GABE DAVID

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EDUCATION

BASc, Mechatronics and Robotics Engineering (with Co-Op), Queen's University **Sept 2021 – Apr 2026**

- **Extracurricular Activities:** Queen's Aerospace Design Team, Mechatronics Discipline Club, Clark Hall Pub Bartender.
- **Relevant Coursework:** Autonomous Mobile Robots, Electronics, Networks, Mechatronics and Robotics Design.
- **Awards:** Queen's Principals Scholarship, Dean's Scholar (2023-2024).

ACHIEVEMENTS

1st Place - $10,000, Ottawa Defense Tech Hackathon **Nov 2025**

- Developed a real-time drone detection ML model to detect and classify adversarial UAVs using their acoustic signature.
- Designed to be run on deployed edge nodes with scalability, low power budget and low RF signature in mind.

PROFESSIONAL EXPERIENCE

Rapid Prototyping and R&D Engineer, DominionX Labs (Dominion Dynamics) **Sept 2025 – Present**

- Selected as part of the inaugural cohort of DominionX Labs, an initiative focused on rapid prototyping and R&D.
- Collaborated with stakeholders to define technical requirements and prioritize high-impact R&D projects.
- Built Arctic AI-enabled sentry towers for ISR, focusing on reliability, autonomy and environmental and power constraints.
- Lead development cycles, including system architecture definition, rapid prototyping and hardware-software integration.

Embedded Flight Software & Design Engineer Co-op, Galaxia Mission Systems **May 2024 – Sept 2025**

- Integrated imagers, GNSS receivers, Attitude Determination and Control hardware with Onboard Computer (OBC).
- Designed and developed firmware for the Electrical Power System and interface PCBs for power control, and comms.
- Designed custom solar panels, assembling and debugging under a tight timeline to meet mission requirements.
- Conducted RTOS and hardened memory R&D on next-generation OBC to establish redundant system architecture.
- Led Ethernet and SSD subsystem design for the next-generation OBC, defining high-speed interface architecture.
- Contributed across electrical, mechanical, and software systems, assisting with PCB assembly, electrical circuit debugging, mechanical CAD and assembly, and higher-level software development to support system integration and testing.

PROJECT EXPIERENCE

Autonomous Gesture Controlled Drone Swarm, Captone Project **Sept 2025 – Present**

- Developed the indoor positioning subsystem for the swarm, designing, purchasing and assembling custom Ultra-Wideband (UWB) positioning boards, reducing costs by 62% compared to off the shelf alternatives.
- Forked open-source firmware to tailor it to our application, integrated with drone hardware achieving 10 cm 3D accuracy.
- Defined and managed scope, budget, project milestones, holding weekly meetings with stakeholders to review progress.

Director of Navigation, Queen's Aerospace Design Team **May 2023 – Sept 2024**

- Led a 15-member team developing autonomous flight software for a 3m wingspan VTOL UAV using ROS2, PX4, Linux (Ubuntu), Git, and Docker.
- Authored formal test plans and scripts, and analyzed flight logs to diagnose electrical, mechanical and software issues.
- Created custom Gazebo simulations by forking PX4, adding depth sensing capabilities to a custom drone mesh in a custom world to accurately simulate competing environments.
- Awarded the Prototype Realism award at AEAC 2024, a Canadian University UAV design and flight test competition.
- Placed 6th as the only undergraduate team at iMAV 2024, an international Micro-Air Vehicle competition.

TECHNICAL SKILLS

- **Languages:** C, C++, Python, MATLAB, Assembly, Bash.
- **Embedded:** Bare-metal/RTOS, Bootloaders, Peripheral Drivers, Integration.
- **Robotics:** ROS 1/2, PX4, Gazebo, System Integration, Field Testing, Controller Design.
- **Interfaces/Networking:** UART, RS-422, I2C, SPI, USB 2.0, Ethernet, PCIe, DDS.
- **Hardware and Design:** Circuit Debugging, Oscilloscope, Prototyping, KiCAD, Eagle, SolidWorks, Onshape.