

Calvin Karthik

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EDUCATION

McMaster University

Bachelor of Computer Engineering (Co-op), Dean's Honour Roll (2025)

Hamilton, ON

Expected 2028

EXPERIENCE

Software Engineering Intern

Dec. 2025 – Present

Hivo Inc. | Remote

Halifax, NS

- Supported an iOS release by running full end-to-end regression testing on real devices, capturing reproducible defects and verifying fixes across core user journeys, reducing escaped defects.
- Implemented **TypeScript (Node.js/Express)** backend changes with **Prisma + PostgreSQL** to enforce correct host application, fixing bugs in consistent role/status syncing and unauthorized security permissions.
- Reduced edge-case failures by refactoring the update endpoint to accept root-level payloads and apply conditional **Prisma** updates, verified with **Jest + Dockerized Postgres**.

Embedded Developer

Nov. 2024 – Present

McMaster Exoskeleton - Electrical Sensors and Actuation

Hamilton, ON

- Validated **BNO055 IMU** performance for joint sensing (outputs, axis conventions, stability-at-rest, calibration behavior) to reduce integration risk during bring-up.
- Investigated IMU behavior under real motion (orientation response + sanity checks) to confirm sensor data quality before downstream use in control/estimation.
- PCB schematic capture** and layout in **Altium Designer** with attention to signal integrity.

PROJECTS

tailSync - DeltaHacks - Winner, Best Use of Tailscale | [🔗](#) |

- Built tailSync, a **Tailscale-secured 2-device desktop overlay** enabling private chat, file sharing, and screenshot-to-feed collaboration.
- Implemented a **hosted session** + join flow with codes and **device-based access control** to keep workspaces **private-by-default** within a tailnet.
- Shipped **low-latency realtime sync** for messages and posts using **WebSockets** alongside **REST** endpoints, keeping host/guest state consistent.

CauldronCare - HackUTD | [🔗](#) |

- Built a **React Native (Expo/TS)** app with a robot helper that gamifies plant health: **Auth0** + onboarding, Brew Score dashboard with animated meters, JoyCon joystick to drive a Pi robot with **live video** and spray, **BLE/Wi-Fi links to ESP32** plant nodes, **Gemini** photo ID/autologging, and social guilds/leaderboards.
- In 24 hours, defined clear app-Pi-ESP32-Gemini contracts and shipped a mock-powered real-time loop with reliable control and state sync, ready to plug in sensors, **CV**, and autonomy.

Autonomous Sumo Robot - McMaster SumoBot | [🔗](#) |

- Built an **autonomous** sumo robot that detects opponents and drives a dual-motor chassis to push them out of the ring; implemented **embedded control logic** on a **Arduino Nano** and validated behavior through arena testing.
- Designed and assembled a modular electronics stack and integrated it into a compact 3D-printed chassis for fast iteration and reliable wiring/debug.

TECHNICAL SKILLS

Languages: Python, SQL, C/C++, HTML/CSS, JavaScript, TypeScript, MATLAB, R, SystemVerilog

Tools: React Native, Node.js, Docker, Prisma, Altium Designer, Autodesk Inventor, Git, OpenCV, Auth0

Interests: Embedded Systems & Robotics, IoT Systems, CV, Embedded/Control Systems, Full Stack Development

AWARDS AND ACHIEVEMENTS

Regeneron ISEF: 3rd Place Award in Energy: Sustainable Materials and Design; **EUCYS:** Award from the Ministry of Universities of Salamanca, Spain; **YSC CWSF:** Best Project Award in Discovery, Energy Challenge Award, Gold Excellence Award, Renewable Energy Award; **BWXT Nuclear STEM Award;** **Dynacast Engineering Award;** Research published in the [Canadaian Science Fair Journal](#)