Mathan Prasanna Kumar S

9159677553 | mathanprasannakumar44@gmail.com | mathanprasanna.com | github.com/mathan

Experience

AI Engineer, Doozy Robotics Nov 2025 - Jan 2026

- Developed and integrated 6D pose estimation pipeline for novel objects using RGB-D data, enabling semi-humanoid to perform pick and place tasks within the ROS perception stack
- Designed Behavior Tree based task control to coordinate perception, navigation and manipulation for autonomous humanoid operation

Software Developer (Vision Systems), RobotoAI Technologies Jan 2024 – Nov 2025

- Led and developed a real-time production monitoring system to track products on a conveyor line using YOLO and ByteTrack for detection and tracking, OCR for label extraction, SQLite for data logging, and collaborated with the backend team for live dashboard integration
- Integrated visual odometry and IMU from a stereo camera into the navigation stack to enhance localization and navigation of an autonomous mobile robot, and developed multithreaded ROS2 nodes for efficient communication between hardware components
- Collaborated with the navigation team to enable vision-based obstacle avoidance to enhance navigation robustness and safety
- Developed an autonomous docking system using ArUco markers by estimating pose with OpenCV, transforming coordinates to ROS frames, and integrating with the Nav2 docking server for precise alignment
- Implemented a person following feature where optimized detection models using TensorRT for low-latency inference, and developed a motion controller for smooth and responsive movement
- Developed a pressure-based altitude measurement system on MSP430, handling SPI and UART communication, real-time data acquisition, filtering raw data to compute accurate altitude
- Led the development of Voice Assistant for AMR using AI agents, enabling the robot to understand and execute spoken instructions

Software Developer Intern, RobotoAI Technologies Sep 2023 – Dec 2023

- Researched and developed a BLE based localization system for improving the global localization in dynamic environments. Handled data transmission from beacons to gateway through MQTT protocol, analyzed and applied low low-pass filter to the raw RSSI data, and developed a triangulation algorithm to find the gateway position
- Implemented a peer-to-peer video streaming application by using the Gstreamer WebRTC plugin, enabling the user to teleoperate the robot at remote locations

Skills

Languages: C, C++, Python, Javascript, SQL
Frameworks: Pytorch, OpenCV, ROS2, TensorRT, LangGraph
Tools: Docker, Git, CMake

Projects

T5_Torch mathanprasannakumar/T5_Torch

- Implemented the T5 transformer architecture from scratch in PyTorch to deepen the understanding of attention mechanisms and the encoder-decoder structure, integrated training, inference, and dataloader pipelines.

Local_RAG mathanprasannakumar/Local_RAG

- Built a Streamlit application that enables users to upload a PDF and ask context-based questions. Used LangChain to process and chunk documents, generate embeddings, and store them in a Chroma vector database, and augmented the query with top-matched chunks to provide grounded responses via an LLM

Education

Bachelor of Engineering in Civil Engineering April 2022
Government College of Engineering, Salem, TN