

# Leah Song

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## TECHNICAL SKILLS

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**Software:** C/C++, Python, MATLAB, Simulink, ARMv7, SolidWorks, AutoCAD, Altium, Verilog

**Communications:** DCS, IEC 61850 GOOSE, Modbus, Ethernet, IEEE C37.118, PLC Systems

## EDUCATION

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**University of British Columbia**

*Bachelor of Applied Science in Electrical Engineering (Dean's List 2025)*

Vancouver, BC

Sep. 2023 – Present

## TECHNICAL EXPERIENCE

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**Electrical Engineering Intern**

*Shell Canada Limited*

May 2025 – Dec. 2025

*Fort Saskatchewan, AB*

- Worked under Electrical Engineering team at Scotford Production Site, managing power systems across refinery, upgraders, chemicals plant, and carbon capture facilities.
- Spearheaded digital fault recording system in 35kV substation using IEEE C37.118 fiber network to record real-time data from HV Siemens relay trips and allow for efficient diagnostics, generating \$645k+ in production value.
- Delivered high-priority operational technology (OT) audit for Shell Global and crucial cybersecurity controls on Rockwell/Siemens/SEL devices to protect digital wireless systems from external threats.
- Overhauled fin fan electric motors, VFDs, and dV/dT filters in central refinery processing unit and deliver 40% higher cooling capacity and \$1.2M in risk reduction.

**Electrical Lead/Captain**

*UBC ThunderBots*

Jan. 2026 – Present

*Vancouver, BC*

- Competed on autonomous soccer robotics team at international tournaments, successfully placing 2nd at RoboCup Eindhoven 2024.
- Coordinated rebuild of electrical PCB stack-up of motor drivers, power board, and breakbeam assembly to fulfill size constraints while maximizing signal integrity.
- Revamped main power board, evaluating electrical layout of solenoid auto discharge, voltage regulators, ESP32 MCU, and UI/RasPi connections for manufacturing viability and HV noise control.

**Electrical/Mechanical Sub-Team Member**

*UBC ThunderBots*

Sep. 2023 – Dec. 2025

*Vancouver, BC*

- Created inertial motion unit (IMU) PCB to supply 3D dynamic movement data to firmware in order to refine autonomous behavior and motion planning.
- Designed HV feedback sensing circuit on power board to offer real-time feedback on capacitor charging times and solenoid discharge.
- Produced 3D-printed CAD dribbler molds and constructed polyurethane rollers to test material grip performance at different speeds.

## PERSONAL PROJECTS

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**Autonomous Coin-Picking Robot** | *C, Python*

Mar. 2025 – Apr. 2025

- Devised a self-driving robot with an electromagnetic servo assembly to detect and collect metal coins.
- Programmed firmware to test and strategically plan best motion patterns to optimize performance.

**Reflow Oven Controller** | *ARMv7, Python*

Jan. 2025 – Mar. 2025

- Constructed a reflow oven controller system with LCD and thermocouple to effectively manage temperature.
- Allows user to input PCB soldering settings and graph temperatures through engaging app interface.

**DE1-SoC FPGA** | *SystemVerilog, ARMv7*

Sep. 2024 – Dec. 2024

- Implemented SystemVerilog and ARM Assembly to design finite state machine controllers and arithmetic datapaths.
- Established designs under both combinational and sequential logic, designing projects such as a combinational lock, basic mathematics calculator, and a binary operator.

**Autonomous Claw** | *C++, CAD*

Mar. 2024 – May 2024

- Developed an autonomous claw from scratch, including manufacturing of metal sheets, hinges and rubber lining.
- Integrated Arduino Uno and servo motor to pick up various objects based on sensor recognition.