Deepak R

Chennai, TN | +91 63696 14424 | deepak121289@outlook.com
github.com/Arkz-Deepak | linkedin.com/in/robotics-deepak | deepak-arkz.me | ORCID: 0009-0000-2500-9093

Professional Summary

Dedicated B.E. Robotics and Automation undergraduate student (CGPA: 9.2/10.0) with practical experience across ROS 2 (Jazzy), Embodied AI (VGA Policy / LeRobot), Autonomous Navigation (Nav2, SLAM), Computer Vision, and Embedded RTOS Systems. Demonstrated capabilities across multi-sensor fusion, edge AI deployment, and industrial robotics through internships, hackathons, open-source contributions, and peer-reviewed preprint research.

Education

Dhaanish Ahmed College of Engineering (**Anna University**) **Chennai, India**
Bachelor of Engineering (B.E.) in Robotics and Automation – CGPA: 9.2/10.0 *May 2024 – May 2028*

- **Relevant Coursework:** Industrial Robotics, Autonomous Mobile Robots, Control Systems, Digital Circuits, Machine Learning, Embedded Systems, ROS 2 Navigation, Kinematics & Dynamics, Computer Integrated Manufacturing.

Work Experience

Wildplant Terrestrial Solutions Pvt Ltd – *Web Development Intern (Under NDA)* **Remote | Jul 2026 – Aug 2026**

- Architected full-stack platforms and secure RESTful backend APIs in Python/Node.js for proprietary internal systems under NDA.
- Optimized client-side data flows and integrated real-time telemetry streaming for internal developer dashboards.

Precise3DM – *Automation & Data Engineering Intern* **Chennai, India (Hybrid) | Jun 2026 – Jul 2026**

- Developed automated ETL data processing pipelines and web scrapers integrating REST API services, eliminating manual ingestion.
- Built structured validation logic and automated logging routines to ensure high pipeline reliability and data integrity.

Tamizhan Skills (RISE Programs) – *AI & Autonomous Systems Intern* **Remote | Dec 2025 – Mar 2026**

- Configured ROS 2 Nav2 navigation stacks, costmaps, and multi-sensor fusion (LiDAR, IMU, Odometry) in Gazebo simulations.
- Trained CNN models in TensorFlow/Keras for image classification and engineered NLP text anomaly detection classifiers.

Chennai Port Authority – *Industrial Engineering Intern* **Chennai, India | Dec 2025**

- Diagnosed and serviced diesel locomotive powertrains; analyzed PLC-driven port logistics and automation systems.

Publications

"Sensor-Fusion Driven Deep RL for Dynamic Traffic Signal Optimization" **doi.org/10.5281/zenodo.20265628**
Zenodo Preprint *Aug 2026*

- Formulated decentralized traffic management combining CV telemetry with multi-agent reinforcement learning (MARL).
- Authored AutoTwin-AI Sim-to-Real Digital Twin research for defect inspection (<42 ms inference); active on AURA.

Projects

VGA Policy: Vision-Geometry-Action Robotic Manipulation – *PyTorch, LeRobot, MuJoCo* **Oct 2026**

- Developed ≤0.5B (298M) embodied manipulation policy operating at **154–215 Hz** with 89.1% jerk reduction; verified autonomous pick-and-place at Step 118 in MuJoCo physics on LIBERO-Spatial; collaborating with DTU researchers.

NeuroCode: Heterogeneous Code-Graph Slicing Framework – *Python, MCP, Tree-sitter* **Nov 2026**

- Published **neurocode-ai** on PyPI with Model Context Protocol (MCP) server for local LLMs; resolved SWE-bench Lite on 4GB VRAM laptop GPUs (961MB peak) with 0 OOMs, and achieved 100% recall on RepoBench-R (-42.6% tokens).

Orbital ADR: Autonomous Space Debris Cleaner – *ROS 2, Jetson Nano, STM32, Fusion 360* **Sep 2026**

- Smart India Hackathon 2026 (PS SIH26226) space tech platform; combined SpaceYOLO pose estimation with STM32 cold-gas thruster firings and electroadhesive capture plate for non-cooperative orbital debris capture.

Project TARA: Embodied Multimodal Assistive Robot – *ROS 2 Jazzy, Nav2, SLAM, Edge LLM* **Oct 2026**

- Architected a modular quad-subsystem assistive robot decoupling autonomous Nav2 mobility, on-device multimodal LLM spatial reasoning, real-time motor actuation, and an interactive touch telemetry display HUD.

Technical Skills

- **Languages:** Python, C++, C, SQL, Rust, Bash, JavaScript, HTML/CSS.
- **Robotics & Simulation:** ROS 2 (Jazzy), Gazebo Harmonic, Nav2 Stack, SLAM Toolbox, MoveIt 2, MuJoCo Physics, LeRobot, ABB RobotStudio & RAPID, URDF/Xacro, Path Planning (RRT/PRM/A*), Coverage Planning (BCD).
- **AI, CV & Web:** PyTorch, Diffusion Transformers (DiT), Flow Matching, Model Context Protocol (MCP), OpenCV, YOLO (v8/v11), MediaPipe, TensorFlow, Scikit-learn, FastAPI, Node.js, Next.js.
- **Embedded Systems & Tools:** STM32, Raspberry Pi 4, ESP32, ESP8266, Arduino, Linux (Ubuntu 24.04/WSL2), Docker, Git, Fusion 360, LaTeX, Hugging Face (@Arkz121), OpenReview (~Deepak_R2).