MOHAMMAD BILAL

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EDUCATION

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

- **GPA:** 12.0/12.0 (4.0/4.0)
- **Relevant Courses:** Object-Oriented Programming, Digital Systems and Interfacing, Data Structures and Algorithms.

SKILLS

Programming Languages:	Java, Python, C, JavaScript, HTML, Bash, Verilog
Tools & Platforms:	Linux/Unix, Git, Grafana, Autodesk Inventor, InfluxDB, MATLAB, Office 365, p5.js, Figma
Hardware:	Arduino, 3D Printing

EXPERIENCE

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

- Designed, developed, and implemented Python scripts for collecting and parsing comprehensive satellite data, enabling the automation of critical tasks such as passover time calculations and real-time location tracking.
- Employed 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 automate and streamline mission-critical processes.
- Actively planning and working on the development of a front-end application using react.js and several APIs for seamless, real-time data storage, and command scheduling, centralizing all satellite information and command transmission in one location.

Adventure Valley Day Camp | Group Counsellor *June 2023 – Aug. 2023*

- Supervised and ensured the safety of campers during all camp activities.
- Planned and led engaging and age-appropriate recreational activities, such as sports, arts and crafts, games, and hikes.
- Fostered a positive and inclusive camp environment by promoting teamwork, respect, and cooperation among campers.

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 and game customizations.
- Created engaging and intuitive user interface using graphics and animations.

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.