Malladi Naga Subhash

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Summary

Software engineer with a strong foundation in building and operating software under real-world constraints. I focus on understanding how systems behave in practice and making practical tradeoffs to improve reliability, performance, and maintainability. Seeking end-to-end involvement in cloud infrastructure roles: design, implementation, deployment, and continuous improvement of scalable systems.

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
Frameworks & Tools	Docker, Apache Spark, Kafka, AWS, Azure, Git, PyTorch, TensorFlow Lite
Operating Systems	Linux

Certifications: Microsoft Azure (AZ-100) course; 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.
- 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

GeoSafe Relocation System

- Developed and deployed a distributed Spark application in Scala to estimate population relocation using OpenStreetMap and ALOS elevation data, scaling from local to AWS EMR clusters (Europe dataset ≈28 GB).
- Optimized H3-based spatial joins and Spark shuffle operations, achieving ∼40% runtime reduction through caching and parallel tuning.
- Extended the batch framework into a Kafka streaming pipeline for real-time data aggregation with sub-second event latency.

AI Job Assistant: Job Discovery & Application Workflow Platform

- Built a pipeline to discover relevant companies and jobs and organize results into a structured database for downstream filtering and follow-up.
- Designed the target cloud architecture (Azure) for running the job-discovery workflow with clear boundaries for data storage, orchestration, and a web UI.

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.

NES Emulator

- Built a cycle-accurate 6502 CPU based emulator with memory-mapped I/O, interrupts, and cartridge mappers (NROM, MMC1) using Rust.
- Validated stable execution of classic games such as Super Mario Bros and The Legend of Zelda through testing and system-level debugging.

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.
- Deployed a compact Tiny-AI pipeline on Android with sub-second inference latency and validated localization consistency across 14 test cells.

Achievements

- **Best Idea Award (2018):** Led APEX (smart hydroponics automation system) to 1st prize and secured €1,000 funding to develop the solution.
- **Gov-Tec-Thon (2020):** Placed 15^{th}/100 nationally, for demonstrating scalability and societal impact of an agri-tech 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.

Languages & Interests

Languages: English, Hindi, Telugu
Interests: Reading non-fiction books, writing blogs, and playing badminton