Kiran Ramlogan

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Education

University of Toronto Sept. 2023 – Apr. 2028

Third year Engineering Science student specializing in Electrical Engineering. CGPA: 3.69 *Toronto, ON*

- Dean's List Recipient - Fall 2023, Winter 2023, Fall 2024 - GPA: 3.9, 3.78, 3.73

Experience

Optics Research Assistant May 2025 – Aug. 2025

National University of Singapore (NUS) *Singapore*

- Designed a microstrip antenna to excite TR12 defects in diamond for optical readout of quantum spin state. Tested many antennas with the lab's Vector Network Analyzer (VNA) to characterize S-parameters and bandwidth
- Designed a three dimensional Helmholtz coil to calibrate magnetic field measurements from a quantum diamond magnetometer. Tested coil using a Gauss meter achieving required strength of 10mT
- Received funding from Engineering Science Research Opportunity Program (ESROP) and Mitacs Globalink Research Award (GRA)

Electrical Subsystem Member Oct. 2023 – Present

University of Toronto Aerospace Team (UTAT) *Toronto, ON*

- Designed, soldered, and tested a step-down switching converter for the satellite with over 90% power efficiency and low output voltage ripple. Interfaced with the lab's power supply, digital load, and oscilloscope
- Verified signal integrity of satellite's onboard computer system CAN bus communication protocol by writing firmware for the STM32 microcontroller and probing with an oscilloscope
- Learned digital signal processing with GNU Radio and interfaced with the Software Defined Radio (SDR) platform, bladeRF, to receive FM radio. Also completed requirements for the amateur radio operator basic qualification
- Mentored three new members and guided them through buck converter design by reviewing schematics and layouts

Environmental Monitoring Research Assistant Dec. 2024 – Present

Environment and Climate Change Canada (ECCC) *North York, ON*

- Interfaced with the Polyphemus Air Quality Modeling System to identify and locate methane sources in Ontario
- Contributed to the source locating system by writing Python code that fixed errors with High-Resolution Rapid Refresh (HRRR) data used for atmospheric stability class blending
- Ran code and analyzed data using the government of Canada's High Performance Computing supercomputers, gaining experience with Linux, Bash, and Git

Projects

Satellite Solar Generation System | *Altium Designer, Power Integrity* May. 2025 – Present

- Created the high level architecture for the FINCH satellite's solar generation system, including solar panels, power monitors, digital potentiometers, Maximum Power Point Tracking (MPPT) chargers, ideal diodes, and an eFuse
- Used Altium Designer to make the schematics and layouts. Ensured power integrity through sufficient decoupling, proper switching converter layout, transient protection, and inrush current protection
- Design accepted by team and currently in soldering and testing phase

ODMR Antenna | *Ansys HFSS, Altium Designer* Jun. 2025 – Aug. 2025

- Designed a microwave circular patch antenna with a tapered feedline and parasitic element resembling a split-ring resonator to achieve a low broadband resonance frequency at a small size
- Antenna planned to be used for Optically Detected Magnetic Resonance (ODMR) experiments to excite TR12 defects in diamond to optically read out quantum spin state
- Used parametric sweeps and optimization algorithms in Ansys HFSS to minimize input reflection coefficient and maximize bandwidth. Designed PCB in Altium Designer

Technical Skills

Languages: Python, C/C++, System Verilog, RISC-V Assembly, Bash, R
Software: Altium Designer, Ansys HFSS, LTSpice, MATLAB, STM32CubeIDE, GNU Radio, AutoCAD, Fusion 360