Jacob Parsons

Embedded Systems | Computer Engineering Co-op
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Education

Memorial University of Newfoundland — St. John's, NL
Bachelor of Engineering, Computer, Co-op Program — *Class of 2029*

Skills

Languages: C, C++, Python, Assembly
Hardware: PCB Design (KiCad), Switching Power Supply Design, LTspice, SMD & Through-Hole Soldering/Rework, Oscilloscope, Logic Analyzer
Embedded: STM32, ESP32 (ESP-IDF), Arduino, Raspberry Pi
Autonomy & Vision: ArduPilot, Cube Orange (Pixhawk), OpenCV, AprilTag, Camera Calibration, Metric Reconstruction
Software & Tools: FastAPI, NumPy, UDP Networking, Git, Linux, MATLAB, Onshape

Design Team Experience

Paradigm Engineering — St. John's, NL
Auxiliary Power System Lead, Electrical Hardware — *Sept. 2025 – Present*

- Shrank buck inductor size by raising switching frequency from 350 kHz to 1 MHz and rebuilding the buck control circuitry.
- Removed the board's most failure-prone stage by replacing an unreliable hot-swap over-current circuit with converters that have integrated over-current protection.
- Led a full design review of the previous season's power board, identifying 4+ failure points including low switching frequency and weak buck control.
- Leading a 6-member sub-team to take a near-complete auxiliary power rebuild to fabrication in 4 months, using task ownership and bi-weekly design check-ins.

Engineering Experience

MUSEC Group — St. John's, NL
Marine Cybersecurity Co-op Student, Hardware & Software Developer — *Oct. 2026 – Present*

- Turned a proof-of-concept report into competition-ready infrastructure in 29 days, delivering a working crane, vision tracking, digital twin and automated scoring for 13 teams.
- Built wireless crane control (ESP32, 4 motor controllers, electromagnet) on perfboard, with ESP-IDF C firmware serving HTTP commands over a per-team password-protected soft-AP.
- Tracked 200+ AprilTags in real time by building an OpenCV pipeline on a Logitech Brio 4K Pro that streams live tracks over UDP.
- Built a FastAPI/Pygame port digital twin with configurable zones, scanning simulated cameras, and live tag tracking that blacklists spotted tags to prevent duplicate points.
- Automated scoring and run management for 13 teams via a FastAPI controller awarding role-based points for cracked accounts and zone entries, with timed score freezes.
- Scaled competition VM data from 1 to 50 crate items by extending Python CSV generators linked to a manifest generator that sets crate values.

Green Infrastructure Partners Inc. — Paradise, NL
Industrial Electrical Estimating Co-op Student — *Jan. 2026 – Apr. 2026*

- Caught a $200,000 pricing discrepancy while reviewing vendor quotes from 20+ RFQs issued to electrical distributors.
- Produced take-offs and full estimates for industrial projects totalling $100M+, covering material, labour, and assembly costs in Bluebeam Revu and Accubid Anywhere.
- Sped up estimate review time by building Excel workbooks with pivot tables that roll up material totals by system and project phase.

Leadership & Involvement

Youth in Defence Association — St. John's, NL
Campus Ambassador, Inaugural Cohort — *Aug. 2026 – Present*

- Recruited directly by YDA's founders as one of the organization's first campus ambassadors following discussions at MASS 2026.
- Introduced YDA to 60+ students across the MUN engineering program through direct outreach.
- Shaping YDA's ambassador program in monthly meetings with the founder, co-founder, and ambassador cohort, contributing campus updates, event proposals, and student concerns.

MUN Engineering Society — St. John's, NL
Junior Advisory Committee — *Sept. 2024 – Present*

- Helped deliver orientation for 300+ incoming engineering students by planning and executing the event with the society's upper administration and fellow junior members.
- Co-organized multiple faculty-wide events, from discipline-specific gatherings to large-scale socials, drawing attendees by pitching and developing event concepts in committee meetings.