Mohammed Azif

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Education

APJ Abdul Kalam Technological University *Sept 2020 - May 2024*
B.tech in Mechatronics Engineering

- CGPA: 7.0 (First Class)
- **Coursework:** Robotics and Automation, Robot Kinematics and Dynamics, ROS2 and Robot Programming, MoveIt 2, Mobile Robotics and Navigation, Control Systems, Computer Vision, C++ and Python Programming, Embedded Systems, Sensor Integration

Experience

Robotics Engineer Intern *Hyderabad, Telengana*
Alphadroid *Jan 2025 - July 2025*

- Worked as part of a 2-member software team to build a robotic dishwashing system using the Doosan M1013 robot.
- Developed the full software stack using ROS 2 Humble, including motion control, pick-and-place pipeline, and system logic.
- Created a custom GUI tool with features like jogging, pose saving, suction control, program execution, and real-time monitoring.
- Enabled analog output control for external devices, reducing manual work and improving reliability.
- Built and tested a pick-and-place routine with over 95% success rate in both simulation and real robot trials.
- Wrote and maintained more than 10 ROS 2 service files and launch files for modular development.
- Integrated MoveIt 2 with a 6-DOF robotic arm for motion planning, collision avoidance, and trajectory execution in ROS 2.
- Collaborated with mechanical and embedded teams to integrate software with the full system.
- Improved development and debugging speed by automating tests and adding clear logs in the GUI.

Robotics Engineer Intern *Kochi, Kerala*
Thundroids LLB *July 2024 - Dec 2024*

- One of three core team members at a robotics startup focused on developing educational and showcase-ready mobile robot platforms.
- Co-developed a custom mobile robot equipped with:
  - Autonomous docking functionality
  - Lightweight onboard computing
  - Basic computer vision capabilities for navigation and interaction
- Designed the system primarily for educational and demo purposes, targeting schools, colleges, and tech exhibitions.
- Contributed to hardware integration, ROS-based navigation stack setup, and system testing.
- Exhibited the robot and represented the team at ROSCon 2024 in Bengaluru, engaging with the ROS community and showcasing the product to industry professionals and enthusiasts.

Projects

Smart Wheelchair (ROS-Based Miniature Model)

- Designed and implemented a miniature smart wheelchair using ROS (Robot Operating System).
- Integrated destination mapping and real-time obstacle avoidance within a range of 0.5m to 7m.
- Used Raspberry Pi for processing and a LiDAR sensor for navigation.Focused on autonomy, path planning, and safe maneuvering in indoor environments.
- Tools Used: ROS, Raspberry Pi, LiDAR

Dynamic Wireless Power Transfer on Solar Roadways (Simulation Project)

- Developed a simulation of a wireless power transfer system powered by solar roadways.
- Originated the idea from school and evolved it into a working academic simulation.
- Simulated storage and wireless energy transfer to electric vehicles on the move.
- Focused on energy efficiency, sustainability, and real-time transfer modeling.
- Tools Used: MATLAB/Simulink

Technologies

Languages: Python, C++, C, Shell Script

Technologies: ROS 2 (Humble), ROS 1, Python, C++, Gazebo, RViz, URDF, OpenCV, MATLAB/Simulink, Docker, Git, Linux, Qt (for GUI), VS Code, RViz Plugins