Thanushraam Suresh Kumar

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Education

University of Colorado, Boulder CGPA **3.7/4** **August 2024 – May 2026**
MS Robotics *Boulder, Colorado*

- **Relevant Coursework:** Introduction to Robotics, Statistical Estimation of Dynamical System, Advanced Computer Vision, Decision Making Under Uncertainity, Advanced Robotics, Mechatronics

Sri Ramachandra Institute of Higher Education and Research CGPA **3.8/4** **October 2020 – July 2024**
Bachelor of Technology in CSE in Artificial Intelligence and Machine Learning *Chennai, Tamil Nadu*

Experience

Indian Institute of Technology, Bombay
Research Intern ***February 2024 – June 2024***

- Collaborated with researchers from Indian Oil and PhD students to develop an autonomous robotic arm for automatic fuel pumping using ROS.
- Collected a dataset of 3,000 images and trained custom segmentation models (Faster-RCNN, Mask-RCNN) to detect car parts, achieving over 90% detection accuracy.
- Optimized path planning algorithms for precise robotic arm navigation, enhancing accuracy in automated refueling tasks.

Sri Ramachandra Institute of Higher Education and Research
Research Intern ***December 2022 – March 2023***

- Enhanced models (YOLO, DeepSORT) with Extended Kalman Filter for vehicle detection and tracking, achieving 97% accuracy on low-res feeds.
- Built applications to mine vehicle trajectories and analyze traffic patterns using PrefixSpan, achieving 20% efficiency gains.
- Designed LSTM models and interactive dashboards (Plotly, Streamlit, HTML, Folium) for city traffic analysis.

Microtek Power Controls Pvt Ltd
Embedded Machine Learning Intern ***June 2021 – August 2021***

- Optimized a Machine Learning algorithm to predict battery performance using parameters, achieving 92% accuracy.
- Created interactive dashboards with Plotly and Streamlit to visualize battery performance over time, deployed on AWS.
- Deployed the ML algorithm using TensorFlow Lite on an STM32F746 microcontroller.

Projects

Depth Estimation using Deep Learning | *Pytorch* **October 2024**

- Architected a deep learning model for depth estimation, achieving a Root Mean Square Error (RMSE) of 0.2, demonstrating high accuracy.
- Implemented convolutional methods to convert standard RGB images to coded representations for enhanced depth perception.
- Leveraged deep learning frameworks to optimize model performance and enhance depth estimation capabilities in challenging scenarios.

Autonomous Drone Project - DJI F450 Model | *KK 2.1.5,Arduopilot APM 2.8,Pixhawk* **May 2023**

- Applied Computer Vision and Deep Learning methods for precise object tracking and essential image processing tasks in the operation of an autonomous drone.
- Collaborated with cross-functional teams to design and simulate a drone model using the Pixhawk framework in ROS and Gazebo, showcasing advanced skills in drone navigation and simulation.
- Established control algorithms, enabling the drone to achieve payload delivery with 95% accuracy, showcasing expertise in precise navigation.

Autonomous Rover | *ROS,Gazebo,SLAM,Linux* **January 2023**

- Developed object detection systems using OpenCV and YOLO, achieving 95% accuracy in real-time recognition of vehicles and pedestrians.
- Simulated SLAM algorithms, enabling a rover to autonomously map and navigate uncharted terrains with an accuracy of 0.1 meters, covering an area of over 500 square meters.

Technical Skills

Languages: Python, C/C++, HTML/CSS, JavaScript, SQL, Embedded C,
Technologies/Frameworks: Matlab,ROS,Gazebo,Autodesk Fusion 360
Certifications: Intermediate Machine Learning Certificate by Kaggle, AWS Academy Cloud Foundations by AWS Academy