

Sabrina Sousa

(289) 489 - 2746 | sabrinavsousa14@gmail.com | [LinkedIn](#) | [Portfolio Website](#) | [GitHub](#) | [Gitlab](#)

Experience

Technical Consultant | Contax Inc. May 2023 - Aug 2024

- Resolved client needs with custom solutions using agile teamwork for the ERP system called SAP
- Created reports using **ABAP** and **SQL** for database queries and updates, order automation and GUIs
- Programmed cross-platform web applications using **JavaScript**, **XML** and **SAPUI5** (HTML5 framework)

Mechatronics Technologist | NRC Canmet Materials May 2022 - Aug 2022

- 3D modelled designs** and **simulations** to build corrosion and material testing **automation** projects
- Designed and **3D printed** a prototype of a sealing chamber with a **camshaft** and **servo** mechanism
- Programmed waypoints for a **robotic arm** to complete **automated** cycles of metal alloy casting

Research Assistant | McMaster University May 2021 - Aug 2021

- Developed and tested **Python** code to design hexagonal tiling of a prototype helmet for **optimal energy** absorption to study the impact of deformations on the helmet's ability to absorb impacts
- Named as a **coauthor** for the research presented at the CMSC conference

Projects

EyeCan Capstone Project Sep 2024 - Apr 2025

- Designed a **real-time** heat detection system for visually impaired users to avoid hazards in the kitchen
- Utilized thermal camera **image processing** and **OpenCV** in **Python** to detect hazards and track a user
- Established **embedded BLE communication** between a wearable **ESP32** device using **NimBLE** stack in **C** and a **Raspberry Pi** camera module with **Bleak Client** integrated in **Python** for reliable user feedback

Pacemaker Project Nov 2022

- Programmed the **state flow** of charge to capacitors for critical **embedded control** of pacing in **Simulink**
- Created a **device controller-monitor** in **Python Tkinter** to send inputs through **serial communication**

Reaction Time Tester Embedded System Feb 2022

- Created a **finite state machine** to implement desired behaviour in a **memory efficient** way
- Coded in **low level C** to configure **GPIO** pins for **external buttons** to use **interrupts** to sense pushes
- Saved reaction times from STM32's real-time clock to an **EEPROM** chip with **I2C serial communication**

Fly A Rocket! Program, Sensor Experiments Team | ESA Sep 2020 - Apr 2021

- Represented Canada as one of 24 students selected by the European Space Agency Education Office
- Completed course on necessary theoretical background and coded in **Python** for the launch campaign

Skills

Software and Programming: C, C++, Python, Java, JavaScript, Linux, Git, JIRA, Confluence, SQL, XML, AWS, HTML5, ABAP, Assembly, MATLAB, R, Verilog, CAD (Autodesk Inventor, SolidWorks), Simulink, Multisim

Hardware: STM32, Raspberry Pi, Arduino, Arm, 3D Printing, Oscilloscope, and Soldering

Education

Bachelor of Engineering, Mechatronics Co-op | McMaster University Sep 2020 - Apr 2025

- Cumulative GPA: 3.7
- Applicable Courses: Operating Systems (Grade: A), Embedded Systems Design II (Grade: A)
- Awards: President's Entrance Scholarship, Dundas Scholarship, McMaster's Summer Research Award

Extracurriculars

Computer Chapter Vice Chair | McMaster IEEE Student Branch Jan 2022 - Apr 2023

- Led a sub team of 15 students to plan an intro to **Raspberry Pi** workshop involving two **Python** projects: a jukebox and an ADC visual display, to teach topics such as **GPIO**, **Audio**, **ADC**, and bit shifting
- Led the sub team project of a **Raspberry Pi controlled car** with **lane detection** using **Python OpenCV** and **brushed DC motors** controlled by a connected **Arduino** in **C**