Mohammed Naveedh M

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Profile

Mechanical Engineering undergraduate at NIT Andhra Pradesh, graduating in 2027, with final-year coursework at IIT Madras through the Student Exchange Programme. Hands-on experience in autonomous systems, systems integration, simulation, closed-loop control, and experimental validation across real vehicles and robotic platforms. Experienced with ROS2, C/C++, Python, Linux, CAN, path tracking, sensor integration, human-in-the-loop control, and operator interfaces. Focused on systems engineering, autonomous vehicles, robotics, and intelligent embedded systems.

Technical Skills

Systems & Autonomous Systems: ROS2, Gazebo, Nav2, SLAM Toolbox, URDF/Xacro, Autonomous Navigation, Path Tracking, System Integration, Simulation & Validation
Control & Vehicle Integration: Closed-Loop Control, CAN Communication, Sensor Integration, Drive-by-Wire, Human-in-the-Loop Systems
Programming & Tools: C/C++, Python, Git, Linux (Ubuntu), Arduino
AI & Perception: Computer Vision, Sensor Fusion, Edge AI Concepts
Mechanical & Mechatronics: SolidWorks, FreeCAD, Mechanism Design, Finite Element Analysis, Manufacturing Process Awareness
Data & Analytics: SQL, Excel, Power BI

Experience

Research Intern, Autonomous Systems Lab May 2026 – Jul 2026
IIT Madras, Department of Engineering Design *Chennai, India*

- Developed and validated a controller-ready steering subsystem for an autonomous electric vehicle, implementing automatic steering calibration, steering ratio estimation, and closed-loop steering position control on a real EV testbed.
- Engineered a software-based steering calibration algorithm using current-spike detection and CAN feedback, eliminating additional steering sensors while enabling repeatable center referencing and fault handling.
- Implemented and evaluated Bezier trajectory generation with Pure Pursuit and Stanley path-tracking controllers in ROS2/Gazebo simulation for autonomous vehicle deployment.

Future Founders Intern (Team Lead) May 2026 – Jul 2026
OkCredit *Remote*

- Led a 3-member team during an 8-week nationwide internship program involving 756 teams to develop CART-EL, an AI-powered retail business assistant.
- Led product development through merchant discovery, problem validation, and live deployment at a supermarket managing 15,000+ SKUs; secured 1st Place nationwide and an INR 1,00,000 award.

EV Go-Kart Team, Formula Kart Design Challenge Season 9 2024 – 2025
NIT Andhra Pradesh, Team EV-il Syndicate *Kari Motor Speedway, Coimbatore*

- Owned technical and business documentation for a 14-member EV go-kart team, covering powertrain architecture, chassis FEA rationale, and cost-performance analysis.
- Contributed to AIR 4 in Design Presentation; team secured AIR 7 Overall (EV Category), AIR 5 in Endurance, and AIR 6 in Acceleration.

Projects

Autonomous EV Control & Human-in-the-Loop Systems | *IIT Madras, Autonomous Systems Lab* 2026 – Present

- Engineered the ROS2 Humble control architecture for a retrofitted autonomous EV, integrating RTK-GNSS path tracking, CAN-based vehicle communication, steering actuation, and a custom PyQt5 telemetry cockpit.
- Implemented the vehicle control stack using Pure Pursuit with a PID-based low-level steering controller, alongside a PI + feedforward throttle controller for trajectory tracking and longitudinal control.
- Integrated a novel human-in-the-loop takeover mechanism within the autonomous driving stack, enabling controlled transition between autonomous and human driving modes; validated the system on a physical test track at 5 km/h through controlled user studies evaluating driver response and system latency.

KnightAngle: Edge AI ADAS Calibration Platform | *Tata Technologies InnoVent-27* 2026 – Present

- Developing a software-defined ADAS camera calibration platform using vision-based pose estimation, homography correction, and dual-IMU sensing for robust geometric compensation.
- Built a field-representative windshield emulator/test rig for repeatable validation and prototype demonstration; currently among the Top 100 teams from 7,500+ project submissions, with further screening results awaited.

Autonomous Lunar Habitat Navigation Robot | *SIH 2025 Winner, Team Captain* 2025

- Led the team while independently owning the core robotics development for an autonomous mobile robot addressing ISRO's lunar habitat navigation problem statement.
- Implemented SLAM-based mapping and autonomous navigation using ROS2, Nav2, SLAM Toolbox, and Gazebo; built the robot's URDF/Xacro models, ROS2 bring-up pipelines, and navigation stack on custom lunar terrain.

LunarISRU: Autonomous Resource Utilisation Simulation | *VisionX 2026, 2nd Runner-Up* 2026

- Extended the lunar rover platform to simulate autonomous in-situ resource utilisation tasks using ROS2 and Gazebo, with mission-planning and task-execution logic for unstructured terrain.

Robotic Arm on Mobile Base | *Solo Project* 2025

- Designed and simulated a 2-DOF robotic arm integrated with a differential-drive mobile base using ROS2 and Gazebo; developed URDF/Xacro models and synchronized arm-base control pipelines.

Automated Cargo Intelligence System | *DP World Global Hackathon, Top 60 of 600+* 2025

- Developed a Gazebo-based harbour simulation with autonomous guided vehicles and conveyor systems; integrated ROS2 camera topics and RViz visualization for real-time cargo inspection and classification.

Education

National Institute of Technology Andhra Pradesh 2023 – 2027
B.Tech in Mechanical Engineering *CGPA: 8.55*

- Selected for the Student Exchange Programme at IIT Madras (2026–27), pursuing final-year coursework at the Department of Engineering Design.
- Relevant Coursework: Industrial Engineering, Production Process & Management, Kinematics of Machines, Engineering Thermodynamics, Fluid Mechanics, Data Analysis

Achievements

Smart India Hackathon 2025 (ISRO) – Winner of ISRO Problem Statement; Ranked 3rd among 55 ISRO finale teams (11 problem statements); Selected from 75,000+ submissions; Awarded INR 50,000
VisionX National Hackathon 2026 – Winner of SpaceTech Theme; 2nd Runner-Up as Team Captain among 250+ teams; Awarded INR 20,000
OKCredit Future Founders Internship 2026 – Led a 3-member team to secure 1st Place among 756 teams; Awarded INR 1,00,000
Tata Technologies InnoVent-27 – Currently among Top 100 teams from 7,500+ project submissions; further screening results awaited
DP World Global Hackathon 2025 – Led team to Top 60 among 600+ teams worldwide (Top 10%)
Institute Ignition Grant – Awarded INR 1,00,000 for autonomous robotics technical prototyping

Leadership & Extracurricular Activities

Joint Secretary, Innovation & Entrepreneurship Cell, NIT Andhra Pradesh (2023 – 2026)
TEDx NIT Andhra Pradesh, Curation Team (2024 – Present)
GDG, Event Planning Team (2024 – 2025)
Joint Secretary, Graphics Cafe (2024 – 2026)

Certifications

Theory of Industrial Robotics and Applications – NPTEL, Silver Elite Top 5%
ROS2 Navigation Stack with SLAM – Udemy
Data Analytics Certification – Udemy