Manas Reddy Arumalla

UG Fourth Year | Robotics Engineer

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EDUCATION

Amrita Vishwa Vidyapeetham, B.Tech Automation and Robotics **Coimbatore**
Major: Automation and Robotics: 2021 – 2025
Grade: 8.84/10.0 (First Class with Distinction)

Intermediate, Telangana Board of Education **Hyderabad**
Subject: MPC: 2019 – 2021
Marks: 962

Xth, Telangana Board of Education **Hyderabad**
Subject: MPC: 2018 – 2019
Grade: 9.2

SKILLS

Programming Languages: Python, MATLAB, C++
Tools and Software: Inventor/Fusion 360, Adams Simulation, Jupyter Notebook, Arduino, CoppeliaSim, Gazebo
Technical Proficiencies: ROS, Computer Vision, Control Systems, Machine Learning, Mobile Robotics, Industrial Automation
Embedded Systems Knowledge: Basic Embedded C, Microcontroller Programming
Operating Systems: Linux, Windows
Soft Skills: Teamwork, Communication, Adaptability

PROFESSIONAL EXPERIENCE

Anvi Robotics – Robotics Intern June 2024 – July 2024
- Developed a water-cleaning unmanned surface vehicle (USV)
- Selected components, designed, and conducted ROS simulations
- Built a robot with integrated image processing for trash detection and navigation using ROS

Sony SSUP Project – Robotics Intern October 2023 – December 2024
- Developed a mechanism for a 4-legged mobile robot for farm assistance and cattle health care
- Enhanced robotic system functionality by programming and integrating various sensors.
- Collaborated with team members on implementing advanced algorithms for robot's control.
- Provided support for troubleshooting hardware issues, ensuring minimal downtime during experiments.

7s Technologies – Robotics Intern March 2024 – April 2024
- Designed and developed an AR/VR motion simulation chair
- Optimized design, selected electrical components, and performed calculations for enhanced performance

My Equation – Technical Content Curator December 2023 – March 2024
- Curated content for AI/ML projects
- Created and managed technical content for AI/ML topics, gaining hands-on experience

PROJECTS

Two-Wheeled Hopping Robot (Control Systems, CAD modelling, , Teensey, Simscape, Raspberry Pi, ROS)
- Designed and developed a self-balancing hopping robot using novel techniques (DST-funded)
- Involved in all stages, from simulation to physical testing

AR/VR Motion Simulation Chair (CAD modelling, iterative design, Real-Time control systems)
- Developed a motion simulation chair with real-time control systems for VR/AR applications

Control Strategies for Two-Wheeled Inverted Pendulum (Dynamics, Control Systems, MATLAB, MuJoCo)
- Derived the dynamics of a two-wheeled inverted pendulum
- Implemented multiple control strategies in MATLAB, followed by testing in MuJoCo

Quadcopter Control (Dynamics, Control Systems, MATLAB)
- Developed a quadcopter simulation implementing advanced control strategies including PID, LQR, Backstepping, and MPC

Robotic Wrist Control Using Hand Tracking (OpenCV, MuJoCo)
• Built a real-time hand tracking system with OpenCV, replicating human hand motions on a robotic wrist

Self-Balancing Robot (Control Systems, Arduino)
• Built a robot capable of balancing itself, employing multiple control systems for enhanced stability

Drone Project (ESP Simulations, Control Systems, CAD Modeling, Flight Control Systems)
• Engineered a quadcopter with robust control systems, fine-tuning ESP simulations to ensure precise control

DC Motor Speed Control (Control Systems, PWM)
• Developed a PWM-based DC motor speed control system with feedback for high precision

Pharma Bot (Image Processing, Raspberrypi, Path planning algorithms, Control Systems, CoppeliaSim)
• Created a medicine delivery system using Raspberry Pi and path-planning strategies for autonomous delivery

Automated Industrial Color Sorting Bot (Arduino, ADAMS, Actuator Control)
• Designed and developed an Arduino-controlled industrial sorting bot for automation tasks

Optoelectronic Robo-Soccer Bot (Arduino, CAD modelling, Optoelectronics)
• Developed a soccer bot controlled via flashlight for a robotics competition

LEADERSHIP & VOLUNTEER EXPERIENCE

NSS Volunteer
• Participated in NSS camps, contributing to social initiatives and team events

Active Member of Robotics Club
• Leaded the projects team in various robotics projects
• Conducted and gave a talk in ROS workshop

CERTIFICATES
• **Internship at Anvi Robotics:** Link
• **Sony SSUP Internship:** Link
• **NSS Special Camp Volunteering:** Link
• **e-Yantra 22-23 Robotics Competition:** Link
• **Internship at My Equation:** Completion, [LOR](LOR)
• **Internship at 7s Technologies:** Link
• **ROBO-AI Industrial Training Program on Robotics Automation and AI:** Completion, Appreciation

ACHIEVEMENTS
• Awarded Level 3 in the **e-Yantra 22-23 Robotics Competition** by IIT Bombay for developing a pharma bot

PERSONAL DOSSIER

Languages
• English, Hindi, Telugu

Extracurriculars:
• Active member of robotics club
• Active member of **NSS** camps and events