Shubham Jangle

Riverside, California | sjang041@ucr.edu | (+1) 858 310-9534 | Portfolio | LinkedIn | GitHub

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)   **July 2025 – September 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   **April 2025 – June 2025**
(Skills: SolidWorks, Arduino UNO R4, PCA9685, Python Tkinter, ROS2 Nav2, DDS, WiFi, ESP32-CAM)
- Search-and-rescue robots need compact designs with reliable control and remote vision in unstructured terrains.
- **Built a 12-DOF quadruped robot** with 3D-printed parts; integrated **ROS2 Nav2 + ESP32-CAM** for vision and developed a **Python GUI** for real-time control via Arduino.
- Reduced **control latency** by **20%**, enabling smoother motion and remote monitoring for scouting tasks in constrained environments.

Imitation Learning for Indoor Robot Navigation   **March 2025 – Ongoing**
(Skills: ROS, PyTorch, LiDAR, TurtleBot3, CNN, OpenCV, ROS2 Nav2, C++)
- Manual teleoperation of robots in cluttered environments is inefficient and error-prone.
- **Collected expert demonstrations** with TurtleBot3; **trained CNN in PyTorch** on **ROS2 Nav2** using LiDAR + velocity data; added **OpenCV**-based dynamic obstacle detection.
- Achieved **92% policy replication accuracy**, enabling safe, **real-time collision-free navigation** in dynamic indoor environments.

PROFESSIONAL EXPERIENCE

Robotics Research Intern, Bosch Future Mobility Challenge – Ahmedabad University (AU)   **July 2025 – September 2025**
(Skills: ROS, ROS2, Computer Vision, Raspberry Pi, BFMC Simulator, Perception Modules)
- Needed a navigation system that followed traffic lights, stops, yield signs, and pedestrians in BFMC smart-city simulator.
- **Built ROS2 stack** with CNN-based sign/light detection, rule-based FSM, and hybrid imitation-learning + safety override layer.
- Reduced **rule violations by 85%** and **improved destination success rate by 30%** in simulation before transferring to hardware.

Robotics Research Intern, University of California, Riverside (UCR)   **January 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)   **January 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)   **September 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)   **September 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)