Jenny Wu

jingjw999@gmail.com | linkedin.com/in/jenny-wu2003 | jennywu.ca | Toronto, ON

Technical Skills

- **Embedded**: Embedded C/C++, PCB Design, SPI, I2C, UART, CAN
- **Tools & Design**: Altium Designer, KiCAD, SolidWorks, GD&T, MATLAB
- **Robotics & Automation**: OpenCV, Computer Vision, Motion Control, PLC
- **Firmware & Debug**: Firmware Development, RTOS, Hardware Bring-Up

Experience

Mechatronics Engineering Intern | FuelCell Energy — May 2024 - Jun 2025

- Developed and deployed a **Raspberry Pi-based machine-vision system** using **Python and OpenCV** to control a **3-axis motion platform**, improving screen-printing alignment **accuracy to 0.01 mm** and increasing manufacturing repeatability.
- Designed electromechanical fixtures and **pneumatic actuation systems** in **SolidWorks**, incorporating **GD&T and Design for Manufacturing (DFM)** principles for high-repeatability manufacturing operations.
- Engineered and validated **custom control PCBs in Altium** for sensor interfacing, **PLC communication**, and robotic automation systems with a **6-axis Epson robot arm**, reducing automated hydrogen fuel cell assembly cycle time by 70 seconds.

Firmware Engineering Intern | Attest Laboratories — Sep 2023 - May 2024

- Developed **embedded C firmware** for a **nuclear magnetic resonance gradient shim controller**, enabling precise electromagnetic coil current modulation for **medical imaging** systems.
- Designed and validated **mixed-signal PCBs** and adapter boards in **KiCAD**: schematic capture, component selection, and layout.
- Debugged and validated embedded firmware through **hardware bring-up**, **electrical characterization**, and **integration testing** for embedded instrumentation systems.

Research Assistant | University of Hawaii at Manoa — Jan 2023 - Apr 2023

- Developed **automated data analysis workflows** for pulmonary surfactant studies using **constraint drop surfactometry**.
- Built a **VBA-based automation tool** for experimental data processing and figure generation, reducing analysis time by **80%**.
- Designed **instrumentation setups** and data collection protocols to measure **surface tension dynamics** in lung surfactants exposed to e-cigarette aerosols, supporting experimental validation and analysis.

Projects

VocalPoint | Altium Designer, Raspberry Pi CM5, PCIe, USB-C PD, I2S — Sep 2025 - Apr 2026

- Developed a **portable embedded assistive-listening system** performing real-time audio enhancement, voice detection, and sound-source localization with **sub-100 ms end-to-end audio latency.**
- Designed a custom **4-layer Raspberry Pi CM5 carrier PCB in Altium** integrating USB-C Power Delivery, buck regulation, PCIe connectivity, multi-channel I2S audio interfaces, and ESP32 wireless communication.
- Implemented **high-speed PCB layout** including **impedance-controlled USB and PCIe differential-pair routing**, trace-length matching, and signal-integrity considerations for reliable high-speed digital communication.
- Executed schematic capture, PCB layout, hardware bring-up, debugging, and validation of embedded hardware subsystems.

Electrium Mobility E-Bicycle | Arduino, Embedded C++, SimpleFOC, DRV8833 — May 2023 - Aug 2023

- Developed **embedded motor-control firmware** for **regenerative braking** in an electric bicycle using Arduino, embedded C++, **SimpleFOC**, and **DRV8833** motor drivers, implementing real-time sensor feedback and **closed-loop control**.
- Integrated **battery-management**, sensor, and **motor-drive subsystems** into a complete **electromechanical control system**.

Project Echo: Hand Prosthetic | Arduino, Embedded C++, EMG, Servo Control — May 2023 - Aug 2023

- Developed an **EMG-controlled hand prosthetic** using embedded C++ and **signal-conditioning circuitry** for biosignal acquisition, real-time muscle-signal processing, and servo actuation.
- Integrated **analog EMG sensing, servo actuation, and embedded firmware** for responsive grasp control.
- Designed mechanical housings and electromechanical assemblies in **SolidWorks** for rapid prototyping and iterative validation.

Education

University of Waterloo | Waterloo, ON, Canada — Graduated Apr 2026

Bachelor of Applied Science in Biomedical Engineering (Co-op), Computing Option | GPA: 3.7/4.0

- **Focus Areas**: Embedded Systems, PCB Design, Robotics, Electromechanical Systems
- **Awards**: University of Waterloo's President's Scholarship of Distinction Recipient, CABHI NextGen Award, Engineer of the Future Fund