LANCELOT SHIH

609-309-1524   shihlancelot@gmail.com   https://lancelotshih.github.io/source/

Citizen of USA and Canada - Seeking Computer Engineering Internship Fall 2025

Education

University Of Toronto — September 2022 - May 2027
Bachelor of Applied Sciences in Computer Engineering — *St. George Campus*

Professional Summary

Computer Engineering student with industry experience in Python, Go, C/C++, and PCBA design.
Demonstrated success in developing embedded Linux solutions, designing PCBAs, and writing firmware device drivers.
Seeking to improve my capabilities through embedded systems, firmware, or fullstack software work.

Technical Skills and Expertise

- Python, C/C++, Java, GoLang, HTML
- Embedded Linux
- OpenCV, Tensorflow, YOLOv8, PyTorch
- SPI, I2C, TCP/IP
- SSH, PuTTY, Internetworking
- Verilog, FPGA
- PCB Design/Debugging
- AutoCAD, CATIA, Fusion360

Experience

Tesla, Inc. — January 2025 – Present
Electronics Automation and Firmware Design Intern — *Palo Alto, California*

- Engineered embedded software stack for a power supply controller, enabling remote automation of 4 simultaneous power delivery test benches via TCP/IP; reduced manual setup time by 75%. (STM32, FreeRTOS, C, Python, I2C, Sockets)
- Designed automated PCBA testing software for Tesla Optimus arm sensors and controllers enabling throughput of up to 150 boards/hour, cutting manual testing labor by 80% and increasing production line efficiency by 5x. (GoLang, Docker, CAN, Ansible)
- Developed a framework for Tesla Optimus robot to quickly validate full finger sensor functionality and identify manufacturing defects by generating sensor pressure heat maps accurate to 0.01 N. (Python, Numpy, CAN)

University of Toronto Power Electronics Lab — May 2024 – September 2024
Student Researcher — *Toronto, Ontario*

- Redesigned firmware and GUI for a multi-chemistry EV battery pack, boosting power efficiency by 12–15% and extending cycle life by 2–5x. (C/C++, Python, Embedded Linux)
- Developed interfacing PCB to instantly connect a microcontroller to various battery management signal protocols such as CAN, SPI/I2C, and ADC current sensing reducing integration time by 50% and minimizing 99% of user error.
- Integrated device tree overlays to support CAN, SPI, and ADC inputs on microcontroller-based systems.

O-View Manufacturing Technology Co. Ltd. — May 2023 – August 2023
Manufacturing Automation Intern — *Taipei, Taiwan*

- Programmed 3-axis camera rig to automatically capture a region of interest, reducing manual alignment effort by 80% and enabling high-throughput imaging of semiconductor wafers.
- Developed an integrated software pipeline using machine learning and image processing to detect semiconductor wafer manufacturing defects at 98% accuracy. (Python, SVM, TensorFlow, OpenCV)

University of Toronto Solar Racing Team — September 2022 – Present
Electromechanical Lead — *Toronto, Ontario*

- Leading the development of an embedded Linux vehicle control system to reduce weight and power consumption by 70%
- Designed and optimized vehicle lighting control to reduce wiring by 67%, improving overall efficiency.
- Designed DC/DC power converter to convert 120V to 12V at 95% efficiency for vehicle's low voltage system. (Altium)
- Calibrated telemetry system to minimize packet loss by 99% and achieve low latency (30 ms).
- Designed mounting mechanisms for vehicle radio, rear view camera, and GPS tracker box. (CATIA, Fusion360)

Projects

NIOS II FPGA Ping Pong — January 2024 – May 2024

- An embedded C program for a reaction based 3D ping pong game against a CPU that increases in difficulty as you play.
- Defined game logic with finite state machines and created ball animations using Bresenham's line algorithm with a gravity factor.

Synthetic Training Data Generation for AI — May 2023 – August 2023

- Developed an autonomous annotation pipeline that accelerated image labeling by 4x, reducing processing time for 10,000 images from 56 hours to 14. (UE5, Unity, Blender).
- Trained a base YOLOv8 model to utilize these annotated datasets to rapidly improve specific environmental object detection performance.