# Urvish Shah

+1 (716) 553-8396 | shahurvish2001@gmail.com | Buffalo, NY
linkedin.com/in/urvish-r-shah

## Education

**M.S. in Engineering Science (Robotics)**, University at Buffalo, SUNY *Expected Dec 2025*
**GPA: 3.667**
**Thesis:** Swarm robotics focusing on signal source localization and collaborative object transportation

**B.E. in Instrumentation and Control Engineering**, GEC Gandhinagar, India *May 2023*

## Technical Skills

**Programming:** Python, C++, Embedded C
**Tools/Frameworks:** ROS, Gazebo, RViz, TensorFlow, PyTorch, OpenCV, LabVIEW
**Embedded/Hardware:** STM32, Raspberry Pi, ESP32, LoRa, PCB Design (Altium)
**Robotics:** SLAM, Sensor Fusion, Perception, Differential Drive Systems
**Simulation:** Gazebo, MATLAB, Proteus, SolidWorks

## Research & Project Experience

**Graduate Research – Adams Lab, SUNY,Buffalo** *Nov 2024 – Present*
**(Advisor: Prof. Souma Choudary)**

- Engineered reinforcement learning-based control strategies using MADDPG to coordinate multi-robot teams for collaborative object transport in Gazebo.
- Developed terrain-adaptive policies enabling agents to adjust actions based on slope, friction, and dynamic surface properties.
- Implemented and benchmarked in-house Bayes Swarm Algorithm, improving localization success rate by 35% in cluttered environments.

**Project Assistant – IITGN Robotics Lab, Gandhinagar** *Oct 2023 – Apr 2024*
**(Advisor: Prof. Madhu Vadali)**

- Designed an adaptive feed rate control algorithm for a 3D printer that improved part success rates by 95% in clogged-nozzle scenarios.
- Developed pressure-controlled, cable-driven robotic fingers with tunable stiffness for enhanced object grasping and manipulation.

**Research Intern – IITGN Robotics Lab, Gandhinagar** *Jan 2023 – Sep 2023*
**(Advisor: Prof. Madhu Vadali)**

- Designed and built a differential drive robot platform for evaluating swarm coordination strategies; developed a flexible continuum manipulator for precision motion tasks.
- Co-developed a sustainable 3D printer that repurposed plastic waste with 80% material efficiency, supporting environmental R&D initiatives.

**Hardware Design Intern – OoB Services, Ahmedabad** *Jun 2022 – Aug 2022*

- Designed and prototyped 4-layer PCBs for home automation and medical applications, optimizing layout for compact performance.
- Led hardware and firmware integration for a smart irrigation system with solar panel alignment, improving energy efficiency.

## Selected Projects

**Semi-Autonomous Arrow-Throwing Robot – STM32 & Arduino** *2022*

- Designed a high-precision control system and custom PCB that improved robotic arrow-throwing accuracy by 90%.
- Secured Indian patent: “Simplified Semi-Autonomous Robotic System for Object Picking and Stacking” **(IN202321008858)**

## Leadership & Awards

- Represented India at ABU Robocon 2021 (9th out of 21 global teams), Jimo, China.
- Best Design Award at Vishvakarma Awards (IIT Delhi) for waste plastic 3D printer.
- Runner-up at IoT Ideathon for Scarecrow 2.0: AI-enabled pest deterrent using GSM, PIR, rain sensors.