Cooper Brosgall

604-445-7876 | cbrosgall@gmail.com | linkedin.com/in/cooper-brosgall | cooperbrosgall.com

Education

University of British Columbia — Vancouver, BC
Bachelor of Applied Science in Engineering Physics | GPA: 4.33/4.33 — *Expected May 2029*

Experience

Firmware and Electrical Engineer (Co-op) — Jan 2026 - May 2026
MistyWest — *Vancouver, BC*

- Redesigned current-control firmware, achieving a 50× reduction in output error while improving system stability and transient response
- Designed a 6-layer automotive-grade PCB integrating high-current power stages, CAN bus, and precision analog sensing
- Led prototype bring-up and characterization, validated performance against design requirements, and resolved hardware and firmware defects

Firmware Developer and Tester (Co-op) — May 2025 - Aug 2025
Lucid Vision Labs — *Vancouver, BC*

- Independently led bring-up of next-generation camera sensors, enabling over 200 Gbps aggregate throughput for new product launches
- Developed C++ firmware tests to validate image-sensor functionality and reduce product failure rates
- Diagnosed timing and signal-integrity faults with oscilloscopes and logic analyzers, improving camera reliability and reducing field failures

Software Developer and Instructor (Part-time) — Jun 2020 - Sep 2024
UTG Academy — *Vancouver, BC*

- Re-architected a client-side module to deliver 200× faster load times for thousands of students
- Built WebSocket-based collaboration tools for real-time, multi-user project editing
- Developed robotics curricula used by 100+ students and mentored 20+ top-ranked teams

Projects

Optical Localization Sensor - Electrical Lead | *C++, STM32, Altium, FreeRTOS*

- Led electrical design of a compact STM32 sensor PCB and localization firmware, helping TNTN Robotics win the 2025 VEX U World Championship
- Implemented a low-latency UART protocol and custom bootloader for robust robot integration and field firmware updates
- Verified signal and power integrity using oscilloscopes and logic analyzers

ENPH 253 Autonomous Robot | *C++, FreeRTOS, Controls, PCBs, Computer Vision* — Summer 2026

- Won UBC's 16-team ENPH 253 competition with a fully autonomous robot; our team finished a working build nearly two weeks before the other teams and used the time for field tuning
- Developed ESP32/FreeRTOS firmware and PID control for a mecanum drive and two-DOF arm, integrating OTOS localization, computer vision, tape sensors, and dual metal detectors

Electrostatic Brake Driver | *C, nRF52840, Altium, LTspice*

- Designed a compact high-voltage bipolar driver PCB for electrostatic clutch research
- Implemented an opto-isolated H-bridge gate drive to generate variable-frequency bipolar waveforms
- Developed nRF52840 firmware for wireless configuration and closed-loop output-voltage regulation

Technical Skills

Languages: C | C++ | Python

Embedded: FreeRTOS | Zephyr | STM32 | ESP32 | nRF52840 | I2C | SPI | UART | CAN | RS485

Hardware/Tools: Altium Designer | KiCad | LTspice | Git | Oscilloscopes | Logic Analyzers