

Jeevan Sanchez

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EDUCATION

Queen's University

Bachelor of Applied Science in Computer Engineering

- Direct Entry Computer Engineering

Exp. May 2029

Kingston, ON

EXPERIENCE

Queen's Rocket Engineering Team

Propulsion Integration Systems Designer

Avionics Lead (since September 2026)

September 2025 - Present

Kingston, ON

- Co-leading the avionics subteam, coordinating **firmware and embedded systems development** for **propulsion control, sensing, and communications**.
- Developed **embedded C/C++ firmware** and **hardware drivers** for ADCs, Hall-effect sensors, and real-time actuator control across **analog, SPI, I²C, and CAN/TWAI** interfaces.
- Designed and integrated **firmware architectures** for **STM32/ESP32-based systems**, supporting modular sensor, actuator, and communications interfaces.
- Supported **firmware bring-up and system integration, troubleshooting hardware, firmware, and interface issues** through functional testing and iterative debugging with the team.

Queen's Engineering Society IT-OPS Team

IT-Operations Team Member

September 2025 - May 2026

Kingston, ON

- **Provide first-level technical support** within a small team maintaining Engineering Society systems.
- **Researched an ML-powered RAG pipeline** using **LangChain and OpenAI** to automate IT support workflows and improve **knowledge retrieval and ticket resolution**.

PROJECTS

Penguin ([Link](#))

Intelligent Robotics | ESP32-S3, C++, Arduino, PlatformIO, KiCad, OpenCV, Next.js)

May 2026 - Present

Toronto, ON

- Built a hybrid wheel-legged rover from the ground up, developing the **embedded firmware architecture**, custom controller PCB, mechanical system, and overall system integration.
- Developed **modular C++ firmware in PlatformIO**, implementing **hardware drivers**, robot **state/command structures**, and interfaces for motors, IMU, ToF sensors, battery monitoring, and camera.
- Implemented a **scheduled real-time control system** for sensor acquisition, actuator updates, **telemetry**, and **robot behaviours**, with **PID-based locomotion and control logic**.
- Built the rover's **Wi-Fi networking and telemetry layer** using HTTP/WebSockets, connecting embedded firmware to a **Next.js/Three.js dashboard** for real-time monitoring and control.
- Integrating an **OV2640 camera and computer vision pipeline** with **OpenCV** for perception and autonomous navigation; currently tuning firmware and **PID controllers**.

Vireo ([Link](#))

September 2026 - Present

Audio Interface, Signal Processing | (KiCad, STM32, C/C++, Analog/Digital Electronics)

Toronto, ON

- Designing a multi-channel audio interface PCB and embedded system for bass guitar, guitar, and drums, integrating **audio ADCs, signal conditioning, power management, and protected I/O**.
- Developing **embedded C/C++ firmware** for **real-time audio acquisition, signal processing**, device control, and **MIDI communication**.
- Engineering **firmware and hardware interfaces** for reliable **high-speed audio acquisition and real-time signal processing**.

HomeCtrl ([Link](#))

August 2025 - July 2026

Smart Home-Automation Controller | (ESP32, KiCad, WebSocket, Arduino C/C++, Next.js)

Toronto, ON

- Built a practical home automation system from the ground up, developing the **embedded firmware**, custom controller, and overall system architecture.
- Developed **C++ firmware in PlatformIO** using **hardware drivers, state machines, and structured control logic** for real-time actuator control and sensor acquisition.
- Implemented **Wi-Fi/WebSocket communication** between the ESP32 firmware and a Next.js dashboard, with Alexa voice-control integration.
- Designed and validated the complete embedded system through iterative **firmware debugging, hardware bring-up, and system testing**.

CERTIFICATIONS

Microsoft Azure AI Fundamentals

Microsoft | Azure, AI/ML | AI-900

August 2025

Toronto, ON

CS50's Introduction to Artificial Intelligence with Python

Harvard University | AI/ML Theory, Python, sklearn | CS50AI

July 2025

Toronto, ON

CS50's Introduction to Computer Science

Harvard University | C Programming, Python, JavaScript, SQL | CS50

July 2024

Toronto, ON

AWARDS

First Place at UofT UTRA Hacks Hackathon

Health System with Integrated Robotics and Firmware | (Arduino C/C++, Next.js, AI/ML)
University of Toronto

February 2025

Toronto, ON

First Place at UofT SEEK JR. Hackathon

Autonomous Martian Rover | (Arduino C/C++)
University of Toronto

February 2024

Toronto, ON