Veronica **Marrocco**

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Education

McMaster University *Hamilton, ON*

BEng BME in Electrical & Biomedical Engineering *Sep 2020 – Present*

- GPA: **3.98** on 4.0 scale (Dean's Honors)
- Coursework: Circuit Theory, Electronics, Programming, Data Structures/Algorithms, Digital Design, Comm. Systems, Control Systems

Experience

Firmware Integration Intern *Palo Alto, California*

Tesla *January 2025 – Present*

- Building **drive inverter (DI) and UI firmware** to support new power limited and speed limited variants for various markets.
- Developing Python test coverage to support the new variants in **Tesla's extensive FW test repository.**
- Testing & validating new variants and DI in SIL and over-the-air on factory models, inspecting CAN traces to debug failures.

Service Router & Optical Module Test Platform Developer (Co-Op) *Ottawa, ON*

Nokia *May 2024 – August 2024*

- Created comprehensive test plans to validate new optics under various traffic conditions, using **network testing tools** (Ixia, Spirent).
- Developed **regression test automation in TCL** for Nokia's large-scale Linux router test platform, adding coverage for new optics.
- Reproduced, characterized and resolved regression failures, collaborating closely with the software development team.

Power Electronics Engineer (Co-Op) *Montreal, QC*

MDA Ltd. *August 2023 – December 2023*

- Assisted in the design of three switching power supplies & associated regulator circuitry for **Canadarm3**.
- Performed **component selection, schematic design, and some PCB layout** for the supplies using Xpedition Enterprise.
- Tested and validated subsystems for efficiency, failure mode (**FMECA**), and worst case analysis (**WCA**).

Embedded Systems Teaching Assistant *Hamilton, ON*

McMaster University Department of Electrical & Computer Engineering *January 2024 – Present*

- **Led lab sessions** of 50+ students for an embedded systems and microprocessors course (COMPENG 2DX3).
- Provided lab instruction and assisted students in **hardware & software debugging** (Assembly, Embedded C).

Clinical Process Engineer (Co-Op) *Toronto, ON*

University Health Network *May 2022 – August 2022*

- Provided on-unit support in Toronto Western Hospital's Emergency Dept. to facilitate the launch of a new health information system.
- Documented **100+ bugs** in new software (Epic) and implemented **hardware/network fixes** where applicable.

Research Study Assistant *Hamilton, ON*

McMaster University *January 2023 – April 2023*

- Reviewed & triaged studies for a **network meta-analysis** comparing mechanical ventilator operation modes for patient outcome.

Skills

Programming:	Python, C, C++, MATLAB, HTML/CSS, JavaScript, Verilog, Assembly, Bash, TCL
Circuit Development:	Xpedition Enterprise, LTSpice, PSpice, FPGAs (Verilog, VHDL), Microcontroller Systems Design, PCB Layout
Test Equipment:	Oscilloscopes, DMM, Network Analyzers, Waveform Generators, Traffic Generators (Ixia/Spirent), Vector CANape
Presentation:	Autodesk Inventor, Microsoft Office, Google Cloud, Jira, Adobe After Effects, Premiere Pro, Illustrator

Projects

Embedded System for 3D Spatial Mapping with ARM-Cortex Microprocessor *January 2023 - April 2023*

- Interfaced an ARM microcontroller with a time-of-flight distance sensor & stepper motor to generate the 3D visualization of a space.
- Programmed the microcontroller in **embedded C** to pull data from the ToF distance sensor over **I2C** and transmit it to a PC over **UART**.
- Generated a 3D visualization of space from data using **Open3D in Python** by connecting points in a plane, then connecting planes.

Posture-Monitoring Medical Device with Arduino Core *January 2023 - April 2023*

- Created a wearable headpiece with **monitor & alarm system** to detect & correct poor neck posture, defined by flexion angle $< 50°$.
- Measured the relative quaternion coordinates of two **IMU sensors** following a calibration sequence to calculate the flexion angle.