

Hardware and Software Developer
May - Aug 2024

Elev8 & Perform
Toronto, ON

- Spearheaded device firmware development; BLE for data transmission, I2C for gas/flow sensors, handling tasks with FreeRTOS
- Designed PCB integrating ESP32 and sensors; modeled and 3D printed device housing for ergonomics and functionality
- Implemented Python-based data visualization solutions for comprehensive sensor data analysis, testing, and system validation
- Developed Python Flask API and web app on Google Cloud, visualizing live device data, and saving to MongoDB collection

Firmware Developer
Sep - Dec 2023

Onsemi
Waterloo, ON

- Developed embedded software for RSL15 MCU (ARM Cortex-M33), SDK sample applications, and fixing customer bugs
- Created GPIO drivers, HAL components, and firmware in C (AUTOSAR); implemented interrupts and watchdog timers
- Designed firmware architecture for SDK applications, from memory mapping to customer-facing code, using Jama
- Implemented unit testing (CppUTest); hardware testing with DMM, logic analyzers, STM32CubeMonPwr, and JTAG debuggers

Undergraduate Research Assistant
Jan 2024 – Jan 2025

University of Waterloo - Department of Nanotechnology Engineering
Waterloo, ON

- Synthesized electroretinography (ERG) electrodes with Au-Ca and Au-Pt nanoparticles for R&D of diagnostic sensor strips
- Validated in-lab electrodes using oscilloscope, DMM; analyzed signal data with Excel and Python, 10% improved performance

Junior Systems Engineer
Jan - Apr 2023

Ontario Health
Toronto, ON

- Developed serverless Electronic Medical Record (EMR) web app on Azure using AngularJS, JavaScript, Node.js, and MongoDB
- Optimized RESTful API endpoints and backend, resulting in 94% development cost reduction and improved EMR accessibility

Design Projects

Electrical Lead
Sep 2025 – Present

True North Biomedical Competition – Electrical Subteam
Waterloo, ON

- Spearheading electrical development for biomedical device, designing electrical schematics, analog signal processing, PCB design
- Leading a 9-member team, assigning tasks, advising on technical choices, and managing technical growth and learning

Integration Lead
Jan 2023 – Jan 2025

WATOLINK - AI/ML Research
Waterloo, ON

- Integrating hardware components (Motor, GUI, BCI) and Python scripts using Jetson Nano for BCI-controlled wheelchair
- Researching and training AI models (SSVEP) using internal EEG data, creating hands-free command system for paraplegics

Education

University of Waterloo
Sep 2021 - Jun 2026

BASc Biomedical Engineering - Specialization in **Medical Devices**
Waterloo, ON