Leah Sharma

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EXPERIENCE

Data Acquisition Team Lead

McMaster Baja Racing **August 2025 - Present, Hamilton, ON**

- Currently leading a team of 10+ students in data acquisition and sensor systems for a Baja SAE vehicle.
- Designed & assembled a test bench PCB in Altium for rapid proofing of CVT primary and secondary RPM sensor performance.
- Designed and built a custom steering torque sensor, implementing a full-bridge strain gauge array, an MCP6002-based amplification stage PCB, and calibrated output sensitivity of 1 mV per ftlb.
- Maintained electrical safety systems (kill switches, brake-light).

Network Technology Intern

Bell Canada **May 2025 - August 2025, Toronto, ON**

- Managed operations and performance of 300+ cellular sites including emergency service sites, ensuring continuous uptime & reliability.
- Collaborated with field technicians in real time to diagnose and resolve 12+ network outages & hardware issues.
- Developed Python based automation workflows, integrating & providing feedback on proprietary monitoring software APIs to streamline cell site monitoring.

PROJECT

Modular Motherboard Redesign

McMaster Baja Racing • August 2025 - November 2025

- Redesigned the main motherboard in Altium Designer as a modular platform, isolating essential circuitry onto a core board & enabling plug-in sensor modules.
- Implemented 3 standardized power rails (12V, 5V, 3.3V) and routed Teensy data lines to expand sensor selection.
- Improved reliability by allowing modules to be swapped, debugged, and upgraded without a full main board overhaul.
- Established a system that accelerates sensor development, simplifies troubleshooting, and reduces integration downtime.

3D Spatial Scanner

March 2025 - November 2025

- Designed and built a 3D spatial scanner using a VL53L1X ToF sensor, stepper motor, & MSP432 series microcontroller.
- Implemented motor control, sensor interfacing & UART communication in C for data transmission of scans.
- Developed a MATLAB program for a spatial visualization of the scanned data.
- Applied sensor calibration, & data filtering for measurement accuracy and system reliability.
- Created a datasheet outlining sensor specifications, electrical characteristics, and performance metrics for validation and future development.

Custom Steering Torque Sensor

McMaster Baja Racing

- Laid 2 strain gauges on an intermediate part between steering rack & shaft.
- Used a custom Wheatstone bridge circuit to amplify strain gauge signals for precise torque measurement.
- Developing software in C++ to map output signal voltage to torque, & interface with main car PCB.

Boutique Guitar Pedal Design

- Reverse engineered 2 & designed 1 custom analog guitar pedal(s), recreating commercial pedals for specific characteristics and tonal variation.
- Developed PCB layouts in Altium Designer, optimized for easy assembly as DIY kits, with 100% SMD components.
- Validated and tuned circuit performance with an oscilloscope & guitar to optimize gain & fuzziness.
- Documented circuit schematics and BOMs to enable reproducibility and kit distribution for other builders.

EDUCATION

Bachelor of Engineering in Electrical Engineering

McMaster University • Hamilton, ON • 2027

SKILLS

Technical Skills: Python, C++, C, Autodesk Inventor, SolidWorks, Altium Designer, MATLAB

Personal Skills: Communication, Time Management, Adaptability, Collaboration