

Vedant Chavan *AI & Computer Vision Engineer*

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🔗 Portfolio: vedantsanjaychavan.de 📍 59555 Lippstadt, Germany

📄 Work Authorization: Eligible to work in Germany | Available Immediately | Open to Relocation



Profile

AI & Computer Vision Engineer specializing in stereo and 3D perception for ADAS, industrial, and robotics. Built night-time stereo depth for the AHEAD program with 3% mean depth error and 95% 3D localization at 10–30 m; improved YOLOv8 on low-light stereo from 60% to 90% mAP. Deliver end-to-end ML from data to deployment; also experienced with LLM/RAG.

Skills

Programming: Python, C++, MATLAB, Linux scripting

AI/ML: PyTorch, TensorFlow, Transformers, CNNs, YOLO, segmentation, stereo vision, 3D reconstruction

GenAI/NLP: LLMs, RAG, embeddings, FAISS, prompt engineering

Deployment: FastAPI, Docker, ONNX Runtime, GitHub Actions CI/CD, AWS/Azure

Tools: OpenCV, Unreal Engine 5, COLMAP, Open3D, NumPy/Pandas, ROS (basic), Linux, Git

Experience

Hella GmbH & Co. KGaA (FORVIA HELLA)

03/2024 – 11/2024
Lippstadt, Germany

Master's Thesis - Stereo Vision for Adaptive Headlight Systems

- Designed **lightweight stereo-CNN** (autoencoder + cost-volume) for low-light depth.
- Achieved 3%** mean error and **~95%** 3D localization @10–30 m.
- Generated **9,000+** synthetic stereo pairs in **UE5**, cutting manual labeling by **~90%**; improved low-light generalization.
- Fused detections with disparity to produce **3D perception** for obstacles; validated on curated test routes.
- Tech:** PyTorch, OpenCV, Transfer Learning, Unreal Engine 5, NumPy/SciPy, Matplotlib

08/2023 – 02/2024
Lippstadt, Germany

AI Research Intern - Intelligent Perception for Automotive Vision

- Fine-tuned **YOLOv8** for night-time stereo; mAP improved by **~30 points** (about 60% to about 90%).
- Deployed the optimized model via **ONNX Runtime** for real-time embedded inference
- Built 2D to 3D localization pipeline (stereo calibration, **triangulation**) to anchor detections in the vehicle coordinate frame.
- Automated evaluation and regression checks across illumination scenarios.
- Tech:** Python, PyTorch, YOLOv8, OpenCV, ONNX Runtime, Docker, Stereo Calibration

05/2019 – 03/2020
Pune, India

Indpro Electronic Systems Pvt. Ltd.

Automation Engineer

- Programmed **ABB AC800M PLCs** to automate boiler section of Sugar Factory.
- Built **HMI/SCADA** dashboards; supported commissioning and on-site troubleshooting.
- Tech:** ABB PLC, HMI/SCADA

Projects

05/2025 – 06/2025

3D Reconstruction using COLMAP & Gaussian Splatting

- Built an **SfM** to Gaussian Splatting pipeline from monocular phone video using COLMAP camera poses.
- Used **SuperSplat** to visualize scenes and interactively **trim splats** (ROI culling, outlier removal) to reduce overdraw and scene size.
- Tuned intrinsics and filtered bad tracks for stable reconstructions; exported scenes for Open3D preview
- Tech:** Python, COLMAP, Gaussian Splatting, Open3D, NumPy

03/2025 – 04/2025

U-Net for Biological Image Segmentation

- Trained a U-Net on microscopy images; achieved **Dice ~ 0.89** and **IoU ~ 0.82** on held-out data.
- Improved image with **CLAHE**, denoising, and **augmentation**; created reproducible training/eval scripts.
- Exported model and built visualization for masks/overlays to aid downstream analysis.
- Tech:** Python, PyTorch, OpenCV, NumPy/Pandas, ONNX, Matplotlib

03/2025 – 04/2025

Transformer-based RAG Chatbot

- Implemented retrieval-augmented generation with **FAISS** and custom embeddings for domain Q&A.
- Built a **lightweight app** and deployed on Hugging Face Spaces with prompt tooling and eval harness.
- Added document ingestion pipeline with chunking and metadata filters for better recall.

02/2025 – 03/2025	<ul style="list-style-type: none"> • Tech: Python, Transformers, FAISS, Sentence-Transformers, Gradio/Hugging Face ONNX Segmentation API with YOLOv11m <ul style="list-style-type: none"> • Packaged an instance segmentation model as a production-ready REST service. • Containerized inference and set up CI/CD with GitHub Actions; deployed on AWS EC2/ECR. • Added health checks, batching, and async request handling to stabilize latency under load. • Tech: Python, YOLOv11, FastAPI, Docker, GitHub Actions, AWS (EC2/ECR), ONNX Runtime
10/2022 – 02/2023	Robotic Bin-Picking with Custom YOLO <ul style="list-style-type: none"> • Trained a custom detector on synthetic + real images; reached ~95% orientation precision for target parts. • Integrated orientation outputs into a grasp-planning stub to simulate pick feasibility.) • Iterated synthetic data with controlled lighting/backgrounds to reduce domain gap. • Tech: Python, TensorFlow, OpenCV, Blender, NumPy

Education

10/2021 – 01/2025 Rosenheim, Germany	M.Eng. Engineering Sciences – Mechatronics Technische Hochschule Rosenheim <ul style="list-style-type: none"> • Thesis: Deep Learning-Based Stereo Vision for Object Localization in Nighttime Driving Scenes • Collaboration with FORVIA HELLA on AHEAD, including stereo calibration, synthetic data generation, and evaluation tooling
09/2020 – 04/2021 Pune, India	PG Diploma - Advanced Computing Centre for Development of Advanced Computing (CDAC) <ul style="list-style-type: none"> • Relevant Subjects: Software Development, Algorithms & Data structures, Operating system
06/2015 – 09/2019 Vellore, India	B.Tech - Mechanical Engineering Vellore Institute of Technology

Languages

English Fluent	German B1 (Actively Improving)	Hindi / Marathi Native
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Certificates

Generative Deep Learning with TensorFlow - DeepLearning.AI

Hands-on with DCGAN, Style Transfer, VAEs; built autoencoders & GAN loops on CelebA and sign-language hands (TensorFlow, Keras)

Advanced Computer Vision with TensorFlow - DeepLearning.AI

Image classification, localization/detection, segmentation; transfer learning (ResNet-50), U-Net/Mask R-CNN, Grad-CAM interpretability (TensorFlow, Keras)

Machine Learning - Stanford/DeepLearning.AI (Coursera)

Core ML; linear/logistic regression, regularization, gradient descent; model evaluation & feature scaling (NumPy, scikit-learn)