Vedant Chavan *AI & Computer Vision Engineer*

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Available Immediately | Open to Relocation

Profile

AI & Computer Vision Engineer with hands-on expertise in 3D vision, stereo depth estimation, and synthetic data generation. Proven experience deploying scalable, real-time perception systems on embedded and cloud platforms using ONNX, FastAPI, and PyTorch. Passionate about combining vision and simulation to build robust AI solutions for robotics, automotive, and industrial automation.

Career Highlights

- Developed a stereo-CNN achieving ~3% MAE and ~95% localization accuracy for 10–30 m range under low visibility.
- Achieved 90% detection accuracy in low-light stereo scenes by enhancing YOLOv8 and deploying on ADAS hardware.
- Built 9,000+ synthetic stereo pairs in Unreal Engine 5 to accelerate deep learning pipelines for headlight control.
- Converted monocular smartphone videos into dense 3D reconstructions using COLMAP and Gaussian Splatting.
- Developed scalable FastAPI segmentation server (YOLOv11m + ONNX) with <50 ms latency on AWS.
- Built industrial bin-picking system using custom YOLO and 3D pose estimation for robotics.

Skills

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

AI & Deep Learning: PyTorch, TensorFlow, Scikit-learn, XGBoost, Transfer Learning

Computer Vision: YOLOv8/v11, U-Net, Stereo Matching, COLMAP, Gaussian Splatting, Open3D, Point Cloud Processing

Simulation & Rendering: Unreal Engine 5, Blender, SuperSplat

Deployment & DevOps: ONNX Runtime, Docker, FastAPI, AWS, GitHub Actions, REST APIs, Streamlit

Control Systems: PLC (ABB), Qt, Linux scripting

Experience

Hella GmbH & Co. KGaA (FORVIA HELLA)

03/2024 – 11/2024
Lippstadt, Germany

Master's Thesis Researcher – Stereo Vision for Adaptive Headlights

- Designed and trained a CNN for stereo depth estimation in the 10–30 m range under low-light conditions to support adaptive headlight control.
- Created 9,000+ synthetic stereo pairs using Unreal Engine 5 with an automated labeling and augmentation pipeline.
- Fused YOLOv8 detections with disparity outputs for 3D localization, achieving ~3% MAE against ground truth.

08/2023 – 02/2024
Lippstadt, Germany

AI Research Intern – Automotive Vision R&D

- Fine-tuned YOLOv8 for stereo-based low-light detection and exported to ONNX; deployed on embedded ADAS hardware.
- Developed stereo pipelines using BM, SGBM, and triangulation for 3D object localization.
- Integrated semantic segmentation to enhance road perception for adaptive lighting decisions.

05/2019 – 03/2020
Pune, India

Indpro Electronic Systems Pvt. Ltd.
Automation Engineer

- Developed and deployed PLC control logic (ABB AC800M) for sugar industry automation systems.
- Designed HMI dashboards and supported on-site commissioning and troubleshooting across multiple facilities.

Projects

05/2025 – 06/2025

3D Reconstruction using COLMAP & Gaussian Splatting

- Reconstructed dense point clouds from monocular video; rendered photorealistic splats using SuperSplat.
- Pre-processed input, filtered outliers, and trimmed scenes for optimal visualization.

03/2025 – 04/2025

U-Net for Biological Image Segmentation
- Built a segmentation pipeline using U-Net on synthetic microscopy-like data.
- Achieved ~0.89 Dice score and ~0.82 IoU for binary cell segmentation.
- Integrated pre-processing (contrast enhancement, resizing), training, evaluation, and visualization.

02/2025 – 03/2025

FastAPI Segmentation Server (YOLOv11m + ONNX)
- Built REST API using FastAPI and Docker for real-time image segmentation (<50 ms latency).
- Deployed ONNX pipeline on AWS; ensured scalable cloud inference with GPU support.

10/2022 – 02/2023

Robotic Bin-Picking with Custom YOLO – Industrial Automation
- Trained custom YOLO for part detection and orientation in cluttered bins.
- Calibrated RealSense depth camera; implemented 3D pose estimation for robotic pick & place.

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

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
Capstone: Developed automated incense stick feeder for ITC Ltd.

Languages

English
Fluent

German
B1 (Actively Improving)

Certificates

- Generative Deep Learning with TensorFlow - DeepLearning.AI
- Advanced Computer Vision with TensorFlow - DeepLearning.AI
- Machine Learning Specialization – Stanford University