Tejas Soni

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Technical Summary

- Excellent end-to-end rapid prototyping ability with GD&T, CAD, machining, and 3D printing skills
- Linux, Python, ROS, MATLAB, and C++ for R&D test development, data analysis, and robotics.
- Prototyping electromechanical systems on breadboard, integrating sensors, and creating custom PCBs
- Strong interest in reinforcement learning, biomechanics, and biomimicry applied to robotics.

Experience

IDEAs Clinic Research Assistant May 2025 – Ongoing

University of Waterloo, Pearl Sullivan Engineering IDEAs Clinic *Waterloo, ON*

- Developed and led an autonomous mobile robot hackathon where ROS, LIDAR, and pathfinding algorithms were employed to allow a Turtlebot4 to autonomously navigate a simulated factory environment.
- Designed a three-day reinforcement learning workshop to teach fundamentals to Waterloo students: created an RL policy for quadruped walking, trained and simulated in MuJoCo, and deployed it on a Unitree Go2 robot.
- Condensed complex topics in robotics, fluid mechanics, and mechanical design into intuitive hands-on labs to drive student engagement and understanding.

Automation & Control Systems Engineer Sep 2024 – Dec 2024

Actemium Canada *Toronto, ON*

- Programmed PLCs and HMIs for Energy & Pharma facilities using Rockwell Suite and Ignition.
- Developed Safety Control System for a hydrogen production pilot plant. Involved procuring & programming PLC, HMI, and SCADA interfaces using Rockwell's Suite and Ignition systems.
- Implemented PID control loops for pump control on Allen-Bradley hardware.

R&D Environmental Lab Testing Engineer Jan 2024 – Apr 2024

Christie Digital Systems *Waterloo, ON*

- Led a $50 000 helium leak test project which successfully found leaks in MEMS projector devices.
- Designed a robot to simulate stepping on LED panels. Design in Solidworks, machined all parts, integrated electropneumatic systems, and developed test software in C++ for ESP32, complete with touchscreen GUI.
- Excelled at following stringent lab protocols to acquire high quality testing results. Continuously worked to automate R&D tests with hardware and software solutions.

Material Science Research Assistant May 2023 – Aug 2023

University of Waterloo, Forming & Crash Lab *Waterloo, ON*

- Performed lab tests on various metal samples and consistently generated high-quality data to create forming-limit curves for industry partners. Excelled in data post-processing and creating clear reports and presentations.
- Co-developed methods for a four-point flexural test to address buckling in aluminum specimens.

Design Team Experience

Mechanical Team Member Sep 2021 – Apr 2022

UW Robotics Club *Waterloo, ON*

- Integrated carbon-fiber strut lattice into rover—doubled frame stiffness.
- Invented and prototyped airless 3D-printed TPU tire; achieved +60% grip, +200% tread life.
- Machined 33% of aluminum parts, which led to final robot assembly.

Education and Awards

Bachelor of Applied Science, Mechanical Engineering 2021 – 2026 (Expected)

University of Waterloo *Waterloo, ON*

- NSERC Undergraduate Student Research Award (USRA), 2023
- Debbie Kennedy Memorial Don's Award, 2024
- Presidents Scholarship, 2021