ADARSH D

AI/ML UNDERGRADUATE — EMBODIED AI & ROBOTICS

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AI/ML undergraduate at PES University focused on embodied AI and robot learning. I build systems spanning deep learning, reinforcement learning, perception, planning and control — connecting learned models to ROS 2 and real robotic hardware to produce autonomous behavior.

SELECTED PROJECTS

Vision-Language-Action Pick & Place — SO-ARM100

Built a ROS 2 vision-language-action manipulation pipeline for language-conditioned pick-and-place, integrating OpenVLA/Octo, SAM 2, depth perception, IK and MoveIt 2 in a closed-loop observe → predict → execute architecture.

ROS 2 · OpenVLA · Octo · SAM 2 · MoveIt 2 · Gazebo · Diffusion Policy

Autonomous UGV — ROS 2 Autonomy & AI Platform

Built a ROS 2 autonomy platform for the Waveshare UGV Beast integrating LiDAR SLAM, Nav2 navigation, YOLO perception and behavior-based autonomy. Developed a distributed web control architecture across React/FastAPI, Raspberry Pi 5 and ESP32 with safety-gated robot control.

ROS 2 · Nav2 · Cartographer · YOLO · LiDAR · OAK-D · Raspberry Pi 5 · ESP32

Fusion2ROS — CAD ⟶ ROS 2 Automation Pipeline

Built a Fusion 360 → ROS 2 pipeline converting robot assemblies into URDF/Xacro, ros2_control, Gazebo, MoveIt 2 and Nav2 packages from a shared RobotModel, with automated validation and Windows↔WSL build/launch integration — generators exercised against real ROS 2 tooling.

Python · ROS 2 · Fusion 360 API · ros2_control · colcon · Gazebo

OPEN SOURCE

Robotics & Autonomy Contributions

Investigated and contributed fixes to open-source robotics projects across the ROS 2 ecosystem and ArduPilot/MAVProxy — diagnosing issues in nodes, navigation, simulation, build systems and hardware interfaces.

ROS 2 · ArduPilot · MAVProxy · C++ · Python

EXPERIENCE

Hackathon Organizer — Scrapyard, Hack Club

FEB — MAR 2025

Organized a global student hardware hackathon with an international team, coordinating participant onboarding, logistics and scheduling across 100+ locations.

COMPETITIONS & ACHIEVEMENTS

AIR 2 — **SAE Drone Development Challenge 2025**
National rank 2 / 400+ teams · high-payload fixed-wing aircraft

AIR 8 — **SAE Drone Development Challenge 2026**
Second consecutive national finalist placement

SKILLS

ROBOT LEARNING & AI
Reinforcement learning, imitation learning, embodied AI, world models, PyTorch, Transformers, computer vision, Hugging Face

ROBOTICS
ROS 2, MoveIt 2, Nav2, motion planning, inverse kinematics, SLAM, TF2, PID/PD control

PERCEPTION
OpenCV, RGB-D/depth cameras, 3D perception, object detection & tracking, camera calibration

PROGRAMMING & SYSTEMS
Python, C++, ROS 2, Linux, Git, Docker

SIMULATION
Gazebo, RViz, physics-based simulation, sim-to-real

EMBEDDED & HARDWARE
Raspberry Pi, ESP32, I^2C, SPI, UART, encoders, motor drivers

UAV
PX4, ArduPilot, MAVLink, Betaflight

CAD & FABRICATION
Fusion 360, KiCad, EasyEDA, Onshape, 3D printing

EDUCATION

PES University, Bengaluru

B.Tech — Artificial Intelligence & Machine Learning
2024 — 2028

Class XII — 92% · Class X SSLC — 98.3%

CERTIFICATIONS

Machine Learning Specialization — Stanford Online · Mar 2025

OS Fundamentals & Linux — PESU I/O · Nov 2024