MOHAMMAD BILAL

📞 (416) 575-4131 • ✉ bilalm14@mcmaster.ca • 🌐 bilalm04.github.io • 🔗 /in/mohammadbilal7 • ⭕ /BilalM04

EDUCATION

McMaster University | B.Eng - Software Engineering CO-OP   *Sept. 2022 - Present*
- **CGPA:** 4.0/4.0 - Dean's Honour List, Provost's Honour Roll, McMaster Award of Excellence
- **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, Office 365, p5.js, Figma, Jira, Java Swing, Arduino, 3D Printing, Confluence, React.js, Node.js, Pygame, Processing.py

EXPERIENCE

McMaster Interdisciplinary Satellite Team | 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 **40% 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! | JavaScript, p5.js
- Designed and developed an educational car dodging game using **object-oriented programming** principles, including multilevel inheritance, polymorphism, and object overloading, garnering **over 3500 impressions** on itch.io during launch week.
- Implemented game mechanics and interactive elements, such as obstacle avoidance algorithms and dynamic game customizations.
- Created an engaging and intuitive **user interface** using **graphics and animations** and the **p5.js** JavaScript library.

Recipe Finder | React.js, Node.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, Quanser
- 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, Quanser
- 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.

Jailbreak! | Python, Pygame
- Designed and developed an escape-room style game with various room scenarios, integrating object interactions and complex puzzle-solving mechanics using the **Pygame** library in **Python**.
- Employed an optimized code architecture and efficient algorithms to ensure fluid gameplay and enhanced performance, allowing the game to be played on the **web** and **locally**.
- Garnered **over 6000 impressions** during launch week on itch.io with **500+ unique visitors**.