

Tejas Salian

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Education

Gran Sasso Science Institute

SPACERAISE:International Doctoral School for Space Sector.(Summer School) [Website](#) [🔗](#)

L'Aquila , Italy

May 2025

- **Coursework:** Robotics for Space Applications, Digital Twins for Space Manufacturing and Satellites, Artificial Intelligence for Aerospace.

Manipal Institute of Technology

B.Tech in Instrumentation and Control

Manipal, India

July 2017 – June 2021

- **Coursework:** Multi-Sensor Data Fusion, Advanced Sensor Technology, Modern Control Theory, Probability Theory and Linear Algebra, Robotics Systems and Control.

Research Experience

Robotics Research Centre, IIIT-H. [🔗](#)

Research Assistant

Hyderabad, India

May 2024 – Present

Advised by [Prof. Madhava Krishna](#) [🔗](#)

- Redesigned and optimized the [AutoDP stack](#) [🔗](#) for seamless transition between simulated (CARLA/LHCS) and real-world (RHCS) environments, improving coordinate frame handling.
- Migrated the SLAM module from **LegoLOAM** to **FastLIO2**, improving the accuracy and robustness of localization.
- **Dockerized** the complete Husky stack, streamlining deployment and testing of various algorithms, enabling more efficient experimentation.
- Developed a **Pure Pursuit controller** for a research project on “GPD:Guided Polynomial Diffusion,” enabling conversion of obstacle-free trajectories from .npy files into a local plan for precise path tracking.
- Conducted in-depth **benchmarking of multiple SLAM algorithms**, comparing odometry accuracy across Lego-LOAM, LIO-SAM, Direct Lidar Odometry, Deep Patch Visual Odometry, Rtabmap-ICP, and Rtabmap-VO.

Professional Experience

Novus Hitech Robotics Systemz Ltd. [🔗](#)

Research Engineer

Gurugram, India

Oct 2022 – Mar 2024

- Implemented [Multisensor-aided Inertial Navigation System \(MINS\)](#) [🔗](#) sensor fusion, to fuse **visual-inertial-wheel odometry(VIWO)** data, achieving a **60% improvement** in odometry accuracy.
- Engineered and deployed a custom ROS package enabling dynamic **multi-floor navigation** by seamlessly switching maps, resetting critical controls, and integrating with our SLAM module to enhance production-level capabilities.
- Created and integrated a 2D laser-based obstacle detection ROS package to enhance perception at drop locations, defining critical **region-of-interest** and triggering new navigation goals for more efficient operations.
- Spearheaded motion planning for a UR10e robotic arm **proof-of-concept** in automotive screwing applications, **calibrating “eye-in-hand”** camera positioning, and implementing a **real-time kernel** for instantaneous servo control, achieving **3mm precision**.
- Engineered a **memory-constrained deep learning pallet detection solution** on Nvidia Jetson Nano, leveraging external storage, containerization, and Ethernet integration to overcome hardware limits.

Robotics Engineer - ROS Intern

Feb 2022 – Sept 2022

- Created a **Unity-based Digital Twin** for “Novus Carry 500” and “Novus Pallet Mover” mobile robots, including a custom URDF lifter plugin and integrated 2D, 3D lidar and depth camera sensors to enable comprehensive, virtual product testing and visualization.
- Accelerated product development cycles, **improving performance and reducing costs** by streamlining testing in a simulated environment.


Publications

1. **SparseLoc: Sparse Open-Set Landmark-based Global Localization for Autonomous Navigation.** P Paul*, V Bhat*, **T Salian**, M Omama, KM Jatavallabhula, N Arulselvan, M Krishna. *Accepted* In 2025 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), China. [🔗](#)

Selected Projects


ROS2-Based Pick and Place Robot Arm for Stacking Application

github.com/tejasps28 

- Collaborated in the development of a **pick-and-place robot arm for stacking application** with [Lentin Joseph](#) .
- Set up Moveit2 to interact with the robot arm using Moveit2 APIs.
- Contributed to architecture, by dockerizing the stack, streamlining deployment and testing.
- Leveraged **Moveit Task Constructor** to perform repetitive actions.
- Developed **stacking pattern logic** for placing boxes on pallet.
- Tools Used: C++, ROS2, Moveit2, Docker.

ROS2-Based Gantry Car Painting Robot Development

github.com/tejasps28 

- Collaborated in the development of a **gantry-based car painting robot arm** with [Lentin Joseph](#) .
- Set up a **Gazebo simulation** environment to mimic real-world conditions.
- Utilized a depth camera for **region of interest (ROI) detection** and image segmentation.
- Concatenated point-clouds to **reconstruct** car as an **Octomap** for **obstacle avoidance**.
- Integrated the collected data for **precise Cartesian path planning** and painting actions.
- Tools Used: C++, ROS2, Moveit2, Gazebo

“DiffBot2D”: 2D SLAM Simulation Testbed

github.com/tejasps28/ 

- Developed a Unity3D-based testbed for 2D SLAM algorithms, implementing AMCL and GMapping for map generation.
- Created an **educational tool** for demonstrating the ROS navigation stack, offering an easier alternative to Gazebo for beginners.
- Enabled essential ROS data outputs like 2D laser scans and control over the robot’s movements, including cmd_vel and odom, for **smooth SLAM simulation**.
- Tools Used: Unity, ROS.

Motion Controlled Wheel-Chair

[Report](#) 

- Goal was to develop a **prototype of a motion controlled wheelchair** for ease of use, by differently-abled people.
- The project was taken up to complete summer training in **Arduino**, and to get **hands-on knowledge of Sensor technology**.
- The chair used **ultrasonic sensors and an accelerometer**. As the accelerometer was tilted, the chair would move accordingly and it would detect obstacles with the help of ultrasonic sensors.
- Tools Used: C, Arduino IDE, Sensor Technology

Achievements

1. Led a junior engineering team through on-site customer challenges, performed RCA, swiftly implemented solutions, and earned a **Certificate of Excellence**.
2. Achieved a **top 20 national ranking out of 250 teams** in the 2020-21 Eyantra E-YRC Robotics Competition (IIT Bombay), excelling under the **Vitarana Drone theme**.
3. Awarded a **€2000 scholarship** to attend *SPACERAISE: International Doctoral School for Space Sector(Summer School)*. Selected among **60 scholarship** recipients from over **150 international participants**.

Position of Responsibility

Founder, Manipal Robotics Support Group

Aug 2021 – Oct 2023

- Founded and led the Manipal Robotics Support Group, **guiding over 150 peers** through ROS/Gazebo tutorials to foster collaborative learning and technical skill development.

Technologies

Languages: C++, Python, MATLAB

Software: ROS/ROS2, Linux, Git, Docker, Gazebo, Moveit, Unity, OpenCV, PCL.

Hardware: Jetson Orin/Nano, Arduino, Intel NUC, 2D Lidar, 3D Lidar, Depth Camera, IMU.