Arjun Mauji

22cnr1@queensu.ca| 647-225-3264 | linkedin.com/in/arjun-mauji

Education

B.A.Sc. Mechanical and Materials Engineering, Biomechanical Stream **| Queen's University** Apr 2027

- Recipient of Dean's Scholar: 2024-2025, Biggs-Ronald & Deanna Scholarship
- Relevant Coursework: Control Systems, Digital Systems for Mechatronics

Projects

Hardware Gait Analyzer | Individual July 2025

- Prototyped a wireless gait analysis system under ($50) to test the feasibility of a low-cost biomechanics tool.
- Designed 2 wearable sensor modules with ESP32s & IMUs to measure hip flexion angle with <0.05° error.
- Wrote Python scripts to collect angle data from the sensor modules over WiFi using TCP protocol.
- Utilized OpenSim's C++ API to generate 2D biomechanical visualizations of the hip flexion.

Continuously Variable Transmission (CVT)| Off Road Car Design Team Sept – Dec 2024

- Assisted in the remodeling & manufacturing of the vehicle's CVT system using SolidWorks CAD.
- Reduced the primary CVT component's machining time by over 50 minutes through weight reduction.

QHDT Machine Vision Sensor System | Team Design Course Jan – Apr 2024

- Built a Raspberry Pi object detection system to identify large hazards in a theoretical hyperloop tunnel.
- Tested both pre-trained & custom models in TensorFlow, comparing effectiveness for hazard detection.
- Created a real-time hazard monitoring interface in HTML/CSS to display live detection feedback.

Automated Fluid Dispenser | Team Design Course Sept – Dec 2023

- Engineered a low-cost prototype fluid dispenser <25$, for hands-free medicine distribution in free clinics.
- Designed a custom 5-gear gearbox for precise control over the fluid dispensing and storage mechanisms.
- Developed a 60s control loop in Arduino C to automate all dispenser components at the press of a button.

Work Experience

Teaching Assistant| Measurement in Mechatronics Course Sept 2025 – Current

- Co-supervising 10+ mechatronics labs, each with 100+ students.
- Answering electronic measurement theory questions & troubleshooting lab circuits.

Lifeguard | City of Toronto Jul 2023 – Aug 2024

- Supervised 200+ swimming patrons alongside other lifeguards across different depths of water.
- Instructed 50+ students (ages 5–50) weekly in beginner to advanced swim programs.
- Created individualized lesson plans for 5 classes, improving student proficiency by 20% over 9 weeks.

Technical Skills

- **Languages :** C, C++, Python, Arduino IDE, Matlab, x86-64 Assembly
- **Hardware :** Arduino UNO, ESP32, Raspberry Pi, MPU6050 IMU
- **Dev Tools:** Jupyter Lab, Nano, VS Code, Arduino IDE