

Sanidhya Jain

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Robotics & Physical AI · ROS 2 · Robot Learning · Embedded Systems

EDUCATION

Maharaja Agrasen Institute of Technology, New Delhi

2023 – 2027

B.Tech, Electronics & Communication Engineering · CGPA: 7.9

DL DAV Model School, Pitampura, New Delhi

2020 – 2023

Senior Secondary (XII-CBSE): 92% · High School (X-CBSE): 88.6%

EXPERIENCE

Software Developer & Physical AI Intern — Unbox Industry

June 2026 – Sep 2026

- Teleoperated an Elite CS66 manipulator to collect human-demonstration datasets for training the $\pi 0$ vision-language-action (VLA) model; built the full pipeline from teleop control to training-ready data.
- Designed and shipped an end-to-end VR teleoperation platform for bimanual robot manipulation (Meta Quest 3 → 2× Elite CS66 6-DoF arms) in real-time C++ control loop at 125 Hz, custom kinematics and rotation handling, integrated DH and Robotiq grippers.
- Built and ran a ROS 2/Python data-collection and QC pipeline for an industrial Pika Sense UMI rig such as live multi-sensor monitoring, episode recording, automated validation, and export to MCAP, LeRobot, and HDF5.
- Delivered 100+ validated demonstration episodes, URDF robot model, camera/gripper calibration to an external client against a strict specification, including a full compliance audit.

Research Intern — SSPL, DRDO

June 2025 – July 2025

- Hands-on GaN HEMT fabrication: MOCVD, photolithography, PECVD, and metal deposition processes.
- Conducted device simulations and data analysis such as 2DEG formation, I-V characteristics, and performance parameters.

Core Member & Team Lead — A.T.O.M Robotics Lab, MAIT

Oct 2023 – Present

- Led robotics society projects and mentored peers in embedded systems, ROS, and autonomous systems development.
- Competed in hackathons such as Vihaan 007, Cognizance'24, DuHacks, CodeClash, and BVP-HEX hackathons.

PROJECTS

Autonomous Mobile Robot (AMR) — ROS 2 · Nav2 · Mecanum Wheels · Gazebo · SLAM

Jan 2025 – Present

- Designed and built a full mecanum-wheel AMR from scratch.
- Derived inverse kinematics for a holonomic mecanum drive, enabling omnidirectional motion with precise per-wheel velocity decomposition.
- Developed a custom odometry pipeline for accurate real-time pose estimation using wheel encoder feedback.
- Built a complete Gazebo simulation (URDF/XACRO, sensor plugins) to test and validate the full Nav2 stack before hardware deployment.
- Integrated Nav2 end-to-end: SLAM-based mapping, AMCL localization, costmap tuning, path planning, and TF2 transform tree.

e-Yantra Robotics Competition — ROS 2 · Swarm Intelligence · ArUco · PID

Aug 2025 – Feb 2026

- Semi-Finalist in a 6-month national-level robotics competition, building a ROS 2 multi-bot warehouse automation system.
- Developed FSM-driven coordination with custom message/topic architecture for safe, scalable inter-bot communication and collision avoidance.
- Implemented ArUco marker-based visual localization (OpenCV) and PID + holonomic kinematics for precise multi-robot navigation.

Keyless Guardian 2.0: RFID Security System — ESP32 · Firebase · KiCAD · Next.js

March 2025 – Jun 2025

- Built a production-grade RFID access system with Admin mode, OLED display, and ESP32 (C++) parallel card scanning with Firebase auto-sync.
- Integrated Discord API alerts; added a DIY BMS as a backup power system.
- Redesigned PCB (KiCAD) and enclosure (Fusion360); helped in building a Next.js dashboard with Clerk auth for secure remote monitoring.

SKILLS

Languages

Python · C · C++ · HTML · CSS

Robotics & Robot Learning

ROS 2 · Nav2 · SLAM · Gazebo · RViz · Teleoperation · Imitation Learning · VLA Models · Hugging Face
LeRobot · MCAP · HDF5 · URDF

Control & Navigation

Real-Time Control · PID Control · Mecanum / Holonomic Kinematics · Odometry · TF2 · ArUco Markers

Vision & Sensing

Computer Vision · OpenCV · Intel RealSense · RGB-D Sensing · Camera Calibration · Multi-Sensor Fusion

Embedded & Hardware

ESP32 · Arduino · KiCAD (PCB Design) · Fusion360 · Fine Soldering · Hardware Integration

Tools & Cloud

Git · Linux · Firebase · Testing & Debugging