Edwin George

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Summary

Robotics Engineer specializing in ROS2-based autonomous mobile robot development. Experienced in navigation, SLAM, and motion planning. Passionate about building robust robotic systems that deliver real-world automation.

Education

APJ Abdul Kalam Technological University - College of Engineering Trivandrum
M.Tech in Robotics and Automation Engineering
- CGPA: 8.23/10.0

APJ Abdul Kalam Technological University - Sahrdaya College of Engineering and Technology
B.Tech in Electrical and Electronics Engineering
- CGPA: 7.53/10.0

Skills

Python, ROS, ROS2, SLAM, MoveIt2, Fusion 360, Git, RViz, Gazebo,Linux, Micro-ROS, Arduino,

Experience

Robotics Engineer Intern, Alphadroid – Hyderabad, Telangana, India   Feb 2025 – July 31

- Developed and trained deep learning models for pose estimation, object detection, classification, and segmentation, enabling advanced perception and interaction capabilities for robotic applications.
- Optimized computer vision pipelines for real-time inference and integrated them with robotic control systems to support autonomous decision-making.
- Designed and implemented a high-performance backend system for controlling and monitoring the Doosan robotic arm using its SDK and APIs.
- Integrated backend services to facilitate seamless communication between the user interface and the Doosan robotic arm controller.
- Developed and optimized RESTful API endpoints to enable real-time command execution and status feedback from the robot.
- Built a scalable and modular backend architecture to support future integration with external systems and robotic components.

Robotics Engineer Intern, UST – Trivandrum, Kerala, India   Jan 2024 – April 2024

- Contributed to the development of a mecanum wheel autonomous mobile robot using ROS2
- Conducted hardware testing to ensure seamless performance and reliability
- Assembled hardware components and integrated them with the software system
- Implemented sensor fusion for localization and obstacle avoidance using LiDAR and IMU
- Developed and optimized ROS2 navigation stack parameters for smooth path planning
- Collaborated with a cross-functional team to debug, validate, and document system performance

Robotics Engineer Intern, Asimov Robotics – Ernakulam, Kerala India   May 2023 – June 2023

- Developed an auto-docking system for mobile robots using ROS1
- Designed a docking mechanism that uses an infrared emitter and receiver for precise alignment and efficient charging
- Complete tests were performed under various conditions to ensure consistent and reliable performance
- Integrated safety protocols to prevent misalignment and hardware damage during docking
- Optimized docking algorithms to reduce alignment time and improve overall charging efficiency
- Documented the design and testing process to support scalability and future ROS2 migration

Projects

Mobile Robot Simulation Using ROS2   Github

- Designed and developed a ROS2-based mobile robot simulation in Gazebo for autonomous navigation.
- Implemented SLAM Toolbox for real-time mapping and localization.
- Configured the Nav2 stack for global planning, obstacle avoidance, and recovery behaviors.
- Tuned launch files and system parameters to enhance navigation performance in dynamic environments.
- Tools Used: ROS2, Gazebo, Nav2, SLAM Toolbox, RViz

Service Robot for Hospitals

- Developed a hospital mobile robot with an authentication system for enhanced security.
- Implemented camera-based person detection and text-to-speech (TTS) system for seamless communication.
- Designed and tested autonomous navigation using ROS1, incorporating computer vision and obstacle avoidance.
- Tools Used: ROS, Python, Gazebo, Rviz

Weed Cleaning Machine

- Designed and developed a weed cleaning machine to remove aquatic plants from water surfaces.
- Implemented wireless remote control using HT12E encoder and HT12D decoder with RF modules.
- Focused on mechanical design, buoyancy, and effective collection of floating vegetation.
- Conducted testing and iterative improvements for efficient weed removal and environmental impact.
- Tools Used: SolidWorks, HT12E/HT12D, RF Module, DC Motors, Metal Fabrication

Lightweight Image-to-3D Gazebo Pipeline   Github

- Developed an extensible Blender-based pipeline to map arbitrary 2D images onto 3D primitives such as boxes (with planned support for cylinders and custom meshes).
- Automated the generation of complete Gazebo-compatible models, including SDF files, material definitions, and texture mapping.
- Designed modular architecture to easily extend support for additional primitive types and texture-wrapping techniques.
- Streamlined the workflow for rapid creation of realistic simulation assets for robotics applications.
- Tools Used: Blender Python API, Gazebo (SDF), Python, Open3D, NumPy

References

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