

Simhadri Holagundhi

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Computer Vision & AI Engineer with research-to-product experience building end-to-end ML systems and working with GenAI agents, ranging from problem framing to deployment-ready prototypes. Shipped work across real-time video processing (detection/tracking for livestreams), multi-agent LLM decision-support systems (RAG + tool calling), and predictive modeling for industrial energy assets. Co-inventor on a pending patent for navigation and POI search. Highly experienced with modern AI coding agents (Cursor, Codex, Claude) and local LLM inference workflows.

Professional Experience

AI Engineer — 21Minds GmbH, Stuttgart

10.2024 - Present

- Led AI feature ideation and engineered orchestration systems across multiple products. Developed an LLM-powered assistant for event planning by building a RAG pipeline integrated with MongoDB.
- Leveraged Azure AI Foundry and LangChain to deploy working GenAI agents, utilizing LangSmith for prompt management, versioning, and AI response evaluation loops.
- Acted as the primary technical liaison with researchers at HdM Stuttgart, collaborating closely to integrate their live video editing research into commercial products.
- Conducted live product demonstrations with customers and event organizers to secure feedback and prove the tangible value of the AI prototypes.
- Built an automated live event direction system in Python: fine-tuned RF-DETR for robust object detection (mAP ~48 → ~51) and implemented persistent multi-person tracking on LiveKit WebRTC streams.
- Managed lightweight MLOps and automated deployment workflows (Git/CI/CD) on Azure VM, ensuring fast and reliable prototype-to-production cycles.

Research Assistant — Fraunhofer IAO, Stuttgart

03.2022 - 09.2024

- Designed and developed a multi-agent LLM decision-support prototype (LangChain + custom Python orchestration) with RAG over user-uploaded documents (FAISS) and local-first web search via SearXNG.
- Refined prompts and established evaluation loops for GenAI systems; collaborated with stakeholders to demonstrate tangible value, generating web-based reports with PDF/JSON exports and final recommendations.
- Built a "Proactive HMI" multi-objective navigation and POI search prototype (Unity + HERE Maps): translated natural language user intents into weighted-scoring and rule-constrained ranking, preferred by over half of the study participants.
- Patent filed (co-inventor): "Proactive Combined Search for Navigation Point-of-Interests (POIs)" — Fraunhofer IAO.
- Built Transformer loss prediction models for Siemens Energy using XGBoost (feature engineering, cross-validation, HPO, SHAP); reduced MAE compared to the baseline.

Research Assistant — Analytic Computing, University of Stuttgart

11.2021 - 02.2022

- Built an XR prototype for medical education on Microsoft HoloLens (Unity/MRTK), streaming microscope feeds via WebRTC.
- Implemented eye-tracking features (gaze cursor, gaze logging, ROI analysis) synchronized with video.
- Evaluated prototype with medical experts at Bundeswehrzentrankrankenhaus, Koblenz.

Project Intern — Grydsense, Bengaluru

06.2019 - 08.2019

- Developed embedded C firmware for ZigBee lighting control.
 - Integrated proprietary sensor board with ZigBee SoC and validated full system behavior.
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Technical Skills

Languages: Python, C#, HTML/CSS/JavaScript, C, C++, Bash/Shell

AI & GenAI: PyTorch, HuggingFace, scikit-learn, XGBoost, ONNX, LangChain, LangSmith, FAISS, Prompt Engineering, LLM Evaluation

AI Agents & Inference: Cursor, Claude Code, Codex, OpenCode, llama.cpp, Ollama, LM Studio

Computer Vision & Video: OpenCV, FFmpeg, LiveKit, WebRTC

Data, Apps & Design: Pandas, MongoDB, Streamlit, Unity, Power BI, Figma, HERE Maps

Cloud & DevOps: Docker, Azure (AI Foundry), Git, GitHub, Lightweight MLOps, CI/CD

OS: Linux, Windows

Education

M.Sc. Information Technology — University of Stuttgart, Germany 10.2020 - 10.2023

- Machine and Deep Learning, Pattern Recognition, Visualization, Software Engineering

B.Eng. Electronics & Communication — Dayananda Sagar College of Engineering, Bengaluru 08.2016 - 08.2020

- Image Processing, Signal Processing, Embedded Systems
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Projects

Deep Learning based Risk Assessment for Franka Emika Panda manipulator — Master Thesis 05.2023 – 11.2023

- Implemented data collection pipeline using ROS/Gazebo; developed Graph Neural Networks for failure prediction
- Predicted hardware failures up to 0.3 seconds in advance

Generative Modelling for Appearance-based Eye Gaze Estimation — Research Project 11.2021 – 05.2022

- Evaluated synthetic data impact on gaze estimation
- Developed GAN models improving accuracy by 10%

Detection and Pattern Recognition — Deep Learning Lab 11.2021 – 02.2022

- Applied preprocessing, transfer learning, and hyperparameter optimization
- Used deep visualization for interpretability

Simulation of Quantum Image Steganography — Bachelor Thesis 10.2019 – 04.2020

- Designed and simulated quantum steganography pipeline
 - Demonstrated secure image encryption/decryption
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Languages

- English: C1 (Professional Proficiency)
- German: A2 (Beginner)