MOHAMMAD BILAL

(416) 575-4131 • bilalm14@mcmaster.ca • bilalm04.github.io • /in/mohammadbilal7 • /BilalM04

EDUCATION

McMaster University | Software Engineering CO-OP *Sept. 2022 - Present*

- **CGPA:** 4.0/4.0 - Dean's Honour List, Provost's Honour Roll
- **Relevant Courses:** Object-Oriented Programming, Digital Systems and Interfacing, Data Structures and Algorithms.

SKILLS

Programming Languages: Java, Python, C, JavaScript, HTML, Bash, Verilog, CSS
Tools & Platforms: Linux/Unix, Windows, Git, Grafana, Autodesk Inventor, InfluxDB, MATLAB, Office 365, p5.js, Figma, Jira, IntelliJ, VS Code, Java Swing, Arduino, 3D Printing, Confluence, React.js, Node.js

EXPERIENCE

McMaster Interdisciplinary Satellite Team (MIST) | Software Developer *Sept. 2023 – Present*

- Designed, developed, and implemented **Python** scripts for collecting and parsing comprehensive satellite data, such as passover time calculations and real-time location tracking, leading to a **25% increase** in accuracy.
- Employed an **InfluxDB** database to store satellite TLE data and utilized **Grafana** for data visualization.
- Presented project progress, findings, and strategies to the Canadian Space Agency (CSA), as well as weekly team meetings.
- Utilized a **Unix** environment for sending commands to the satellite, accompanied by **Bash** scripting to streamline mission-critical processes.
- Leveraged **Apache Airflow** alongside **Directed Acyclic Graphs (DAGs)** to automate scripts and the retrieval of satellite data resulting in a **55% reduction** in manual data collection.

PROJECTS

CRASHED! | p5.js (JavaScript library)

- Designed and developed an educational car dodging game using **object-oriented programming** principles, including multilevel inheritance, polymorphism, and object overloading.
- Implemented game mechanics and interactive elements, such as obstacle avoidance algorithms and dynamic game customizations.
- Created engaging and intuitive **user interface** using **graphics and animations** and the **p5.js** JavaScript library.

Recipe Finder | React.js, CSS

- Created a dynamic Recipe Finder **web application** utilizing **React.js** to create an intuitive platform to search and discover recipes.
- Leveraged the **Edamam API**, to retrieve a diverse range of recipes.
- Styled the application with **CSS** to provide an aesthetically pleasing and user-friendly interface for browsing recipes.

Get a Grip | Python

- Led a team of 3 to develop a **Python**-based program to control a robotic arm for the sterilization of surgical tools.
- Implemented remote sensing and actuation techniques using a **photoelectric sensor** to control the movement and function of the robotic arm.
- Initially coded in a simulation environment, then implemented the code into a physical environment using a **Quanser QArm**.
- Conducted thorough **testing and debugging** to ensure the accurate and efficient operation of the robotic arm, and meticulously **documented** our design process.

Recycling System | Python

- Designed and developed a Python program to create an efficient recycling system using a **Quanser QBot** (autonomous mobile robot).
- Leveraged **color sensors** on the QBot to enable precise line following and facilitate the loading and unloading of recyclable items.
- Incorporated **photoelectric sensors** and **weight sensors** to assess the contents of recyclable containers, allowing for the identification and disposal of any containers containing liquid or waste.
- Devised a **continuous algorithm** to ensure the systematic recycling of items until no further recyclables remained.

Blackjack | Java

- Designed and developed a graphical blackjack application using **Java Swing** and **object-oriented programming** principles, including inheritance and polymorphism.
- Implemented game mechanics, such as card dealing, player decisions, and win/loss conditions.
- Created intuitive **user interface** using Java Swing graphics.