Shubham Parab

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Education

Master of Science | Data Science and Artificial Intelligence *2025 – 2026 (Expected)*
Newcastle University, United Kingdom

Bachelor of Engineering | Electronics Engineering *2018 – 2022*
Ramrao Adik Institute of Technology, Navi Mumbai
GPA: 8.12 / 10.00

Experience

Systems Engineer, Tata Consultancy Services (TCS) – Bengaluru, India   June 2022 – Present

- Led the development of navigation systems for omnidirectional and differential drive robots, incorporating motion planning, path optimization, and safety algorithms for real-time collision avoidance.
- Spearheaded AI-driven enhancements in robotic systems by integrating Deep Learning models for 6D pose estimation and object classification in retail environments.
- Engineered a shelf monitoring system to detect empty shelf volumes and identify anomalies using computer vision techniques.
- Implemented integration of precision control and autonomy modules, enhancing overall robotic performance in dynamic environments.

Robotics Engineer Intern, Roboslog – Remote   May 2020 – Aug 2020

- Designed and simulated electronic circuits using ThinkerCAD for robotics-based projects.
- Authored a blog post to explain the practical application of simulated circuit design in low-cost robotics.

Publications

SMC 2024 (IEEE International Conference on Systems, Man, and Cybernetics)   Accepted, 2024

- Teleoperated Omnidirectional Dual Arm Mobile Manipulation Robotic System with Shared Control for Retail Store [ref]
- System for Autonomous Management of Retail Shelves using an Omnidirectional Dual-arm Robot with a Novel Soft Gripper [ref]

Telepresence 2024 (IEEE Conference on Telepresence)   Accepted, 2024

- ATMAS: Assistive Teleoperation Method using Augmented Reality and Switching Control[ref]

Projects

UR5 Arm for Warehouse Management   2023

- Built an automated warehouse solution where the UR5 robotic arm sorts packages based on order data received from different city locations.
- Integrated IoT-based order communication and package classification using Google App Script.

Fruit Plucking Robot   2022

- Developed a custom-built robot for automated fruit harvesting in orchards.
- Designed with an omnidirectional mecanum wheel base and a robotic arm to enable mobility and precise fruit handling.

Pose Estimation for Human Skeleton Tracking   2023

- Built a computer vision system using MediaPipe to detect and track human body keypoints in real time for gesture recognition and robotic interaction.
- Enabled responsive behavior in robots based on detected poses, facilitating intuitive and contactless human-robot interaction.

Skills And Technology Stack

- **Domains:** Computer Vision, Machine Learning, Robotics, SLAM, NLP
- **Programming Languages:** Python, C++, C#, JavaScript, HTML, CSS
- **Libraries/Frameworks:** NumPy, PyTorch, TensorFlow, SciPy, Pandas, Scikit-learn, spaCy, Django, Flask
- **Tools/Platforms:** ROS (ROS1 & ROS2), PyBullet, Gazebo, Git, Arduino, Microsoft Office Suite, Linux