Srinivas Peri
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Experience

Graduate Research Assistant, Northeastern University — Boston, MA Apr 2024 – Present
- Developed low-level control systems for **multi-state machines**, enabling **TSP-optimized** waypoint navigation with dynamic obstacle avoidance for **UAV and UGV multi-agent pair**. Integrated automated takeoff and precise landing systems.
- Spearheaded the development of drones for GPS-denied environments using **visual-inertial odometer (VIO)** that integrates data from the RGB-D camera and the IMU of the flight controller, improving autonomous flight capabilities and spatial mapping accuracy by **30%**.

Research Intern MBSE and Autonomous Driving, TWT Gmbh — Munich, Germany Jun 2023 – Dec 2023
- Developed and validated a **hybrid neural network model** (combining LSTM and CNN) to classify rainfall intensity with 92% accuracy, enhancing **LiDAR-based 3D reconstruction** by analyzing multimodal data, including **3D point cloud's,** images and disdrometer data.
- Implemented a **Marshall-Palmer-based LSTM model** to generate a high-fidelity rain particle system in Blender, leveraging **3D-LiDAR and disdrometer** data for accurate prediction.
- Resolved critical SUMO-Unreal Engine 4 integration issues, implementing precise georeferencing of Ingolstadt map data using Unreal's GeoReferencing plugin and UTM coordinates. Achieved **95%** improvement in spatial accuracy, significantly enhancing traffic simulation realism for the **SaveNow** project.

System Engineer, TATA Consultancy Services — Hyderabad, India Apr 2021 – Jun 2022
- Developed automated solutions using Splunk and Power BI to monitor network performance in real-time, focusing on error and anomaly detection to quickly identify issues, improving operational efficiency by 40%.
- Supported data processing workflows on AWS for log analysis and reporting, assisting with client requests to retrieve and analyze data effectively.
- Collaborated with a 16-member team to provide critical support across the Americas and Europe, addressing client needs for timely log retrieval and analysis.

IOT Developer, Robic Rufarm — Hyderabad, India Oct 2020 – Feb 2021
- Designed a sensor suite (pH, oxygen, and temperature) for real-time water quality monitoring in aquaculture, integrating IoT protocols to process and transmit data via Wi-Fi.
- Implemented **ARIMA** for time series forecasting and predictive insights.

Drones and Robotics Engineer, Activa Software.Inc — Hyderabad, India Jun 2019 – Jul 2020
- Engineered a GPS-equipped autonomous UAV by integrating the u-blox GPS with the PX4 autopilot and Pixhawk flight controller, achieving significant advancements in autonomous navigation.
- Implemented a **3D LIDAR-LOAM** approach to generate high-quality point clouds of large-scale structures, greatly enhancing virtual reality visualization accuracy and detail.

Projects

Synthetic Data Generation for Enhanced Traffic Predictive Modeling GitHub— GAN, SDV
- Generated synthetic traffic data from PEMS-BAY dataset using Gaussian Copula, and TimeGAN methods.
- Implemented bidirectional LSTM model for traffic predictions, achieving 94% accuracy on original data .

Autonomous Vehicle Navigation with DQN in Carla Github— TensorFlow, OpenCV, UnrealEngine
- Developed a DQN-based autonomous navigation system in CARLA using TensorFlow/OpenCV, achieving 50 mph navigation via front-camera input. Processed real-time frames (edge detection, segmentation).
- Trained collision-avoidance logic by fusing CARLA sensor data (impact force spikes) with OpenCV-processed visual input, improving obstacle prediction accuracy by 32% over 100 trials via DQN reinforcement learning.

Object Detection Using Lidar Point Clouds — Open3d ML
- Conducted extensive research and implementation of 3D-object detection techniques using VLP-16 LiDAR point cloud data, with a detection accuracy of 87%.
- Improved object detection efficiency by implementing voxel down-sampling (reducing 26,000 points to 8,000) and utilizing the DBSCAN clustering technique from Open-3D to accurately define object shapes and draw bounding boxes.

Skills
- **Programming Languages & OS:** Python, C++, MATLAB, Linux, Windows
- **Hardware Expertise:** Raspberry Pi, Nvidia Jetson, Analog/Digital Sensors, Arduino
- **Technologies:** Robotics, Drones, Computer Vision, Neural Networks, SLAM, Sensor Fusion, IoT
- **Software Tools:** ROS/ROS2, Gazebo, MeshLab, Unreal Engine, Docker, Splunk, Blender, YOLO, CNN, Autoware AI
- **Communication Protocols:** UART, I2C, MSP, MAVLink
- **Libraries/Frameworks:** Pandas, NumPy, SciPy, Matplotlib, Scikit-learn, OpenCV, CUDA, TensorFlow, PyTorch

Publications
- **"Robust and Scalable Planning of Energy-Aware UAV-UGV Teams for Aerial Monitoring"**. Submitted to ICRA 2025.
- **"LiDAR-Driven Rain Intensity Predictions: A Robust Classifier Modeling Approach"**. Submitted to Stuttgart International Symposium on Automotive and Engine Technology, July 2025.

Education

Northeastern University, Boston MA Dec 2024
Master of Science in Robotics (ECE) — GPA: 3.7/4
Coursework: Robotic Sensing & Navigation, Reinforcement Learning, Computer Vision, NLP, Machine Learning, Computer Vision & Pattern Recognition.