

UNIVERSITY OF  
ALBERTA

# Gabriel Gebremedhn

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Visit my website here!

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, through hands on projects, teamwork, and real-world problem-solving skills. **Seeking a 4,8 or 12-month internship starting May 2026**

## 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:** Performed hands-on hardware testing and basic **troubleshooting** using **oscilloscopes** and multimeters, identifying circuit issues and supporting resolution during team testing sessions.
- Control Circuit Assistance:** Played a key role in supporting the design and assembly of analog and digital control circuits for the **Total Artificial Heart** (TAH) project, with a focus on power delivery and basic safety functions.

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

Sep 2024 – Sep 2025

**Electrical Subsystem Team Member**

- Battery & Power Management:** Evaluated and assessed power subsystems for a solar-powered electric vehicle, focusing on battery management systems, MPPT controllers, **AC/DC charging** infrastructure, and overall system architecture.
- Electrical Subsystem Design:** Designed and reviewed **power distribution** paths connecting the battery, solar cells, fuse protection, EPS controller, and J1772 charging interface to ensure safe energy flow.

**Alberta Sat (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 meets 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 11V 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

Project Controls & Cost Management | Electrical & Computer Engineering | Budget, WBS & Forecast Tracking | Earned Value Analysis & Change Orders | Cost Transactions & Invoice Validation | Schedule Updates & LEMS Tracking | Data Analysis & Trend Reporting | Excel, Word & PowerPoint Proficiency | Technical Documentation & Reporting | Team Collaboration & Problem Solving | Attention to Detail & Independent Work | Process Improvement & Workflow Optimization