Vedant Chavan

AI and Computer Vision Engineer

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59555 Lippstadt, Germany

Eligible to work in Germany | Immediate availability | Willing to Relocate

PROFILE

AI and Computer Vision Engineer with hands-on experience building real-world vision systems for automotive and industrial use. Skilled in image processing, stereo vision, and deployment of deep learning models using Python and ONNX. Strong background in filtering, calibration, and embedded deployment with a focus on reliable and scalable applications.

SKILLS

Programming: Python (Advanced), C++, MATLAB

Computer Vision & Deep Learning: OpenCV, PyTorch, TensorFlow, Stereo Vision, Depth Estimation, Image Segmentation, Anomaly Detection, Object Detection, Keypoint Estimation

Imaging Methods: Calibration, Filtering, Synthetic Data Generation, Image Quality Enhancement

Deployment & MLOps: Docker, FastAPI, CI/CD, AWS, GCP (familiar), Git

EXPERIENCE

Hella GmbH & Co. KGaA (FORVIA HELLA)

Master's Thesis Researcher 03/2024 – 11/2024 | Lippstadt, Germany

Project: Deep Learning-Based Stereo Vision for Object Localization in Nighttime Driving Scenes

- **Created a lightweight stereo depth CNN** (<7M parameters), achieving **3% depth error** at **30m**.
- Boosted low-light performance by **50%** (vs. traditional methods) using **Unreal Engine 5 synthetic data**.
- **Achieved 90%** localization accuracy via **cost-volume aggregation & disparity refinement**.
- Optimized and integrated model for real-time embedded deployment via **quantization and Docker**.

Computer Vision Intern 08/2023 – 02/2024 | Lippstadt, Germany

- **Fine-tuned YOLOv8 models** for nighttime object detection, improving accuracy to **90%**.
- Developed core perception components for **production-grade adaptive headlight testing**.
- Designed robust **3D scene understanding** through **stereo calibration & depth triangulation**.
- **Deployed ONNX-based models in Docker containers** for scalable edge inference.
- Integrated **real-time vision modules** into **embedded systems**, collaborating with cross-functional teams.

Indpro Electronic Systems Private Limited 05/2019 – 03/2020 | Pune, India

Automation Engineer

- Developed **PLC logic** for industrial **boiler automation** in a sugar manufacturing plant.
- Integrated **SCADA** systems for real-time process monitoring, improving operator control and reducing manual intervention.

EDUCATION

Technische Hochschule Rosenheim 10/2021 – 01/2025 | Rosenheim, Germany

M.Eng. in Engineering Sciences - Mechatronics

- **Thesis:** Lightweight Stereo CNN for Low-Light Automotive Depth Estimation (in collaboration with HELLA)
- **Master Project: Robotic Bin-Picking with Custom YOLO**
  - Designed and trained a custom YOLO-based detector using synthetic **Blender and real data**.
  - Achieved **98% pick** success rate by optimizing object orientation detection and integrating **camera-lighting calibration**.
- **Relevant Coursework:** Image Processing in Production, Trajectory Planning, Industrial Control Systems, Digital Signal Processing, Real-Time Systems

Centre for Development of Advanced Computing (C-DAC) 09/2020 – 04/2021 | Pune, India

PG Diploma In Advanced Computing

- **Relevant Coursework:** Software Engineering, OOP, Database Technologies.

Vellore Institute of Technology, Vellore, India 07/2015 – 05/2019 | Vellore, India

B.Tech. in Mechanical Engineering

SELECTED PROJECTS

Anomaly Detection with PaDiM 04/2025

- Developed an **anomaly detection** system using **Patch Distribution Modeling** (PaDiM) with **Mahalanobis distance** modeling on **MobileNetV3** features.
- Visualized defect **heatmaps** and exported to **ONNX** for edge inference.

GaugeVision: Analog Gauge Reader 04/2025

- Developed pose-based dial reader using **YOLOv11 keypoints**.
- Extracted **gauge readings** with **OpenCV** post-processing in industrial settings.

Real-Time Segmentation Deployment on AWS System 03/2025

- Deployed **FastAPI** service using **Docker for real-time segmentation.**
- Hosted on **AWS EC2** with **CI/CD** automation for scalable inference.

CERTIFICATES

- Advanced Computer Vision with TensorFlow - DeepLearning.AI
- Machine Learning Specialization - Stanford University (Coursera)

LANGUAGES

English — Fluent | **German** — B1 (Actively improving) | **Marathi, Hindi** — Native Speaker