

# GABRIEL GEBREMEDHN

Alberta, CA | +1 (825)-419-9287 | Hadgu@ualberta.ca | [LinkedIn](#) | <https://geb-8.github.io/>



## PROFESSIONAL SUMMARY

I'm an Electrical Engineering student with a passion for building hardware that moves. From designing satellite power systems to engineering a mechanical heart, I specialize in embedded systems, circuit design, and testing hardware to ensure reliability in high-stakes environments. I love the challenge of taking a complex idea and turning it into a working, physical prototype.

Embedded Systems Development | Analog & Digital Circuit Design | Hardware Validation & Troubleshooting | Mechatronics & Actuator Control | Sensor Calibration & Signal Processing | PWM & Arduino Interrupts | Ultrasonic Sensors (HC-SR04) | ADC & UART Communication | Technical Documentation & Engineering Reporting | CAD Design & Electrical Drawings

## EDUCATION

**Bachelor of Science in Electrical Engineering** | University of Alberta | Expected Date: May 2027

**Coursework:** Embedded Systems | Electrical Circuits, Power Systems | Digital Logic Design | Microprocessors

## ENGINEERING EXPERIENCE

**Alberta Heart (Student Engineering Team) - Edmonton, AB**

Sep 2025 – Present

**Electrical & Embedded Systems Member**

- Hardware Testing & Support:** Assisted with hands-on hardware testing and basic troubleshooting using oscilloscopes and multimeters to help identify circuit issues during team testing sessions.
- Control Circuit Assistance:** Supported the design and assembly of analog and digital control circuits for the Total Artificial Heart (TAH) project, focusing on power delivery and basic safety functions.
- System Tuning:** Enhance pumping accuracy, responsiveness, and long-term reliability by designing, implementing, and tuning closed-loop feedback control systems under varying operating conditions.

**University of Alberta Solar Car Club (USCC) - Edmonton, AB**

Sep 2024 – Present

**Electrical Subsystem Team Member**

- Battery & Power Management:** Drive power subsystem optimization for solar-powered electric vehicle by analyzing and integrating battery management systems, MPPT controllers, AC/DC charging infrastructure, and power architecture.
- Electrical Subsystem Design:** Boost performance electrical subsystem through circuit design, subsystem modeling, and coordinated integration while ensuring stable and efficient energy delivery across the vehicle.

**AlbertaSat (University Satellite Engineering Team) - Edmonton, AB**

Jan 2025 – Sep 2025

**Power Systems Team Member**

- EPS Design & Review:** Utilized Altium Designer to review solar panel PCB layouts and verify trace routing, ensuring the circuitry met the requirements for the satellite's Electrical Power System (EPS) architecture.
- Solar Panel Testing:** Led fabrication and performance testing of Hyperion solar panels for Ex-Alta 3 aimed at improving power output, efficiency, and overall system reliability for successful satellite deployment.

## KEY PROJECTS

**Servo-Powered Ultrasonic Sonar Scanner**

- Object Detection:** Developed a rotating sonar system using an ultrasonic sensor and servo to map objects across a 180° field, using the timing of sound pulses for real-time distance tracking.
- Hardware Integration:** Programmed an ATmega328P to coordinate motor movement with RGB LED and buzzer alerts, providing immediate interactive feedback as objects move closer.

**Multistage BJT Audio Amplifier**

- Circuit Modeling:** Designed and simulated a two-stage BJT amplifier in LTspice, analyzing signal behavior to achieve a stable voltage gain of ~11 V/V at 2 kHz.
- Signal Optimization:** Prototyped the circuit on a breadboard and used an oscilloscope to monitor output waveforms, adjusting components to eliminate clipping and ensure a clean, undistorted sound.

## TECHNICAL SKILLS

**Programming languages:** C/C++ | Python | MatLab | Arduino IDE | Verilog/VDHL | Assembly | Microcontroller programming

**Applications:** Altium Designer | KiCad | LtSpice | SolidWorks | AutoCAD | Word/ Excel | Microsoft 365/MS Office

**Availability:** Seeking a 4, 8, or 12-month internship starting May 2026.