**Tarun Reddy**

Boston, MA | (857)-693-4743 | thandu.t@northeastern.edu | www.linkedin.com/in/tarun-reddy

**EDUCATION**

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| **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

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| **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**

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| **Tesla, 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.

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| **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**

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| **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.

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| **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.

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| **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.