

Shubham Jangle

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SUMMARY

Innovative Robotics Engineer in training with expertise in **designing, simulating, and deploying autonomous systems**. Skilled in mechanical design, embedded systems, and AI/ML for advanced navigation, perception, and control. Delivered solutions improving **robot accuracy** by **92%** and **cutting latency** by **20%**, bridging research with real-world applications.

SKILLS

Programming: Python, C++, C, MATLAB, Bash, Git

Robotics: ROS (Noetic/ROS2), Gazebo, RViz, MoveIt, SLAM, LiDAR, Nav2, PID, MPC, Path Planning (RRT*, A*)

AI/ML & CV: PyTorch, TensorFlow, OpenCV, Scikit-learn, CNN, Behavior Cloning, Sensor Fusion

Simulation & Design: SolidWorks, Webots, CATIA, FEA, CFD

Tools: Docker, Streamlit, VS Code, Ubuntu/Linux, Jupyter, Arduino, ESP32

PROJECTS

Bio-Inspired AUV (Fish-Like Underwater Robot) [GitHub]

July 2025 – Sep 2025

(Skills: ROS/ROS2, PID Control, IMU, Python, SolidWorks, C++, Camera-LiDAR Fusion, Docker)

- Propeller-based AUVs were inefficient and unstable; goal was to design a **fin-driven AUV** and test advanced control strategies.
- Prototyped AUV**, implemented **PID & MPC**, trained RL with **domain randomization**, deployed all controllers on hardware.
- Achieved **30% better trajectory stability**, improved **energy efficiency**, and open-sourced benchmark dataset for future research.

Spider Robot: WiFi-Enabled Quadruped Scouting Robot [GitHub]

April 2025 – June 2025

(Skills: SolidWorks, Arduino UNO R4, PCA9685, Python Tkinter, WiFi, ESP32-CAM, ROS)

- Search-and-rescue robots require compact designs with reliable teleoperation and vision feedback in unstructured terrains.
- Built a 12-DOF quadruped robot** using 3D-printed parts and PCA9685 servo drivers; integrated **ESP32-CAM** for live vision and developed a **Python GUI** for real-time WiFi control through Arduino.
- Reduced **control latency by 20%**, achieving smoother motion; designed the architecture for future **ROS2 Nav2** integration.

Imitation Learning for Indoor Robot Navigation [GitHub]

March 2025 – Ongoing

(Skills: ROS 1 (Noetic), PyTorch, LiDAR, TurtleBot3, CNN, OpenCV, Python, C++)

- Manual teleoperation in cluttered environments is inefficient and unsafe for continuous navigation.
- Collected expert demonstrations** on TurtleBot3 using ROS 1; **trained a CNN policy in PyTorch** with LiDAR + velocity data and implemented **OpenCV-based obstacle detection**.
- Achieved **92% policy-replication accuracy** enabling safe, real-time navigation; extending pipeline for **ROS2 Nav2** migration.

PROFESSIONAL EXPERIENCE

Robotics Research Intern, Bosch Future Mobility Challenge – Ahmedabad University (AU) [GitHub]

July 2025 – Sep 2025

(Skills: ROS 1, Computer Vision, Raspberry Pi, BFMC Simulator, Perception Modules)

- Developed a **ROS 1-based navigation pipeline** combining CNN sign/light detection, rule-based FSM, and imitation-learning safety override layers.
- Reduced rule violations by 85%** and **improved destination success by 30%** in BFMC smart-city simulation prior to hardware transfer. Designed node architecture compatible with future **ROS2 modular upgrade**.

Robotics Research Intern, University of California, Riverside (UCR) [GitHub]

Jan 2025 – March 2025

(Skills: SLAM, ROS, Gazebo, Reinforcement Learning, Path Planning – RRT*, MPC)

- Research group required robust navigation in Gazebo environments and efficient robotic manipulation in cluttered labs.
- Developed **SLAM-based navigation stack** in **ROS/Gazebo**; tuned **reinforcement learning** models for robotic arm manipulation; implemented **RRT* + MPC** for path planning.
- Improved **map accuracy by 25%** and reduced **planning failures**, enhancing robotic performance in complex indoor settings.

Mechatronics Intern, Pandit Deendayal Energy University (PDEU) [GitHub]

Jan 2024 – May 2024

(Skills: Autonomous Navigation, Multi-Sensor Fusion, Webots, PID Control, Hardware Debugging)

- Firefighting robots required faster response times and reliable hazard detection.
- Designed firefighting robot in **Webots** with **IR, temperature, and ultrasonic sensors**; optimized PID; led integration and debugging.
- Reduced **reaction time by 30%**, demonstrating improved hazard detection and real-world fire safety response.

EDUCATION

University of California, Riverside, Master's in Robotics (GPA: 3.7/4.0)

Sep 2024 - Present

Coursework: Robot Sensing and Navigation, Linear System Theory, Design and Fabrication of Robots, Computational Methods for Robotics.

Pandit Deendayal Energy University, Bachelor's in Mechanical Engineering (CGPA: 8.0/10.0)

Sep 2020 – May 2024

Coursework: Heat Transfer, Thermodynamics, Strength of Material, Artificial Intelligence, Industry 4.0.

Work Authorization: Eligible to work in the U.S. from Jan 2026 under F-1 OPT (STEM extension eligible)