

Shubham Mawa

Senior Machine Learning Engineer

☎ +918699519186 ✉ shubhammawa1998@gmail.com 📠 shubham-mawa 🌐 shubhammawa 📍 Bengaluru

PROFESSIONAL SUMMARY

Technical Lead and Senior ML Engineer with 5 years of experience bridging the gap between cutting-edge model research and deploying scalable AI systems. Skilled at leading engineers through the full project lifecycle, managing 5+ simultaneous initiatives through rigorous Agile practices. Expert in system architecture, generative AI, and MLOps, with a commitment to high-quality code standards and data-driven project delivery. Adept at bridging frontier model research with production-grade pipelines, particularly in GenAI and LLMs.

WORK EXPERIENCE

Senior Machine Learning Engineer

Oct 2024 - Present

Mercedes-Benz Research and Development India

Bengaluru, Karnataka | Sindelfingen, Germany

- Pioneered a synthetic data and Gen-AI-driven solution for training computer vision models, eliminating the need for real data acquisition and manual annotation, resulting in a 95% reduction in costs.
- Led the development of multiple pipelines for inpainting, stylization and domain adaptation via diffusion models, increasing interior scene segmentation MIOU by 30% without using annotated segmentation data.
- Used a training-free approach to inject style into content images by manipulating self-attention layers during the reverse denoising process, specifically swapping Key and Value in the UNet bottleneck layers.
- Fine-tuned CLIP-ViT-B/32 for image-text retrieval using LoRA adapters on the attention layers, improving Recall@10 by 15% over zero-shot baseline while updating only 3% of the model parameters.
- Engineered automated data pipelines for text dataset curation and processing, leveraging prompt engineering to synthesize high-quality multimodal training data for CLIP-ViT-B/32 fine-tuning.
- Orchestrated the end-to-end lifecycle of 5 concurrent machine learning projects, overseeing a team of 4 engineers to deliver high-impact models securing critical rating points for thousands of Mercedes-Benz cars.
- Served as an Onsite engineer in Germany for 4 months overseeing production deployment, testing and model updates of multiple safety features securing NCAP rating points for Mercedes-Benz cars.

Technologies / Skills Used : Diffusion Models, GenAI, Pytorch, Agile, System Design, Team Leadership

Machine Learning Engineer

Aug 2021 - Sep 2024

Mercedes-Benz Research and Development India

Bengaluru, Karnataka

- Developed a novel Graph Convolutional Network for human stature estimation and 3D head position estimation.
- Optimized data augmentations via GPU implementations thereby reducing training time by 25% and increasing model performance by 5% for human pose estimation.
- Built a multi-task loss function using homoscedastic aleatoric uncertainty to weigh loss functions for keypoint estimation and bounding box detection, improving PCKk@50 by 12% and mIoU by 7%.
- Worked on PTQ and QAT for quantization of deep neural nets for low latency deployment on edge devices.

Technologies / Skills Used : Machine Learning, Graphs, Computer Vision, Quantization, GCP

Artificial Intelligence Research Intern

Mar 2020 - Aug 2020

AWL Inc

Hokkaido, Japan

- Developed a semi-supervised learning pipeline using Mix-match algorithm to leverage unannotated data for training image classification models and increased F1 score by 7%.

Data Science Research Intern

Dec 2019 - Jan 2020

PredictivEye Inc

Toronto, Canada

- Developed a hybrid recommendation engine using collaborative filtering and content-similarity using contrastive learning for learning user and item embeddings.

SKILLS

Frameworks and Libraries :	PyTorch, Tensorflow, Lightning, Lit-Serve, Python, Jax
Technologies and AI skills :	Vision Language Models (VLMs), Large Language Models (LLMs), Diffusion Models, Data Structures and Algorithms, Gen AI, LoRA, RAG, Deep Learning, Machine Learning, Computer Vision, Quantization, Transformers, ML System Design, PEFT
Tools & Platforms :	Git, Docker, Kubernetes, GCP, MLOps, Agile, Jira, Confluence, GitHub, Copilot, Claude, Flyte
Soft Skills :	Team Leadership, Product Ownership, Problem Solving, Decision Making, Communication
Languages :	English, Hindi, German (A1)

EDUCATION

Indian Institute of Technology Kharagpur <i>M.Tech: Industrial and Systems Engineering (Machine Learning, Deep Learning)</i>	Sep 2020 - Jun 2021
Indian Institute of Technology Kharagpur <i>B.Tech: Industrial and Systems Engineering</i> Technical member: Autonomous Ground Vehicle Research Group	Jul 2016 - Jun 2020

AWARDS & ACHIEVEMENTS

- High Impact Innovation Award: Top 10 innovations across Mercedes-Benz Research and Development India
- Two time Silver Star Award winner for best performance in AI Algorithms team
- Innovation and Implemented Patent Award for 6 patent filings in Germany and India in AI and computer vision.
- Runner-up IGVC Oakland University, Michigan, Autonomous Ground Vehicle Research Group, IIT Kharagpur

PATENTS AND PUBLICATIONS

[Google Scholar](#)

- Outlier sensitive online change detection using convex combination of adaptive filters in sensor data streams.

[Google Patents](#)

- Child Presence Detection with 3D Skeletal Structure and Graph Convolutional Networks.
- Child Presence Detection using Object Detection and Optical Flow Estimation.
- In-Cabin wide Field of view IR Camera Blockage Detection.
- Occupant Action Recognition using Human Pose Estimation and Monocular Depth Estimation.
- Seat belt position warning system with semantic image segmentation
- Seatbelt Misuse Detection using a perception-based algorithm with synthetic data and Gen AI using zero manual annotation