Luna Zhou

548-577-8888 d24zhou@uwaterloo.ca Linkedln Github Personal Website

Education

University of Waterloo **Class of 2028**

Candidate of Applied Sciences in Electrical Engineering *Waterloo, Canada*

- Coursework: Algorithms and Data Structures, Semiconductor Physics and Devices, Digital Computers, Electronic Circuits, Discrete Mathematics and Logic, Signals and Systems

Work Experience

Gas Sensor Characterization Research **Jun 2025 – Aug 2025**

Research Student *Simon Faster University, Vancouver*

- Implemented and validated **I²C communication** between a **LabJack U6 Pro** and **Honeywell HIH8000** humidity/temperature sensor, performing **address scanning, bus-line verification, and signal-level diagnostics** via the LabJack Python API and a custom I²C analyzer script.
- **Developed and QA-tested a Python-based GUI** (using **NiceGUI**, **Matplotlib**, and **pytest**) for real-time data acquisition; executed **unit, integration, and regression testing** for data parsing, exception handling, and UI responsiveness; maintained **version control and peer code reviews** via Git to ensure reproducibility.
- Executed comprehensive hardware–software verification and environmental stress testing, including **functional validation, boundary-condition testing, and failure-mode analysis** to identify wiring and timing faults; confirmed **measurement repeatability and calibration stability** across **temperature/humidity sweeps**.

Dongzhuo Auto Electronic Co ltd **May 2025 – Aug 2025**

Engineering Testing and Development Service *Waterloo, Remote*

- Designed and validated a PCB solder-defect reference board in **Altium Designer**, reproducing compliant, non-compliant joints to create a training samples and quantitatively evaluate classification **accuracy improvements (20%)**
- Developed and tested an **MCU-based control circuit** for an automotive mist-diffuser, implementing **PWM-controlled atomization** and **water-level sensing**; conducted **functional verification**, **stress testing**, and **signal integrity analysis** using a multimeter and logic probe.
- Performed **iterative QA reviews and documentation** of test results, highlighting schematic reliability risks, verifying board rework success, and ensuring **compliance with electrical safety and design-for-test (DFT)** guidelines.

Projects

Temperature Sensor | *C, STM32, TMP102* **July 2025 - Aug 2025**

- Developed **embedded C** firmware in **STM32CubeIDE** to interface the **TMP102 digital temperature sensor** via I²C, implementing register-level reads and error-handling for communication faults.
- Designed and assembled the sensor circuit on a breadboard, soldered components, and **verified signal integrity** using a **oscilloscope, logic analyzer** and **multimeter**.
- Tested and verified the temperature sensor's accuracy and performance to complete the project by comparing digital output with a calibrated reference thermometer, achieving **±0.3°C consistency.**

Exercise Form Checker | *Python, YOLOv8, Roboflow, Google Colab*

- Customized a **YOLOv8-pose model** in **Google Colab**, trained via **Roboflow**, to detect body keypoints and compute joint angles in real-time for motion assessment during squats and posture tracking.
- Implemented a **threshold-based form validation algorithm** to detect shallow squats and incorrect back posture; tested against video samples and live webcam feeds to ensure feedback accuracy within 10° angle tolerance.

SCD Auxiliary Prior-Warning Product | *C, STM32, Arudino* **Sep 2023 - Dec 2023**

- **Performed signal-level validation of ECG waveforms**, identifying **key pattern deviations and abnormal trends** related to cardiac activity; collaborated on **circuit debugging** and **sensor calibration** to improve detection accuracy.
- **Developed mechanical and electrical test plans** in parallel with schematic design using **Onshape**; conducted **functional and stress testing** by simulating heartbeat signals through a **vibration generator** and a **mobile-signal emulator**, verifying system responsiveness and reliability under varied input profiles.

Skills

Programming Language: C++, C, Python, HTML, CSS, JavaScript, Matlab, Vhdl, Assembly

Hardware and Tools: VS Code, Altium Design, Porteus, multimeter, oscilloscope, signal analyzer, Linux, PlatformIO, STM32CubeIDE, Quartus, LabVIEW, YOLOv8, Roboflow, Google Colab, Figma