

# J Dhana Santhosh Reddy

College Park, MD, USA  
📞 +1-240-714-9891 ✉️ [jdsr2611@gmail.com](mailto:jdsr2611@gmail.com) [LinkedIn](#) [GitHub](#)

## Summary

Robotics Engineer with expertise in AI, deep learning, ROS2, Python, C++, and path planning. Skilled in robot perception, motion planning, and control systems with experience in CARLA, Gazebo, Open3D, and deep learning frameworks. Strong background in neural networks, autonomous navigation, and algorithm optimization for intelligent robotics applications.

## Education

### University of Maryland, College Park

Aug 2023 - May 2025

*Master of Engineering, Robotics*

- **Coursework:** Multi-Modal Models, AI and Deep Learning, Perception, Path Planning, Robot Modeling

### SRM Institute of Science and Technology

Aug 2019 - May 2023

*B.Tech., Mechatronics Engineering*

- **Coursework:** Applied Mechatronics, Fundamentals of Robotics, Automation and Intelligent Systems

## Technical Skills

- **Languages:** Python, C++, MATLAB
- **Libraries and Tools:** OpenCV, ROS, TensorFlow, PyTorch, Open3D, Git, Arduino, bash, ABB RobotStudio, CARLA, MoveIt, SolidWorks, Simulink, ControlDesk 2.0, GCS, Docker
- **Development Platforms:** Linux (Ubuntu), Embedded robotics, Gazebo

## Experience

### Precision Agriculture Lab

May 2024 - Feb 2025

*Research assistant -Deep learning*

*College Park, MD*

- Designed and trained LSTM neural networks to predict irrigation schedules for contrasting soil types, achieving prediction accuracy with an  $R^2$  of up to 0.998.
- Predicted irrigation prescriptions 1, 3, 6, 12, and 24 hours in advance using LSTM neural networks, enabling dynamic water management and achieving RMSE  $< 0.224$  mm.
- Interpolated raw data from soil matric potential sensors to ensure a complete and continuous dataset for predictive modeling.

### SRM Institute of Science and Technology

Mar 2022 - Feb 2023

*Research assistant - Control Systems and Modeling*

*Chennai, INDIA*

- Designed and optimized a PID controller for precise DC motor speed control, reducing response time by 14%. Executed real-time HIL simulations with dSPACE 1104 and MATLAB/Simulink, improving closed-loop performance.
- Implemented Simulink models with RTI libraries to interface BLDC motors and H-bridge drivers, validating performance through oscilloscope analysis.

## Projects

### Transformer based 3D Object Detection in LiDAR Point Clouds for Autonomous Vehicles

Oct 2024 - Nov 2024

- Engineered a custom transformer-based framework for 3D object detection in LiDAR point clouds, leveraging KITTI data to train models optimized for urban autonomous vehicle navigation.
- Integrated pretrained PointNet++ for feature embedding and developed a novel loss function, achieving enhanced detection accuracy and computational efficiency in cluttered urban environments.

### Fuzzy Adaptive RRT\*N Path Planning and Control on CARLA

Feb 2024 - May 2024

- Implemented and evaluated the Fuzzy Adaptive RRT\*N (FA-RRT\*N) algorithm for autonomous vehicles in the CARLA simulator, incorporating fuzzy logic to dynamically adjust sampling parameters based on obstacles.
- This adaptation led to an 84% reduction in computation time and 68% fewer nodes explored, demonstrating the algorithm's efficiency and potential for complex robotic navigation systems.

### Perception-Based Dynamic TurtleBot

Feb 2024 - Apr 2024

- Built ROS2-based Turtlebot navigation with YOLOv8 stop sign detection, optical flow, and horizon-line calibration for robust obstacle avoidance.
- Achieved 1st place via robust stop-sign detection, error-resilient navigation, leveraging horizon-line calibration for seamless indoor/outdoor operation.

## Publications

- Mapping of Deep Learning based Gesture Generation with Speech and Image Data to a Robotic Manipulator. *Published: 2024(Under Review) /INDERSCIENCE*