Tarun Reddy

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EDUCATION

Khoury College of Computer Sciences, Northeastern University, Boston, MA   Expected Dec 2024

Master of Science in Artificial Intelligence (GPA 3.95/4)

- Courses: Large Language Models, AI for Human Computer Interaction, Deep Learning, Machine Learning, Natural Language Processing
- Roles: Head Teaching Assistant for Graduate Level Natural Language Processing

National Institute of Technology, India   Jun 2020

Bachelor of Technology in Electronics and Communication Engineering (Gold Medalist)

- Roles: Class Representative, Training and Placement Coordinator, Head of Electronics Club

WORK EXPERIENCE

Bisla, Machine Learning Engineer - Autonomous Driving, Palo Alto, CA   June 2022 - Present

- Led the integration of reinforcement learning algorithms into Tesla's self-driving models, which improved real-time decision-making by 15%, enhancing safety metrics.
- Developed a sophisticated object recognition module using YOLO and OpenCV that reduced the error rate by 12% in detecting pedestrians and cyclists in urban environments.
- Collaborated with cross-functional teams to implement and optimize Simultaneous Localization and Mapping (SLAM) techniques, significantly refining the vehicle's positioning accuracy.

Waymo, AI Research Intern - Self-Driving Technology, Mountain View, CA   May 2021 - Aug 2021

- Implemented and validated deep neural network models for lane detection, which increased the accuracy of trajectory prediction by 10%.
- Assisted in integrating sensor fusion technology combining LIDAR and radar data streams, which resulted in a 20% improvement in obstacle detection efficiency.
- Enhanced the data augmentation pipeline with novel image processing techniques leading to a 30% reduction in data preprocessing time.

PROJECTS

Autonomous Driving, Perception Module Optimization for Self-Driving Cars   June 2023 - August 2023

- Enhanced the perception module of an autonomous vehicle system by integrating advanced deep learning frameworks such as YOLOv5 and Faster R-CNN, achieving a 20% increase in object detection accuracy.
- Implemented sensor fusion techniques combining LiDAR and camera data using Kalman Filters, leading to a more robust environmental mapping and decreasing false positive rates by 15%.
- Performed thorough hyperparameter tuning and model optimization, reducing inference time by 30%, thereby improving the real-time decision-making capabilities of the vehicle.

Reinforcement Learning, Adaptive Driving Policy with RL for Self-Driving   February 2023 - May 2023

- Developed a reinforcement learning model using Proximal Policy Optimization (PPO) for adaptive driving policy, improving lane-keeping performance by 25% under varied weather conditions.
- Simulated real-world driving environments using CARLA simulator to train and evaluate model efficiency, reducing training time by 40% through optimized environmental settings and distributed computing.
- Integrated a dynamic reward system focusing on safe distance maintenance and smoother trajectory control, resulting in a measurable improvement in passenger comfort scores.

Computer Vision, Real-Time Lane Detection with Deep Neural Networks   September 2022 - December 2022

- Designed a convolutional neural network model for real-time lane detection, surpassing conventional Hough Transform techniques in both accuracy and processing speed by 30%.
- Incorporated data augmentation strategies, such as spatial transformations, to enhance model robustness and achieve consistent performance across diverse environmental conditions.
- Implemented the solution on embedded hardware using TensorRT optimization techniques, leading to a 50% enhancement in frame processing rate and ensuring realtime applicability.