Nehan Mohammed

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Education

McMaster University *Sept. 2024 - June 2029*
Bachelor of Engineering - *GPA: 3.95+/4.0*

Skills

Programming Languages: C++, Python, HTML/CSS
Tools and Frameworks: ROS2, Micro ROS, Arduino IDE, Git, Visual Studio Code, PyGame, Linux
Technologies: Arduino Uno, Raspberry Pi 3/4

Projects

BOGOCHIB – Bird Flocking Simulation — Python, Pygame

- Developed a simulation to model bird flocking behavior in a 2D environment, successfully simulating the behavior of over 40 birds.
- Implemented 15+ algorithms for alignment, cohesion, separation, and predator avoidance.
- Created a dynamic GUI with **Pygame**, enabling real-time adjustments to bird speed, flock size, and predator introduction.
- Optimized predator-prey dynamics with recursive position updates, enhancing realism and responsiveness.

Hand Gesture Controlled Car — C++, Python

- Designed and implemented a 4-motor car using **Arduino Uno** and **Raspberry Pi 4**, ensuring precise control and seamless integration.
- Enabled wireless hand gesture control with Bluetooth connectivity and gyroscope sensors embedded in custom gloves.
- Integrated a live video feed from the car's camera to a VR headset, creating an immersive first-person driving experience.

Simon Says Game — C++

- Built an interactive Simon Says game using an **Arduino Uno** board, achieving a success rate of 85% in player responses.
- Programmed the board to generate a random color sequence communicated through a set of LED lights.
- Utilized push buttons to receive player input to validate it against the original color sequence.

Experience

Software Developer — *McMaster Mars Rover Team* *Oct. 2024 – Present*

- Developed **ROS2** packages to enable keyboard-controlled actuation of a camera mounted on the rover, providing a complete view during competitions.
- Integrated **Micro ROS** with a **Teensy 4.0** microcontroller to process keyboard commands and control servos for precise camera movement.
- Collaborated with team members through weekly meetings to ensure seamless integration of hardware and software.

Voter Engagement Agent *June 2023 - Sept. 2024*

- Conducted over 500 outreach interactions across Ontario, increasing voter participation by 20% and improving campaign strategies through detailed feedback analysis.
- Collaborated with cross-functional teams to design outreach initiatives, achieving a 15% increase in voter turnout in targeted regions.
- Addressed voter concerns with persuasive communication and active listening, effectively promoting key policies.

Extra-Curriculars

Porter Athletic Council — President *Sept. 2022 - June 2024*

- Oversaw a team of 100+ members and 15 executives as President of the Porter Athletic Council.
- Coordinated events such as grade 9 orientation, spirit weeks, and intramurals, fostering a vibrant athletic community.
- Managed activity sign-ups and athletic sales, showcasing strong organizational and managerial abilities.

SEEK Robotics Hackathon *March 2023*

- Achieved second place in the UofT SEEK Robotics Hackathon to design and build an efficient rover capable of following a path and retrieving a sample from sandy terrain under a strict time limit of 3 minutes.
- Utilized critical thinking, problem-solving, and expertise in **Arduino** programming and mechanical engineering.
- Demonstrated effective communication and strong collaboration with team members, within a time-constrained environment