Sarah Alabdulrazzak

Mechatronics Engineering and Co-op Student

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https://sarah-razzak.github.io/sarah-razzak-portfolio/#projects

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 developed a user-friendly RESTful API for a power planning platform using Django Rest Framework , significantly improving efficiency and productivity for over 1000+ users.
- Developed comprehensive API test cases using JSON and Postman to ensure reliability and functionality.
- Strategically optimized the MySQL database infrastructure to facilitate streamlined data management, reducing planning time and annual request volume.
- Enhanced Python code across Telus-managed sites, leading to improvements in critical infrastructure management, ensuring uninterrupted services for Telus customers.
- Collaborated on an AI model aimed at strengthening emergency response capabilities, hence enhancing resilience and readiness for unforeseen events within central office environments.

Automation Control Engineering Intern, *Control Engineering Inc.* 05/2022 – 08/2022
California, USA

- Engineered intuitive HMI screens, enhancing user experience and navigation, aligning with optimization goals.
- Utilized Ignition SCADA software and Connected Components Workbench to streamline automation processes, fostering efficiency and productivity.
- Played a pivotal role in successfully executing an Air Knife device installation project in an amazon facility, ensuring precise installation and functionality of PLC programs and cameras.
- Acquired valuable insights into the company's sales and marketing strategies, contributing to informed decision-making and a deeper understanding of the business cycle.

STELCO - Experience Venture Student, *McMaster - STELCO* 10/2021

- Collaborated with a diverse team of students to develop an innovative navigation solution for a STELCO facility.
- Improved guest navigation and facility efficiency, positively impacting visitor experience and operational workflows.

Extracurricular

Engineers Without Borders Canada, *Community Distribution Team member* 06/2021 – present
Ontario Central

- Facilitated seamless communication between university and professional chapters in Central Ontario within EWB Canada's community distribution team.
- Fostered collaboration and knowledge exchange among engineers from diverse backgrounds.
- Contributed to advancing the organization's goal of leveraging engineering for positive social change.

Mcmaster Formula Electric, *Embedded Software Sub-Team* 10/2021 – 06/2023
- Developed and implemented communication protocols and conducted comprehensive CAN testing for an electric vehicle.

Engineers of Tomorrow, *Future City Experience Volunteer* 01/2020 – 05/2020
- Mentored a seventh-grade class through interactive virtual meetings, providing guidance and support as they tackled various engineering challenges.

Battery Workforce Challenge, *McMaster Software Technical Lead* 11/2023 – present
Hamilton, Canada
- Contributed to the design, testing, and integration of advanced battery packs for a competitive environment, driving innovation in battery technology. Gained critical project management, teamwork, and problem-solving skills through hands-on experience.

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
- Collaboratively researched, developed, and tested a real-time safety-critical system.
- Created a pacemaker with a functional device control module using MATLAB Simulink and Visual Basic.
- Implemented features including user support, serial communication, and real-time plotting of pacemaker data to ensure robust performance and safety compliance.

ASIP Stepper Motor Controller and SDRAM Controller
- Designed an Application-Specific Instruction Set Processor (ASIP) using Verilog on an Intel Cyclone V FPGA.
- Incorporated a 14-module data path and control Finite State Machine (FSM) to regulate a stepper motor.
- Implemented a motor driver interface circuit with an SN754410 Half-H Driver chip.
- Utilized Quartus Prime for simulation and testing of the ASIP and its modules.
- Developed assembly test programs to ensure functionality and performance.

Digital Circuit Design Project
- Created a digital circuit to display my student number repeatedly on a seven-segment display.
- Constructed sequential logic using logic gate chips and conducted debugging using an oscilloscope to ensure proper functionality and timing accuracy.

Community Challenge Case Study
- Finalist in the UWaterloo XChange Event Community Challenge hosted by Engineers Without Borders, Canada.
- Advocated for proactive strategies in agricultural systems.
- Collaborated within a team to address limitations of reactive methodologies in tackling climate change damages.
- Presented a strategic vision - aligned with the SDGs - emphasizing the transformation of agricultural practices towards preventative approaches.
- Demonstrated skills in strategic planning, advocacy, and alignment with adaptive solutions critical for mitigating climate change impacts on agriculture.