Hemanth Yadav Komarala

Email: hemanthyadavkomarala@gmail.com
Phone: +49 157 81775825
DOB: 08 Sep 1996
Nationality: Indian
Marital status: Single
Work authorization: Germany
GitHub: github.com/Komarala
Portfolio: hemanth-komarala.netlify.app
Address: Vetterstraße 70, 09126 Chemnitz, Germany
Availability: Immediate | Open to relocate

Professional Summary

Senior AI Systems Engineer specializing in the design and validation of **AI-defined vehicle architectures**. Architected a pioneering multi-agent framework for automated C++ generation, utilizing **LLM orchestration** to exceed reliability targets by 20% while maintaining 100% code integrity. Expert in translating complex AI strategies into production-ready system designs, supported by 5+ years of automotive engineering experience at **Bosch and IAV**. Strong background in high-similarity system alignment using CodeBERTScore and automated verification loops.

Skills

- **Languages and Frameworks:** Python, C++, FastAPI, LangGraph, AutoGen, CrewAI
- **Generative AI:** Agentic Workflows, LLM Orchestration, RAG (Vertex AI Vector Search), Prompt Engineering, Hyperparameter-tuning
- **AI & Perception:** Object Detection, Image Super-Resolution, E2E AI Architectures
- **Edge Hardware:** Snapdragon 855 Optimization, LiteRT (TFLite), RTOS, POSIX-compliant C++
- **AI Operations (AIOps):** Kubeflow (ML Pipelines), Model Deployment, Prometheus, Grafana, ML Lifecycle Management (Data to Monitoring)
- **DevOps and Cloud:** GitHub Actions, Terraform, Jenkins, Docker, Kubernetes, CI/CD, Linux
- **Code Quality and Security:** Test-Driven Development (TDD), ASPICE (SYS.4), ISO 26262 (ASIL-D), MISRA-C, Trace32, Closed-Loop HIL/SIL Validation, Clang-Tidy
- **Data Engineering:** NumPy, Pandas, Vector Databases, DVC

Experience

IAV GmbH **Nov 2023–Present**
Student Employee, Dresden, Germany

- Supported in component testing for tuner middle-ware modules using C++18.

Master Thesis: An AI Framework for Automated Source Code Generation from Requirements

- Engineered a multi-agent AI framework for automated C++ code generation, orchestrating Requirement, Developer, and Build-Verify agents to **reduce implementation time by 41.2%**.
- Achieved a 100% unit test pass rate and 100% static clean code (via Clang-tidy) by integrating automated build-verification loops, exceeding **reliability targets by 20%**.
- ***Impact:*** Reduced development time by **41.2%** while maintaining 100% code reliability (Static/Dynamic analysis) and a 1.0 pass-rate on unit tests.
- ***Tech Stack:*** Multi-Agent Systems, C++, CodeBERT, Azure DevOps, LLM Orchestration, Clang-tidy.

Internship: AI Supported Infotainment Software Development

- Applied few-shot prompting techniques and hyper-parameters tuning, and advanced context strategies to eliminate hallucinations and ensure high-fidelity unit tests.
- ***Impact:*** Engineered AI-driven software workflows for infotainment systems, delivering a **47% reduction in development time** and a **90% boost in test coverage**.
- ***Tech Stack:*** Few-shot Training, Prompt versioning, Hyper-parameter tuning

Tessolve Semiconductors **Mar 2022–Oct 2022**
AUTOSAR Engineer, Bangalore, India

- Implementation of CAN diagnostic frames and participation in Adaptive AUTOSAR configurations.
- ***Tooling:*** DaVinci; protocols: CAN/CAN-FD, Linux, VS Code.

Bosch **Sep 2018–Mar 2022**
Software Engineer (Sep 2018–Dec 2021) | Senior Software Engineer (Jan 2022–Mar 2022), Coimbatore, India

- **RAM Optimization:** Mitigated critical memory exhaustion by reducing RAM utilization from 96% to 85%, ensuring a **15% safety buffer** for future OTA updates.
- **Fault Diagnostics:** Engineered bidirectional DFC/DSQ coupling for 150+ diagnostic paths, reducing fault-synchronization latency between Master and Slave by **10ms**.
- **Root-Cause Analysis:** Leveraged UDS diagnostics and Trace32-based hardware-in-circuit debugging to perform deep-dive analysis of complex embedded defects.
- **HIL/SIL Validation:** Executed comprehensive HIL/SIL validation using ECU-TEST and CANoe, identifying and documenting critical defects in base functions and microcontroller I/O.
- **Protocol Transition:** Spearheaded the adaptation of functional test specifications for CAN-FD protocols within a compressed **4-week** window to meet BMW SOP (Start of Production) milestones.
- **Validation:** Optimized Base function script to **reduce the overall runtime by 4%** per run. Minimized the effort for SW rebuild by identifying 3 potential bugs at initial stage of project.
- ***Process/quality:*** ASPICE (SYS.4), MISRA-C, ISO 26262
- ***Tooling:*** DOORS, Jira, Git, CI/CD (Jenkins), ISOLAR, ECU-TEST, ASCET, ETAS-INCA, CANoe

Education

M.Sc. Automotive Software Engineering **Oct 2022–Mar 2026**
Chemnitz University of Technology, Germany
Master thesis: An AI framework for automated generation of source code from requirements
***Personal Project*:** High-Performance Edge-AI Deployment

- Engineered and deployed a production-grade Edge-AI model for real-time ***Object Classification and Image Resolution*** on a ***Qualcomm Snapdragon 855***.
- Developed a native Android application using the SDK to host the model, achieving an average ***inference time of 10ms*** and ***End-to-End prediction time of 100ms***.

Additional exposure: LiteRT, Android NDK, OpenCV, Qualcomm AI hub

B.Eng. Electrical and Electronics Engineering **Sep 2014–Jun 2018**
JB Institute of Engineering and Technology, India
Bachelor thesis: Design of a hybrid electric vehicle powered by solar and wind energy using an Arduino processor
Additional exposure: MATLAB/Simulink, model-based development
Lab exposure: oscilloscope, arduino, Power Electronics, Electrical Machines, soldering

Certifications

- **Artificial Intelligence Fundamentals** – IBM — Dec 2024
- **RBEI-NIPUN: ML Certified** – SimpliLearn — Nov 2021
- **Python for Data Science** – IBM — May 2021
- **ISTQB Foundation Level** – ITB — Jul 2019

Languages

English (C1) | German (B1, progressing toward B2)

Place/Date: Chemnitz, March 12, 2026 **Signature:**