Kartikey Pathak

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Education

Veermata Jijabai Technological Institute (VJTI) — Mumbai, India
Third Year B.Tech in Electrical Engineering, Minor in Robotics (CGPA 8.04) — *2023 – 2027*

Matoshree Prabodhini Jr. College — Maharashtra, India
HSC, Maharashtra State Board (MHTCET: 99.14%) — *2023*

Experience

NishCorp Technologies — May 2025 – Nov 2025
Robotics Control Systems Engineer Intern — *Hybrid*

- Developed Gazebo simulation for the robotic wheelchair platform to analyze motion and steering behaviour
- Applied kinematic models for differential drive control, added IMU Plugin in Simulation
- Contributed to building the half-scale hardware prototype through integration, testing, and field evaluations

Krishna Defence and Allied Industries Limited — May 2025 – July 2025
Research Intern for Defence Technology — *IIT Gandhinagar*

- Implemented SLAM and NAV2 for autonomous forklift navigation in warehouse environments
- Integrating Ultra-Wideband (UWB) technology for centimeter-level precision in indoor positioning where GPS is unreliable
- Reduced error to 0.4% across 10,000 sq meter operational area.

Projects

eYantra Warehouse Drone Competition | *ROS2, PID, Computer Vision* — October 2024 – January 2025

- Developed advanced PID control algorithms for a drone to achieve stable hovering and precise movement in a simulated warehouse environment
- Implemented computer vision techniques to detect and decode ArUco markers, enabling autonomous localization and navigation

Voice Video Manipulator | *ROS2, Gazebo, RViz* — June 2024 – July 2024

- Programmed forward and inverse kinematics for an Open Manipulator X robot arm to perform precise pick-and-place operations
- Successfully implemented object detection and tracking algorithms to locate target objects in the Gazebo simulation environment

MARIO - 3DOF Manipulator | *ROS2, Gazebo Fortress, micro-ROS* — July 2024 – August 2024

- Migrated simulation from deprecated Gazebo Classic to modern Gazebo Fortress
- Implemented new teleop control system for improved ease-of-use
- Enhanced ESP32 and micro-ROS based hardware communication pipeline
- Optimized for educational use during ROS2 workshops at VJTI conducted by SRA

Positions of Responsibility

Society of Robotics and Automation (SRA) — August 2024 – March 2025
Active Member — *VJTI, Mumbai*

- Conducted technical workshops for students on embedded C programming and ESP32 microcontroller applications
- Mentored junior teams in developing self-balancing and line-following robots, sharing expertise on hardware design and software implementation
- Taught advanced concepts including MPU6050 sensor integration and complementary filter algorithms for accurate orientation estimation

Technical Skills

Programming Languages: C, C++, Python
Software: ROS2, Gazebo, RViz, KiCAD, ESP-IDF
Hardware: ESP32, Raspberry Pi, Motor Controllers, Sensors
Specialties: Robot Kinematics, Embedded Systems, PID Control, Sensor Fusion