Aravind Sairam

MSc Robotics | ROS & Python |2+ year of work ex | Robotics Software Engineer
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PROFESSIONAL SUMMARY

Robotics Engineer with deep expertise in SLAM, robot navigation, and computer vision, built on a Master's in Robotics from the University of Bristol and 3+ years of hands-on development. Demonstrated success in real-world and simulated environments through projects such as a Dual-Robotic SLAM-based Search and Rescue system. Skilled in ROS, mapping & localization, visual detection, and robotic system integration. Proven ability to solve complex spatial problems and implement robust autonomous navigation pipelines using SLAM.

RELEVANT SKILLS

- **Functional Competencies:** SLAM Implementation | Robot Navigation & Localisation | Robotics Software Development | Perception Integration | Problem Solving | Team Collaboration | Innovation and Roadmap Support | Simulation in ROS & Gazebo | Documentation | Communication in Distributed Teams | Embedded Programming

- **Technical Tools:** SLAM (Visual, Graph-based) | ROS | Python | C | OpenCV | Ultralytics | RViz | Gazebo | Pandas | Matplotlib | Scikit-Learn | GIT

WORK EXPERIENCE

Robotic Software Developer, KitCounter AI, UK (Proof of Concept) *2023 – 2024*

- Developed real-time object detection pipelines using YOLOv7 integrated with Intel RealSense Depth Cameras, critical for visual SLAM and semantic mapping.
- Created custom datasets and tested perception systems in varied environments, ensuring robust detection essential for map consistency.
- Contributed to sensor fusion and perception stack foundational to SLAM-based object recognition and scene understanding.

Systems Engineer, General Electric - TCS *2021-2022*

- Monitored and managed cloud-based trip data for 568 wind turbines globally, enhancing uptime and operational efficiency.
- Implemented over-the-horizon communication protocols to ensure 99% data availability for real-time turbine monitoring.
- Integrated PLC and industrial controllers in wind farm operations, leading to an 8% reduction in turbine downtime.
- Deployed software updates across multiple sites using Git and Agile methodologies, achieving a 15% improvement in process efficiency.
- Collaborated with cross-functional teams within an Agile framework, participating in daily scrums and sprint reviews to analyse trip data and implement optimisations for power generation.

Graduate Engineer Trainee (GET), Newtech Industries *2020 – 2021*

- Completed a comprehensive training program in automotive component manufacturing, gaining hands-on experience in CNC machining, VMC operations, and quality control processes.
- Collaborated with the engineering team to interpret technical drawings and ensure adherence to design specifications during the manufacturing process.
- Participated in the implementation of 5S and Kaizen methodologies on the shop floor, contributing to improved operational efficiency and workplace organization.

- Engaged in quality assurance activities, including the use of inspection tools and techniques to verify component accuracy and compliance with industry standards.
- Supported cross-functional teams in troubleshooting manufacturing issues, leading to reduced downtime and enhanced product quality.

PROJECTS

Dual-Robotic System for Autonomous Search and Rescue in Simulated Office Environment |(2023)
Skills: ROS, Gazebo, Robotic Systems, SLAM, Mapping & Localisation, Path Planning, Computer Vision & Machine Vision, OpenCV, Robot Navigation

- Engineered a dual-robot system for autonomous indoor navigation using SLAM-based mapping and localization.
- Evaluated and benchmarked multiple SLAM and mapless navigation algorithms; improved accuracy by 10%.
- Simulated rescue missions using 20 TurtleBots, integrating Darknet (YOLO) for human detection.
- Achieved a rescue success rate of 78% in complex simulated environments, using coordinated SLAM maps and navigation plans.

Brake Pad Wear Warning System using IoT | (2020)
Skills: Mechanical Engineering, Internet of Things (IoT), Computer-Aided Design (CAD), Manufacturing Engineering, C (Programming Language)

- Engineered an IoT-based brake pad wear warning system, enhancing safety protocols for heavy vehicles.
- Tested IoT-based system functionality under varied conditions, optimising sensor accuracy and data reliability.
- Gained proficiency in Arduino and GSM Module integration for real-time sensor data transmission and visualisation on the Thingspeak IoT Server.

Disabled-Friendly Four-Wheeled E-Vehicle | (2019)
Skills: Python Programming, Design & Prototyping, 3D Printing & Modelling, Drives & Sensors, OpenCV, Machine Vision

- Designed and prototyped an inclusive vehicle catering to individuals using wheelchairs, focusing on ergonomic design and accessibility.
- Implemented ultrasonic sensors and DC motors for controlled navigation and obstacle avoidance.
- Programmed vehicle operations using Python and MATLAB, utilising Raspberry Pi for processing tasks.

Education

University of Bristol, UK 2022 – 2023
Masters in Robotics

Rajalakshmi Engineering College, Chennai, India 2016 – 2020
Bachelor in Mechatronics Engineering