Shriman Raghav Srinivasan

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Education

Northeastern University Boston, MA
Master of Science in Robotics; GPA: 3.78 *September 2024 – August 2026*
- Relevant Courses: Robot Sensing & Navigation, Mobile Robotics, Deep Learning for Robotics

SRM Institute of Science & Technology (SRMIST) Chennai, India
Bachelor of Technology in Mechatronics Engineering; GPA: 3.81 *June 2018 – May 2022*
- Relevant Courses: Fundamentals of Robotics, Linear & Digital Control Systems, Computer Vision for Robotics

Experience

Manufacturing Equipment Engineer Intern April 2025 – December 2025
Tesla Inc. *Fremont, CA*
- Deployed autonomous forklift AMRs leveraging SLAM, 2D/3D LiDAR, and stereo camera fusion for real-time pallet perception and localization on live factory floors, enabling $2.04M projected annual cost savings
- Developed multi-camera pedestrian safety system using YOLOv8 and Depth Anything V2 for real-time detection and depth estimation, optimizing GPU utilization for 30 FPS multi-stream inference with less than 1s latency
- Implemented OpenCV Canny edge detection pipeline to reduce false alarms in pedestrian detection system, improving perception reliability in dynamic industrial environments
- Integrated 3D pallet vision system for autonomous forklifts, enabling accurate pallet localization and pickup in cluttered warehouse environments through depth-based perception

Robotics Engineer – Projects July 2022 – August 2024
Hero MotoCorp Ltd *Neemrana & Tirupati, India*
- Designed SegNet-powered vision-guided inspection system for lithium-ion battery assembly defect detection, achieving 92.3% accuracy in identifying surface anomalies and misalignments in real-time
- Devised real-time vision-based spot-welding system leveraging Faster R-CNN optimized with TensorRT, achieving sub-50ms inference latency and reducing defect rates by 19.6%
- Engineered CRNN-based OCR pipeline for Vehicle Identification Number (VIN) recognition, integrating visual servoing for real-time alignment with 86.7% recognition accuracy

Projects

3D Reconstruction using RTAB-Map SLAM with Sensor Fusion October 2024 – November 2024
- Integrated RTAB-Map SLAM on autonomous robot with ZED Mini Camera in ROS2, using Bayesian loop closure and GTSAM optimization to create drift-free maps in GPS-denied environments
- Combined stereo visual odometry and IMU data via Extended Kalman filtering, achieving sub-centimeter accuracy and enhancing spatial awareness in feature-sparse environments like underground tunnels
- Implemented SIFT-based Bag-of-Words algorithm for efficient loop closure detection, reducing cumulative odometry drift by 12% in SLAM pipeline

Dead Reckoning Navigation with Multi-Sensor Fusion October 2024 – November 2024
- Built automotive navigation stack fusing VectorNav IMU and GPS data, implementing magnetometer calibration for hard/soft-iron correction achieving 94% reduction in magnetic distortion error
- Designed complementary filter combining low-pass filtered magnetometer yaw with high-pass filtered gyro integration, achieving 18% improvement in heading estimation over raw sensor data

GPS & IMU Sensor Fusion for Localization September 2024 – November 2024
- Built and deployed custom ROS2 drivers in Python for real-time data acquisition using GPS and IMU sensors mounted on automotive platform, achieving synchronized multi-sensor data collection at 40Hz
- Performed sensor fusion implementing Extended Kalman Filtering, achieving 2.3m positioning accuracy over 3km route after compensating for IMU bias and proper yaw heading alignment

Technical Skills

Technical: SLAM (Visual, LiDAR), Sensor Fusion (Kalman/EKF), 3D Reconstruction, Depth Estimation, Point Cloud Processing, Multi-Sensor Calibration, State Estimation, Object Detection, Visual Odometry
Programming: Python, C/C++, CUDA, SQL
Software: MATLAB/Simulink, Gazebo, Isaac Sim, RViz2, Git, SolidWorks
Hardware: ZED Mini/2 Cameras, Intel RealSense, Velodyne LiDAR, RTK GPS, VectorNav IMU, NVIDIA Jetson Orin
Libraries/Framework: ROS 2, RTAB-Map, GTSAM, OpenCV, PCL, Open3D, TensorRT, PyTorch, TensorFlow
Certifications: Deep Learning, Reinforcement Learning, Mechanism & Robot Kinematics, Systems Engineering