Ravi Kothari

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About Me

ML Engineer with 4+ years of experience specializing in Computer Vision, Natural Language Processing (NLP), and autonomous driving technology, with a strong focus on perception systems, deep learning models, and real-time processing pipelines. My expertise includes model optimization, data-driven decision-making, and the deployment of scalable ML solutions

Education

RWTH Aachen, Germany, M.Sc. Automotive Engineering, CGPA: 9.0 *Oct 2019 – Jan 2022*
Indian Institute of Technology, Kanpur, India, B.Tech. Mechanical Engineering, CGPA: 9.0 *July 2013 – May 2017*

Experience

Expert Software Engineer (ADAS), AVL Software and Functions GmbH, Germany *March 2022 – Present*

- Fine-tuned vision foundation models for domain adaptation in images and generated adverse weather datasets using guided diffusion models, improving performance by 80%
- Employed an active learning pipeline to identify and extract high-value data for labeling, reducing the required labeled data by 50% and improving model efficiency
- Implemented MLOps pipelines for data selection, model tracking, and evaluation, improving automation and scalability in machine learning workflows
- Collaborated with 18 European partners to develop decision tree-based algorithms to inject world knowledge into ML models
- Evaluated detection models, tested modules in simulations and with real-world data, managed A100 GPU clusters, and supervised Master's students

Master Thesis, e:fs TechHub GmbH, Germany *June 2021 – Jan 2022*

- Delivered an end-to-end radar-based ML solution for object detection and heading estimation, enhancing perception systems
- Led data collection, cleaning, and model training processes, ensuring high-quality datasets and robust model performance
- Introduced novel cross-attention architecture, improving SOTA mAP by 5% while reducing model size by 23%

Manager, TATA Steel, India *July 2017 – Aug 2019*

- Developed a real time Health Monitoring System for a 5MW gearbox using time series forecasting with decision tree models
- Deployed POC for computer vision-based rebar counter, reducing labor effort by 18hrs/day and enhancing worker safety

Publications

Radar-based Object Detection and Heading Estimation using Cross Attention *June 2023*
Oral Presentation: IEEE Intelligent Vehicle Symposium'23, Alaska
Kothari, Ravi; Kariminezhad, Ali; Mayr, Christian; Zhang, Haoming

Self-Supervised Multimodal NeRF for Autonomous Driving *Sept 2024*
Pre-print: ICRA'25
Sharma, Gaurav; Kothari, Ravi; Schmid, Josef

Projects

- Developed a Scientific Paper Analyzer using LLMs, extracting data from PDFs, segmenting content into text, images, and tables, indexing summaries in ChromaDB, and implementing a UI for data upload, chunk visualizer, and prompt window
- Performed data visualization, analysis, and experimented with LSTMs and Prophet model for time-series forecasting
- Engineered a multi-agent assistant using LangGraph, integrating human-in-the-loop mechanisms for real-time oversight and control of critical decision-making processes

Skill Set

Programming Languages & Tools	Python, C++, LaTeX, MySQL, JIRA
OS & Platform	Linux, Azure, Windows, ROS-1
ML Framework	PyTorch, SciPy, Azure ML Studio, TensorRT, LangChain, NLTK, Hugging Face
ML Ops	MLflow, Docker, Kubernetes, Jenkins, Git, DVC
CV Tasks	Semantic Segmentation, 2D/3D Detection, Depth estimation, NeRF, Gen AI
NLP Tasks	Image summarization, Classification, Grounding