Blake Freer

4th Year Mechatronics Engineering & Math Student
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Seeking embedded software internships for May – August 2025

Education

McMaster University	Graduating April 2026

Mechatronics Engineering B.Eng. + **Pure Math** B.Sc. (Double major)   **GPA 3.97**

Courses: Embedded Systems, Predictive & Intelligent Control, Electronics & Instrumentation, Real-Time Operating Systems. Graduate courses: Functional Analysis, Time Series Analysis

- Provost Honour Roll for achieving a **perfect GPA**.   2021, 2023
- Anna Marie Hibbard Scholarship for achieving the **highest GPA among all first-year students**.   2021

Embedded & Technical Experience

Team Lead, Firmware, Software & Controls | McMaster Formula Electric FSAE   July 2024 – Present
- Wrote a memory-safe, interrupt-driven **CAN layer** using **modern C++** features.   [link]
- Leading 20 team members developing a C++ **control system**, dashboard, drivers, and internal tools.
- **Documenting** team knowledge and practices with MkDocs.   [link]

Firmware & Infrastructure Developer | McMaster Formula Electric FSAE   Aug 2023 – Present
- Wrote peripheral drivers and designed a **platform abstraction system** to enable platform-agnostic development with compilation for STM32, Linux, Software-in-the-Loop test server, and the CLI.   [link]
- Designed a **CMake + Makefile build system** to compile project code for all platforms. Integrated Jinja templating and automatic code generation for fast yet deterministic builds.   [link]

Metrology R&D Intern | Northern Digital Inc. (Waterloo, Ontario)   May 2023 – Aug 2024
- **Reduced pixel error by 6×** by developing a physics-based signal processing algorithm.
- Enabled new experiments by **rapidly prototyping circuits**, embedded devices, and metrology artifacts.
- Created Python packages to interface internal & third-party instruments, sensors, and data formats.

Instrumentation Intern | Langtree Controls (Sarnia, Ontario)   Summer 2022

Robotics Research Assistant | McMaster University   Summer 2021

Team Manager & Engine Design Lead | Northern Eco-Team (Shell Eco Marathon)   2018 – 2020

Projects

Arduino Sumobot: Integrated sensors and motors with ADC, PWM & GPIO by writing AVR firmware. Tracked objects with ultrasonic sensors. Awarded **Best Hardware Design**.   [link]

Painter's Grip Pro: Read accelerometer data over I2C and communicated with Bluetooth to detect hand tremors. Selected as a **top project in the first-year engineering showcase**.   [link]

H-Bridge PCB: Designed a FET H-Bridge and acid-etched my own PCB.   [link]

Technical Skills

Languages: C / C++ | Embedded Firmware (STM32, AVR) | CMake | Makefile | Python | numpy | Rust
Other Skills: Electronics | Git / GitHub | Linux & Bash | Documentation | CAD | Operating Systems

Achievements

Putnam Math Competition: Scored in top 20% worldwide	2022
Loran Scholar National Finalist for character, service, and leadership	2020
Track and Field: 5 appearances and two 7th place finishes at Ontario provincials	2017 – 2019

Activities and Hobbies

Intramural sports (hockey, volleyball, ultimate frisbee, inner-tube basketball), fishing, camping, guitar