Malladi Naga Subhash

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Education

MSc in Computer and Embedded Systems Engineering — Sept 2023 – June 2025
Delft University of Technology — Delft, Netherlands
CGPA (2-year program): 7.5/10

B.E. in Electronics and Communication Engineering — Aug 2018 – Aug 2022
Sir M Visvesvaraya Institute of Technology — Bangalore, India
CGPA (4-year program): 9.3/10

Experience

IMEC — Eindhoven, Netherlands
Graduate Research Student — Sep 2024 – July 2025

- Analyzed state-of-the-art mapping tools (Timeloop, ZigZag) and identified their limitations in modeling event-driven accelerator architectures.
- Designed and developed AeDAM, a framework for design space and mapping exploration of AI workloads on event-driven architectures.
- Built analytical models to estimate energy, latency, and area for dense neural networks, and validated them through a case study on the SENECA neuromorphic architecture.
- Achieved up to 2.5× faster exploration and up to 52% latency improvement over ZigZag, establishing AeDAM as an effective framework for event-driven accelerator optimization.

UVASKA — Bangalore, India
Robotics Software Engineer — Aug 2022 – Aug 2023

- Led the development of the software stack for a custom 7-axis and 6-axis gantry-style articulated robot, including motion control, hardware interface integration, and system testing.
- Implemented kinematics and motion planning algorithms in C++ and Python, improving control precision.
- Evaluated and integrated modular software packages for system-level control and testing.
- Established structured version control workflows using Git, and collaborated within a 4-member team to iteratively test and debug software modules for a 6-axis industrial manipulator.

Epson — Bangalore, India
Robotics Software Intern — Mar 2021 – Sept 2021

- Developed a Python-based interface on Raspberry Pi to control EPSON SCARA robots, bypassing proprietary SPEL-based software to simplify programming for new developers.
- Tested and validated the interface on physical robot hardware, improving accessibility and speeding up programming workflows within the R&D team.
- Collaborated in a client project to build an automation system using the robot's vision module to detect specific shapes and perform sorting operations.

Projects

Visual Instruction-Tuned LLaVA for Multimodal Reasoning

- Reproduced and fine-tuned the multimodal LLaVA-1.5 model integrating CLIP-ViT-L-336px with Vicuna 7B, achieving coherent image–text reasoning across 11 public VQA benchmarks.
- Conducted ablation studies substituting Vicuna 7B with Gemma 2B under constrained hardware using DeepSpeed Zero3 CPU offloading, reducing training time by 80% with minimal performance loss.
- Implemented a two-stage instruction tuning pipeline (feature alignment + fine-tuning) and validated inference consistency using CLI benchmarking.

TrackIn: Real-Time Indoor Tracking and Activity Recognition

- Built a smartphone-based tracking system integrating Bayesian localization, particle filtering, and an on-device TensorFlow Lite MLP classifier for real-time activity recognition.
- Processed multi-sensor data (Wi-Fi RSSI, accelerometer, gyroscope, magnetometer) using a 5th-order Butterworth filter and custom motion model, achieving 98% activity-classification accuracy.
- Deployed a compact Tiny-AI pipeline on Android with sub-second inference latency and validated localization consistency across 14 test cells.

NES Emulator

- Built a cycle-accurate 6502 CPU emulator with memory-mapped I/O, interrupts, and cartridge mappers (NROM, MMC1).
- Integrated the PPU using the tudelft-nes-ppu crate and verified correctness against automated test ROMs.
- Validated stable execution of classic games such as Super Mario Bros and The Legend of Zelda through testing and system-level debugging.

Vargi Bots – Automated Warehouse Management System

- Designed a ROS-based warehouse automation system integrating dual UR5 manipulators, computer vision (OpenCV), and MQTT communication for autonomous warehouse operations.
- Developed modular Python APIs for robot coordination, real-time image processing, and priority-based task scheduling to optimize operational throughput.
- Simulated and validated pick-and-place workflows in Gazebo, improving system reliability through iterative debugging and ROS topic introspection.

Skills and Certifications

Programming Languages	C, C++, Python, Rust
Frameworks & Tools	PyTorch, DeepSpeed, TensorFlow Lite, Hugging Face Transformers, Git
Libraries	NumPy, Pandas, OpenCV, CLIP, W&B (Weights & Biases)
Operating Systems	Linux

Certifications: Industrial IoT on Google Cloud — Google ; Programming for Everybody (Python) — University of Michigan ; Getting Started with ROS - RigBettel Labs Mentorship Programme

Achievements

Best Idea Award 2018

- Led the design of a smart agriculture automation system, APEX, which won 1st prize for its innovative approach to optimizing farming resources, securing €1,000 in funding to develop the solution.

Gov-Tec-Thon 2020

- Achieved 15th place out of 100 teams in a national-level competition, demonstrating the project's scalability and potential societal impact of an agre-tech project

Eyantra Competition 2020

- Advanced to the second round in a prestigious robotics competition by IIT Bombay, ranking in the top 250 out of 500 international teams.

Publication

Artificial intelligence enabled plant emotion xpresser in the development hydroponics system 2021

Materials Today: Proceedings

Extracurricular activities

IEEE Bangalore, India

Student Branch Chair Aug 2021 – Aug 2022

- Spearheaded the hosting and management of online events on diverse topics, including Entrepreneurship, Mobile App Development, and the integration of robotics in the Food Industry.
- Orchestrated the IEEE Day celebration, significantly enhancing club engagement and membership, with a successful addition of 10 new members to the IEEE club.

ROS Tutorials Channel Online

Content Creator 2021 – Present

- Created and maintain a YouTube channel with tutorials on the Robot Operating System (ROS), demonstrating the hardware implementation and communication frameworks.
- Produced practical, project-based videos to support learners and showcase applied knowledge in robotics development.

Languages & Interests

Languages: English, Hindi, Telugu

Interests: Reading non-fiction books, writing blogs, and playing badminton