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SUMMARY

- I am **perception engineer** with 3 years of experience developing the perception pipelines using computer vision and deep learning. I specialize in developing sensor fusion **multimodal pipelines** for object detection, depth estimation, tracking and deploying it on **edge devices**. I am skilled in developing scalable training pipelines, creating **datasets** and auto annotation pipelines and managing it on cloud platforms.
- I am proficient in **Python and C++**, libraries like **PyTorch** and TensorFlow, coupled with ONNX and TensorRT and frameworks like OpenCV and Open3D.

SKILLS, INTERESTS & OTHERS

Programming: Python, C++

AI Frameworks: PyTorch, TensorFlow, Fabric, Nvidia-Deep stream

Tools & MLOps: OpenCV, FastAPI, Docker, Weights & Biases, CI/CD, AWS S3

Soft Skills: Problem-Solving, Independent & Collaborative Work, Communication

Languages: English (Fluent), German (B1)

WORK EXPERIENCE

Nov 2024 – Present	SmartAIs GMBH <i>AI and Computer Vision Engineer</i>	Munich, Germany
	<ul style="list-style-type: none">Developed high-performance computer vision software for obstacle avoidance for blind people using C++ and PyTorch, optimized for real-time mobile deployment.Developed a ViT-based stereo-depth refinement deep learning model (PyTorch), fusing monocular depth with LiDAR supervision to outperform conventional stereo.Leveraged multiple segmentation models (e.g. SAM, DeepLabv3) using a voting method, combined with camera pose data, depth maps, and intrinsics to develop a segmented 3D reconstruction pipeline using Open3D.Recorded and preprocessed the novel dataset for metric depth estimation and object detection, and leveraging auto annotation pipeline using foundation models like Grounding DINO.Optimized real-time deployment of AI pipelines on mobile & embedded platforms PyTorch, ONNX and TensorRT quantization.	
May 2024 – Dec 2024	Infineon Technologies <i>Master Thesis Student [Report] (Grade 1.0)</i>	Munich, Germany
	<ul style="list-style-type: none">Built a real-time multimodal RADAR–camera fusion model for depth estimation and object detection, achieving 37 FPS on A100 GPUs.Developed a novel ViT-based cross-sensor association network with CNN decoder in PyTorch, reducing depth error by 8% vs. SOTA and improving spatial alignment.Applied Post training quantization and quantization aware training, to quantize the model by 56% with only 2% reduction in accuracy, using PyTorch and TensorRT.Leveraged MLOps tools such as Weights & Biases for efficient training, monitoring, and fine-tuning of deep learning models.	
Nov 2023– Apr 2024	Infineon Technologies <i>Computer Vision Working Student</i>	Munich, Germany
	<ul style="list-style-type: none">Designed and tested ADAS functions for vehicle tail-light detection and maneuvering action analysis to enhance driving safety on edge computing devices.Developed and validated traffic light detection algorithms using meta-learning with deep learning models including YOLOv5, SSD, DETR, and Faster R-CNN.	

- Applied **ONNX** and **TensorFlow Lite quantization** to deploy models on embedded AI platforms (NVIDIA Jetson Nano, Coral Dev Board), achieving significantly faster inference.
- Collaborated with a cross-organizational team on the “Althena project” for ADAS feature development, utilizing frameworks such as GitHub and **Weights & Biases**, integrated with **CI/CD** pipelines.

Jan 2023 – Oct 2023	Fraunhofer IKS <i>Computer Vision Working Student</i>	Munich, Germany
	<ul style="list-style-type: none"> • Researched and developed 2D multi-object tracking using ByteTrack with Kalman filtering and enhanced association methods, benchmarking performance against state-of-the-art DeepSort. • Trained a deep descriptive neural network to reduce identity switches and improve overall tracking performance. • Developed an advanced evaluation metric for video object detection, accounting for detection accuracy across consecutive frames. 	

EDUCATION

Oct 2021 – May 2025	Technische Hochschule Ingolstadt <i>Master of Engineering in International Automotive Engineering, GPA: 2.0/4 (German Grading System, 1.0 = Best)</i>	Ingolstadt, Germany
Aug 2016 – May 2019	Savitribai Phule Pune University <i>Bachelor of Technology Mechanical Engineering, GPA: 1.4/4 (German Grading System, 1.0 = Best)</i>	Pune, India

ACADEMIC PROJECTS

Camera-Lidar Visual Fusion [[Github](#)]

- Developed a fusion pipeline for integrating **camera and LiDAR** data, including efficient coordinate transformation.
- Implemented YOLO for camera-based object detection and SFD3D for LiDAR-based object detection.
- Integrated early and late fusion methods with the Hungarian association method to enhance object detection accuracy.

Hydranets-The one multitasking algorithm [[Github](#)]

- Implemented a **multitasking algorithm** for classification and regression on the UTK Face dataset using PyTorch.
- Developed a real-time encoder-decoder model for predicting **semantic segmentation** and **depth maps**, featuring a lightweight **Mobile Net**-based encoder and a **Retina Net**-inspired decoder.
- Evaluated **3D segmentation** maps by leveraging metric depth maps and segmentation outputs with the Open3D library.

RAG application for onboarding of blind people [[Github](#)]

- Built an onboarding **RAG application** for visually impaired users using the **LangChain** framework and evaluated its real-time usability.
- Deployed the solution on **Streamlit** for demo, with a Chroma vector store for semantic retrieval, ensuring robust performance through cross-testing of retrieval strategies, indexing configurations.
- Developed **multiple agent workflow** prototypes (parallel, sequential, iterative, conditional) using LangGraph and OpenAI function calling.

Deep Learning and Edge Computing (Master Semester Project) [[Github](#)]

- Developed a **Single Shot Detector** for car and number plate detection from scratch using PyTorch and TensorFlow and integrated it with **Google Coral Board** and imported it to **TensorFlow Lite** using ONNX.
- Performed image data augmentation using computer vision libraries and employed various machine learning algorithms and AI neural network architectures, such as VGG16, Mobile-NET, for image classification.

Vision Language Models (VLM) Bootcamp [[Certificate](#)]

- Completed the OpenCV **Vision Language Model** Bootcamp with a **96%** score, gaining practical skills in applying Vision Language Models (VLMs) for image understanding and description generation.
- Worked hands-on with models like **CLIP** for zero-shot image classification and **Qwen2.5-VL** for image captioning and object detection, enhancing multimodal AI capabilities.