Syed Ali Zaidi

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Education

Bachelor of Engineering Co-op *Aug 2020 - Present*
McMaster University, Hamilton

- **Mechatronics Engineering (Third Year)**
- Relevant Coursework: Embedded Systems, Control Systems, Software Engineering and Development, Mechanics (Statics and Dynamics), Electrical Circuits and theory, Engineering Profession and Practices
- **Dean's Honor List** (2020-Present)
- Working with **McMaster Solar Car Club** in the electrical design team

Work Experience

Undergraduate Researcher (Co-op) *May 2022 - Sep 2022*
Centre for Emerging Technologies, McMaster University

- Used **software** and **electromechanical devices** to analyze photoluminescence by a class 3 laser on a sample of Gallium Arsenide.
- Utilized LabVIEW to move a multi-axis universal **motor controller** in two dimensions and extracted voltage readings using a data array.
- Performed **statistical analysis** and produced an intensity graph using the readings
- Showed **innovation** by **optimizing the scans** by various techniques like changing the time constant of lock-in, increasing delays between readings and changing the laser's position relative to its focal point.
- Used **critical thinking** to apply **code optimization** techniques to reduce space/time complexity and prevent computer crashes.
- Presented compiled **technical documentation** that demonstrated written **communication skills**.

Teaching Assistant *Sep 2021 - Present*
Integrated Cornerstone Design Projects in Engineering, McMaster University

- Responsible for helping the instructional team to **conduct labs** and answered questions related to CAD and sketching, Python and algorithms, material science and professional practices in engineering.
- Marked assignments and **provided feedback** to the students.
- Demonstrated **strong work ethic** by summarizing the highlights of the week in meetings and suggesting ways to further improve the course.

Project Manager *Jan 2021 - Apr 2021*
Google Solutions Incubator

- With four other engineering students, formed the **framework of an app** that detects potholes in roads and provides the most ideal route to the user.
- Showed **leadership** when doing **software quality assurance** and **merging the ideas** of the developers and business analysts.
- Conducted research on the **feasibility of the project** which broadened our understanding of how potholes affected the daily commute of the people of Hamilton.
- Held a zoom conference with a **city council member** who was interested in our creative ideas.

Awards

- **Dean's Excellence Scholarship Winner**
- **Summer Research Award**
- **Engineering International Honor Scholarship**
- **Full Tuition Scholarship (High School)**

Skills

Programming Languages/Software

- Proficient in **Python, C, C++, ARM assembly, Maple, LabVIEW, and Simulink**
- Able to use **Linux** and can collaborate on **GitHub**
- Can use **MATLAB, R and Excel** for complex mathematical problems and scientific computation
- Data Structures, Algorithms and Operating Systems knowledge
- C++ and Python for **object-oriented programming**
- STM32 **microcontrollers** experience using **Embedded C**.

Mechanical/Electrical

- **CAD models and engineering drawings** in Autodesk Inventor
- **NI Multisim** to build and simulate **analog and digital circuits**
- **Theoretical knowledge** of mechanics along with electricity and magnetism

Laboratory and Safety

- **WHMIS** and Laser/Fire safety training
- Violence and Harassment prevention, Human Rights code, Ergonomics and Asbestos awareness

Projects

Pacemaker *Sep 2022 - Present*

- Implemented **stateflows** for a cardiac pacemaker using an FRDM-K64F **microcontroller** in **Simulink**.
- Designing a **DCM** that will allow communication between the interface and the pacemaker
- Correctly applying all **software design principles** and **requirements specifications**.

PWM Fan Controller *Jan 2022 - Apr 2022*

- Built a **digital thermometer** that displayed the current temperature and the user selected setpoint temperature on an LCD display. If the temperature exceeded the setpoint, the fan turned on to cool the **sensor**.
- Other embedded system projects can be found here.

Source Water Quality Monitoring *Jan 2022 - Apr 2022*

- Developed a system consisting of a **drone** that is equipped to take high-resolution pictures and a **machine-learning algorithm** that analyzes a series of pictures to detect the **presence of the algae** on Cootes Paradise Lake.
- Performed **stakeholder analysis** and used **constraints** according to the PERSEID method (performance, environmental, regulatory, and socio-economic).

Digital Sequential Logic Project *Sept 2021 - Dec 2021*

- Created an infinite loop of displaying my student number on a **7-segment display**
- Determined the correct combination of **digital components** using a **state-transition table** and **Karnaugh maps**. Then confirmed the digital logic by building it physically and by using an **ECAD software**.