Muhammad Zaeem Ghauri

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Education

Bachelors of Computer Engineering — **McMaster University, Hamilton, Ontario**

Sept 2019 - Apr 2023

- Currently enrolled in level 3 of co-op program while maintaining a 3.9/4.0 GPA.
- McMaster Dean's Honour List (2019 - current).

Skills

Languages C/C++, Python, Verilog HDL, Bash Scripting, HTML/CSS, MATLAB, Simulink, Java

Tools/Applications Visual Studio Code, GitHub, Quartus, ModelSim, OpenCV, Arduino, Raspberry Pi, UNIX/Linux OS

Projects

LIDAR Scanner

Feb 2021 - Apr 2021

- Created an embedded system that scans an environment and creates a 3D mesh of it using the MSP432E401Y microcontroller, and the C and Python languages.
- Interfaced time-of-flight sensor, stepper motor, microcontroller, and user PC with UART and I2C serial communication protocols.

Personal Website

May 2021 - Aug 2021

- Built a website using HTML, CSS, and other web-design principles to showcase and document my projects in detail.
- Demonstrated strong work ethic and willingness to learn by teaching myself these new concepts while taking a fully-loaded summer school term and working on other personal projects.

Vibez Music Player

Jul 2021 - Aug 2021

- Developed a Python application that recognizes the user's emotion with computer vision tools such as OpenCV library and Keras framework.
- Interfaced with the Spotify web API to play music based off detected emotion.

Image Decompression Hardware

Sept 2021 - Dec 2021

- Designed an image decompression algorithm through digital logic concepts and implemented it in Quartus using Verilog HDL.
- Used critical thinking and creative problem solving to optimize the system's state machine and design and ensure maximum utilization of hardware resources (up to 90%).
- Performed debugging, verification, and timing analysis through ModelSim to ensure the design worked as specified.
- Demonstrated excellent scheduling and time management skills by staying ahead of several project deadlines.

Pacemaker DCM

Sept 2021 - Dec 2021

- Led a group of 6 students to design, develop, and integrate the DCM for a pacemaker device in Python and MATLAB/Simulink.
- Demonstrated excellent communication and organization skills by setting up regular meetings/follow-ups with teammates and performing version control between 6 members through GitHub.
- Applied knowledge of object oriented programming, low coupled/high cohesion design, and information hiding to build a robust software application.
- Performed black/white-box testing and unit testing to debug and verify software.
- Demonstrated strong written communication skills by documenting each module's responsibility, interface, and implementation for others to refer to.

Software Defined Radio

Jan 2021 - Current

- Leading a group of 4 students to design and develop a software defined radio that works in real-time in Python and C++.
- Learning and applying digital signal processing principles and algorithms such as signal convolution, modulation and demodulation.