Aravind Sairam Subburam

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SUMMARY

Robotics & AI Engineer with 5+ years building real-time autonomy and perception for ground and aerial robots. Experienced across ROS 2, PX4/MAVSDK, SLAM/VIO, simulation (Isaac Sim/Gazebo), and ML-based perception (PyTorch/TensorFlow). Passionate about continuously learning and experimenting with new tools and methods, with a track record of rapid prototyping, cross-team integration, and shipping robust systems from simulation to embedded deployment.

SKILLS

Programming Languages: Python, C++

ML/DL Packages: TensorFlow, PyTorch, OpenCV, scikit-Learn, NumPy, Hugging Face, LangChain, LangGraph.

Robotics: Robotic Operating Systems (ROS1, ROS2), PX4 autopilot, MAVSDK, Point Cloud Library (PCL), Nav2, NVIDIA Isaac Sim, NVIDIA Isaac GEMs, Gazebo.

Data/ETL: PostgreSQL, MySQL, MongoDB, Pandas.

DevOps: Git, Docker, GitHub Actions, AWS (EC2, S3, Lambda, SageMaker).

EXPERIENCE

Senior Robotics Software Engineer

LucidBots Inc April 2024 – Present, Remote

- Built and configured a custom four-wheel omnidirectional robot in NVIDIA Isaac Sim by importing CAD models from Onshape and using ROS 2 Action Graphs, then deployed a scalable simulation/regression test stack on AWS EC2 to run automated scenarios, enabling faster iteration, repeatable pre-field validation, and reduced manual verification.
- Integrated and tuned NVIDIA Isaac ROS GEMs (e.g., Visual SLAM, Map Localization) for visual-inertial odometry with stereo cameras and global localization with 2D LiDAR which improved localization robustness and runtime suitability for embedded deployment.
- Developed a natural-language robot control interface using LangChain/LangGraph with ROS 2 and OpenAI APIs, integrating GroundingDINO + GroundingSAM for zero-shot detection/segmentation which is more intuitive in human-in-the-loop tasking and perception-driven actions.
- Designed row/column cleaning maneuvers for an automated cleaning drone using C++/ROS 2 with custom PX4 modes and built a coverage-cleaning planner for pressure-washing ground robots and integrated it with Nav2.
- Designed a robust mission state machine using BehaviorTrees.CPP, adding lifecycle node management and ROS 2 diagnostics for fault detection and recovery which improved system resilience across multi-mode operations.

Software Developer

Verenia June 2023 – April 2024, Remote

- Developed control software for multicopter drones and differential-drive rovers using Python, ROS, PX4, and MAVSDK, improving reliability of command/control and autonomous mission execution.
- Partnered with hardware teams to configure, flash, and test custom PX4 firmware tuned to aerial and ground vehicle dynamics, reducing integration issues and stabilizing real-world behavior.
- Implemented GPS-denied indoor navigation using Visual-Inertial Odometry (VIO) and depth sensing to deliver robust localization and mapping in complex indoor environments.
- Built a Gazebo simulation environment to validate control and navigation behaviors before field deployment, catching issues earlier and improving field readiness.

Robotic Software Developer
United Robots July 2020 – May 2023, Warsaw, Poland

- Built a ROS-based robot diagnostics application in C++ to monitor system health, telemetry, and performance across platforms, improving observability and speeding up issue triage.
- Implemented real-time point-cloud filtering/outlier removal for LiDAR and depth-camera streams using PCL, ROS, C++, and Python, improving perception stability by reducing noisy artifacts.
- Developed intrinsic/extrinsic sensor calibration tooling for RGB cameras, LiDAR, and ToF sensors using OpenCV (C++/Python) with RANSAC and ICP, improving sensor alignment and downstream fusion accuracy.
- Prototyped perception and localization pipelines, 2D footprint estimation on ROS costmaps using partial point clouds and U-Net–style CNNs, human instance segmentation using YOLOv7 with mask projection into 3D point clouds, and 6D docking-target pose estimation using particle filtering, enabling rapid evaluation of docking and navigation concepts.

Python Developer
Avantari Medical Technologies Pvt Ltd February 2018 – September 2018, Hyderabad, India

- Built a preprocessing pipeline for a synthetic media detection system using OpenCV and TensorFlow, improving data quality and reducing friction in training and inference for fully convolutional models.
- Conducted EDA on multimedia datasets using Python, Pandas, and Matplotlib to identify patterns and clean data, improving dataset reliability and model iteration efficiency.

EDUCATION

Master of Science in Computer Science 2021
Warsaw University of Technology • Warsaw, Poland

Bachelor of Engineering in Electronics and Communication 2017
Anna University • Chennai, India

PROJECTS

FPV Drone Build

- Built a custom 5-inch FPV drone with ExpressLRS control link and Walksnail digital video system.
- Assembled and tuned multiple FPV builds (ESC/motor selection, PID tuning, RF/video integration), improving flight stability and reliability.
- Earned EU A1/A3 Remote Pilot Certificate; experienced in cinematic and freestyle flight.

RAG based chatbot for Salon September 2023 – November 2023
Willeder Inc.

- Developed a RAG-based chatbot using OpenAI LLMs, LangChain, and FAISS to answer customer queries from salon-specific knowledge.
- Collected, cleaned, and curated domain data into structured knowledge chunks for embedding and retrieval, improving response relevance and consistency.
- Implemented conversation memory strategies (session history + summarization/compaction) to support longer multi-turn interactions without context loss.

Summer Intern July 2019 – September 2019
BabbleLabs, Inc. (part of Cisco Systems)

- Designed and trained a U-Net–based speech denoising model using PyTorch, including data preprocessing and training pipelines.
- Evaluated multiple architectures using objective speech-quality metrics such as SSNR and PESQ, and compared performance across datasets/conditions.

CERTIFICATIONS

TensorFlow Developer Specialization 2022
DeepLearning.AI

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DeepLearning.AI