Brandon Jahoor

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Candidate for BASc in Mechatronics Engineering Honours, Minor in Computer Engineering, University of Waterloo

Skills

- **Programming:** ROS2, Docker, C++, Python, Object-Oriented Programming, GitHub, MATLAB, Data Structures & Algorithms, C
- **Digital Logic:** PLC ladder logic, FPGA programming using VHDL, microcontrollers
- **Prototyping:** CAD(SolidWorks), 3D printing, raspberry pi, ESP32, STM32, kinematics, electrical, hand & power tools

Experiences

Robotics Research Assistant *– University of Waterloo RoboHub* *(September 2025-December 2025)*

- **Company Overview:** Robotics research lab at the University of Waterloo.
- Pairing Xsens Awinda **IMU**s with Emika Panda **7-axis robot arm** to **mimic human arm movement** using **ROS2.**

Robotics Engineering *– University of Waterloo Robotics Team (Co-op)* *(June 2025-August 2025)*

- **Company Overview:** Develop a custom remotely operable robotic system comparable to the MARS rovers designed by NASA.
- Developed **control and autonomy** software in **Linux/Ubuntu** using **ROS2** natively and through **docker**.
- **ROS2 Realsense** camera streaming with compression, **OpenCV** viewer, and resolution select nodes.
- 6-wheel drivetrain modelling with solved **forward & inverse kinematics.**

Robotics Engineering *– BHF Robotics (Co-op)* *(May 2025-June 2025)*

- **Company Overview:** Produce autonomous Electric Weeders using AI deep learning vision for farming applications.
- Part **design** (**simulations**) for prototyping & manufacturing as well as electrical diagnosis & solutions to restore robotic controls.
- Programmed **autodrive algorithm** for **autonomous robot navigation** using **python/ROS2**.
- Trained **deep learning AI** model for weed/crop detection.

Mechatronics Engineering *– RAB Design Lighting (Co-op)* *(September 2024-December 2024)*

- **Company Overview:** End-to-end LED Lighting solutions provider with in-house customization and pre/post sales support.
- Validated and tested **lighting controls app**; created app manual and training materials ensuring **successful app launch**.
- Regularly used **SolidWorks & AutoCAD** for design, development, documentation.
- Created Engineering documents, conducted electrical & mechanical **validation/testing**, and designed process improvement tools.

Quality Assurance Engineering *– Ontario Drive & Gear (Co-op)* *(January 2024-April 2024)*

- **Company Overview:** Custom in-house manufacturer of AMGA/ISO compliant gears.
- Lead QE on **prototype new product launch** under extraordinary deadlines earning AGMA Foundation **Scholarship**

Electrical Engineering *– Jule/eCAMION (Co-op)* *(February 2022-June 2022)*

- Gained experience across electrical, design, software, & quality **engineering functions** and **assembled & wired** EV chargers.

Youth Robotics Mentor *– FIRST Robotics - First Lego League (FLL)* *(January 2021-December 2023)*

Projects

- **WATonomous:** Developing ROS2 navigation stack in Docker and Foxglove, integrating LiDAR, A* path planning, and Pure-Pursuit.
- **SWARM Hackathon:** Assembled fleet of HeRo 2.0 robots from scratch (smd soldering) with ESP32s using ROS2, Docker, Gazebo.
- **Robot Arm:** Designed (CAD), prototyped and 3D-printed coloured token sorting robot using OpenCV with ROS2 on Raspberry Pi.
- **C Operating System:** Currently developing custom operating system in C using STM32 Nucleo 64 Microcontroller.
- **PLC Programming:** Programmed Siemens PLC using ladder logic to control motors, sensors, & buttons.
- **Rubik's Cube Solver:** Built EV3 robot using RobotC; integrating Python solving algorithm.
- **Retro Arcade Console:** Fully functional Raspberry Pi powered arcade retrofit.
- **Motorized Bicycle:** Engineered motorized (gas) bicycle retrofit using metal cutting, welding, and drilling skills.

For more information, please visit my website: bjahoor.github.io