

# Jenny Wu

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## Technical Skills

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- **Embedded:** Embedded C/C++, PCB Design, Hardware Bring-Up
- **Tools & Design:** Altium Designer, KiCAD, SolidWorks, GD&T, MATLAB
- **Robotics & Automation:** OpenCV, Computer Vision, Motion Control, PLC
- **Software:** Python, Linux, Git

## Experience

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### **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.
- Designed 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 Sept 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, including schematic capture, component selection, and PCB layout.
- Performed firmware debugging, hardware bring-up, electrical validation, and integration testing for embedded instrumentation systems.

### **Research Assistant** | University of Hawai'i at Mānoa Apr 2020 - Mar 2024

- 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.

### **Co-Founder & Software Developer** | Impact Without Contact Apr 2020 - Mar 2024

- Co-founded a federally registered COVID-relief nonprofit organization supporting 1,100+ volunteers across 85+ cities.
- Developed and maintained the organization website, volunteer portal, and newsletter infrastructure using React and Firebase, supporting 800+ monthly users and volunteer coordination.

## Projects

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### **VocalPoint** | Altium Designer, Raspberry Pi CM5, PCIe, USB-C PD, I2S Sept 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.
- Performed 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, iterative testing, and system validation.

## Education

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### **University of Waterloo** | Waterloo, ON, Canada Graduated Apr 2026

*Bachelor of Applied Science in Biomedical Engineering (Co-op), Computing Option*

- **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