Malladi Naga Subhash

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Summary

Edge AI engineer with an MSc in Computer and Embedded Systems Engineering from TU Delft. Experienced in multimodal models and ONNX-based workflows, with hands-on work in model implementation, evaluation, and deployment on embedded Linux systems under real-world constraints. I combine practical ML development with low-level software engineering and system integration experience.

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

Skills and Certifications

Programming Languages	C, C++, Python, Rust
Microcontrollers	ATmega328P, ESP32, nRF51822 (ARM Cortex-M0)
Communication Protocols	SPI, I^2C, UART
Operating Systems	Linux
Tools & Frameworks	Git, Docker, TensorFlow Lite, ONNX, PyTorch

Certifications: Industrial IoT on Google Cloud — Google; Programming for Everybody (Python) — University of Michigan

Experience

IMEC — Eindhoven, Netherlands
Graduate Research Assistant — 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.
- Assisted 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, evaluated against the paper's 11 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.

Aidge Framework: ONNX Model Validation Pipeline

- Designed and implemented a structured validation pipeline to assess ONNX models before deployment on edge devices, including model verification, graph import, and operator support inspection.
- Automated detection of unsupported operators and generated feasibility reports to determine readiness for on-device execution.
- Focused on improving deployment reliability and model readiness rather than model training.

Embedded Quadcopter Control System

- Implemented a flight-control stack in Rust featuring a safety-first FSM, PID loops (roll/pitch/yaw), and Mahony sensor fusion at 200 Hz.
- Designed a fault-tolerant UART protocol with checksums and recovery logic; integrated joystick input (gilrs) and GUI telemetry (egui).
- Validated closed-loop stability and communication reliability through hardware-in-the-loop testing on a Cortex-M0 platform.

Achievements

- **Best Idea Award (2018):** Led APEX (smart agriculture automation) to 1st prize and secured €1,000 funding to develop the solution.
- **Gov-Tec-Thon (2020):** Placed 15^{th}/100 nationally, demonstrating scalability and societal impact of the project.
- **Eyantra Competition (2020):** Advanced to Round 2; ranked top 250/500 in IIT Bombay's robotics contest.

Publication

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

Materials Today: Proceedings

Extracurricular activities

CoderDojo Delft, Netherlands

Mentor 2025 – Present

- Mentored children aged 8–12 in foundational programming concepts through hands-on, project-based sessions.
- Guided learners in problem solving, logical thinking, and translating ideas into simple working programs.

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