Vedant Chavan *AI and Computer Vision Engineer*

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

Profile

AI and 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.

- **Tech:** Python, Transformers, FAISS, Sentence-Transformers, Gradio/Hugging Face

02/2025 – 03/2025

ONNX Segmentation API with YOLOv11m
- 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
- 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
- **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)
- **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

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)