

# Sarah Alabdulrazzak

## Mechatronics Engineering and Co-op Student

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### Education

#### Bachelors of Mechatronics Engineering (Co-op), McMaster University

09/2020 – 04/2025

Hamilton, Ontario

- In level 3 of a 4-year Mechatronics Engineering co-op Program
- Excellent teamwork and leadership abilities developed while working on multiple group projects

### Professional Experience

#### Software Engineering Intern - Network Efficiency Team, TELUS

05/2023 – 04/2024

Toronto, Canada

- Designed and developing a RESTful API for a shopping cart / planning platform used by power planners to manage central offices.
- Utilized Django Rest Framework to streamline the API development, ensuring scalability and security.
- Optimized the associated MySQL database for seamless data management.
- Modified Python code to predict the reserve time of batteries and integrated Lithium battery behaviour in addition to lead-acid batteries.
- Collaborated with a cross-functional team to create an AI model for emergency response by leveraging various data sources.

#### Automation Control Engineering Intern, Control Engineering Inc.

05/2022 – 08/2022

California, USA

- Developed HMI screens with proper navigation for an open project with the main objective of optimization.
- Worked with different Automation softwares such as Ignition SCADA software and Connected Components Workbench.
- Participated in Air Knife Installation Project in Amazon facility. Took a part in verifying installation, downloading PLC program and configuring the camera used by the sensor.
- Gained an insight on the company's sales and marketing cycle.

#### STELCO - Experience Venture Student, McMaster - STELCO

10/2021

- Collaborated with a group of students with different engineering backgrounds to develop an innovative solution to the navigation problem in a STELCO facility.

### Extracurricular

#### Engineers Without Borders Canada, Community Distribution Team member

06/2021 – present

Ontario Central

- Actively engage with the community distribution team at EWB Canada to facilitate communication between university and professional chapters in Central Ontario.
- Foster collaboration and knowledge sharing among diverse groups of engineers, promoting the organization's mission of creating positive social impact through engineering initiatives.

#### Mcmaster Formula Electric, Embedded Software Sub-Team

10/2021 – 06/2023

- Worked on communication protocols and CAN testing of an electric vehicle.

#### Engineers of Tomorrow, Future City Experience Volunteer

01/2020 – 05/2020

- Guided a seventh grade class through given challenges by joining virtual meetings and engaging with them and sharing my experiences on following the engineering design process.

#### Battery Workforce Challenge, McMaster Software (Algorithms) Team Member

11/2023 – present

Hamilton, Canada

- Contributing to the advancement of battery technology through hands-on design, testing, and integration of cutting-edge battery packs within the competition framework
- Gaining invaluable project management, teamwork, and problem-solving skills.

## Skills

### Software

Python, C, C++, Bash, Python Django Rest Framework, MySQL, SQL, Git, MATLAB Simulink, Embedded Systems, Autodesk Inventor, AI model development, Ignition SCADA, Verilog

### Testing Equipment

Oscilloscopes, Multimeters, Function Generators [WHMIS Certified]

### Soft Skills

Teamwork, Problem-Solving, Project Management, Community Engagement, Oral and Written Communication Skills

## Projects

### Pacemaker with GUI

- Researched, developed and tested a real-time safety critical system through the team-based project of creating a pace with a functional device control module using MATLAB Simulink and Visual Basic.
- Featured user support, serial communication and real-time plotting of pacemaker data.

### ASIP Stepper Motor Controller and SDRAM Controller

- Designed an ASIP using Verilog, including a 14-module data path and control FSM on an Intel Cyclone V FPGA to control a stepper motor a stepper motor.
- Constructed a motor driver interface circuit using an SN754410 Half-H Driver chip.
- Utilized Quartus Prime for simulation and testing of the ASIP and its modules and wrote test programs in assembly.

### Digital Circuit Design Project

- Designed and built a digital circuit that repeatedly flashes my student number on a seven segment display
- Built the sequential logic using logic gate chips and performed debugging with an oscilloscope

### Community Challenge Case Study

- Participated in the Community Challenge of the Waterloo Change Event hosted by Engineers Without Borders Canada
- Collaborated within a team to advocate for proactive approaches in agricultural systems, highlighting the inefficiency of reactive methodologies in addressing substantial climate change damages.
- Presented a strategic vision aimed at transforming agricultural practices towards a preventative approach, aligning with global sustainability goals and the imperative need for adaptive solutions in the face of climate change impacts.