Vedant Chavan Computer Vision & AI Engineer

vedantchavan097@gmail.com +49 151 43560223 linkedin.com/in/vedant-chavan-97ml/
vedantsanjaychavan.de/ github.com/vedantchavan004 59555 Lippstadt, Germany
Available Immediately | Open to Relocation

Profile

Computer Vision & AI Engineer with expertise in **3D perception, sensor fusion, and spatial data processing** for robotics and autonomous systems. Experienced in **stereo vision, point-cloud reconstruction, and GPU-optimized model deployment** using PyTorch, CUDA, and ONNX. Passionate about developing **scalable, real-time AI** that bridges the physical and digital worlds.

Skills

3D Perception: Stereo Vision, Multi-Sensor Fusion, Triangulation, Calibration, 3D Reconstruction, Point Cloud Processing, SLAM

Deep Learning: 2D/3D Detection, Tracking, Segmentation, Anomaly Detection

Frameworks & Tools: PyTorch, TensorFlow, OpenCV, ONNX Runtime, CUDA, Unreal Engine 5, COLMAP, Open3D, Docker

Programming: Python (advanced), C++ (intermediate), Bash

Optimization & Deployment: TensorRT, Quantization, AWS, CI/CD (GitHub Actions)

Generative AI / LLMs: LangChain, FAISS, Streamlit, Hugging Face, Prompt Engineering

Experience

03/2024 – 11/2024
Lippstadt, Germany

Master's Thesis - Stereo Vision for Adaptive Headlight Systems
Hella GmbH & Co. KGaA (FORVIA HELLA)

- Developed a **lightweight stereo-depth CNN** (autoencoder + cost volume, PyTorch) for long-range perception; achieved **3% D1-all error** on KITTI and **95% depth accuracy at 30 m** on real tests.
- Generated **9000 synthetic stereo pairs in UE5** to simulate varied lighting and weather; fine-tuned with real data for robust generalization.
- Combined **dense depth maps with YOLO detections** for 3D object localization and trajectory estimation in low-light scenes.
- Reduced inference latency from **120 to 70 ms** via ONNX optimization; containerized full pipeline for reproducible deployment.

08/2023 – 02/2024
Lippstadt, Germany

AI Research Intern - Intelligent Perception (ADAS)
Hella GmbH & Co. KGaA (FORVIA HELLA)

- Fine-tuned **YOLOv8** for low-light automotive detection, improving mAP by **30%** through targeted augmentation & hyperparameter tuning.
- Implemented **stereo triangulation and calibration** for 3D localization and lane estimation.
- Built and benchmarked **multi-object tracking pipelines** (DeepSORT + OpenCV) validated with laser ground truth.
- Evaluated **DINO, SAM, and DETR** for foundation-model adaptation in automotive perception.
- Automated dataset workflows with **Docker**, enabling reproducible GPU training.

Selected Projects

06/2025 – 07/2025

3D Scene Reconstruction and Gaussian Splatting

- Reconstructed dense 3D scenes from **COLMAP** point clouds using **Gaussian Splatting** to generate photorealistic spatial data for digital twin workflows.
- Evaluated reprojection accuracy and spatial fidelity across multiple camera poses, validating high-quality point-cloud output and scalable real-time **3D visualisation**.

05/2025 – 06/2025

Visual Anomaly Detection for PCB Inspection (OpenCV / PyTorch)

- Developed an **unsupervised anomaly-detection model** using PaDiM and Mahalanobis distance; achieved **99 % pixel-level accuracy** on MVTec AD.
- Visualized defect maps and feature embeddings for explainable AI analysis.

02/2025 – 03/2025 **Cloud Vision Pipeline (AWS / FastAPI / ONNX)**

- Deployed a **real-time segmentation microservice** on AWS (EC2 / ECR) using FastAPI and Docker.
- Optimized inference latency to **< 30 ms** via ONNX Runtime and automated CI/CD workflows.

03/2025 – 04/2025 **Chatbot with Retrieval-Augmented Generation (RAG)**

Built a **retrieval-augmented chatbot** using FAISS & LangChain; deployed on Hugging Face Spaces with Streamlit UI for interactive Q&A.

10/2022 – 02/2023 **Vision-Guided Bin-Picking for Industrial Robotics**

- Developed a YOLO-based **6D pose-estimation** (detection and orientation) system for ABB robot pick-and-place tasks in dynamic environments.
- Trained on hybrid synthetic (Blender) and real datasets to reach **98% detection accuracy**.

Education

10/2021 – 01/2025 Rosenheim, Germany **M.Eng. Engineering Sciences – Mechatronics**
Technische Hochschule Rosenheim

09/2020 – 04/2021 Pune, India **PG Diploma - Advanced Computing**
Centre for Development of Advanced Computing (CDAC)

06/2015 – 09/2019 Vellore, India **B.Tech - Mechanical Engineering**
Vellore Institute of Technology

Certificates

- Oracle Cloud Infrastructure 2025 Certified Generative AI Professional
- Generative Deep Learning with TensorFlow (2025)
- Advanced Computer Vision with TensorFlow (2025)
- Stanford Machine Learning (2022)

Languages

English: C1 (fluent) | **German:** B1 (intermediate)