ASANG TRIRATNA INGLE

Akola, Maharashtra

📞 +91-7756884920   ✉ asangingle07@gmail.com   🔗 LinkedIn   ⚙ GitHub   🌐 Portfolio

Summary

Passionate Machine Learning and Deep Learning practitioner with hands-on experience in computer vision, NLP, medical imaging, and AI-driven automation. Strong background in CNNs, Transformers, YOLO architectures, and RAG systems. Skilled in TensorFlow, OpenCV, LangChain, FastAPI, and information retrieval. Focused on building scalable, multimodal, and production-ready AI systems.

Education

Indian Institute of Information Technology, Nagpur — Nov 2022 – Jun 2026
B.Tech in Electronics and Communication Engineering — *Nagpur, Maharashtra*

Projects

Deep Learning for Traffic Speed Monitoring — 2024
− Designed a real-time traffic monitoring pipeline using YOLOv8 for detection and SORT for multi-object tracking.
− Computed per-vehicle speed using dual-line geometry and timestamp differentials.
− Automated overspeed capture with ID, speed, and saved frame logging.
− Implemented modular OpenCV overlays and TensorFlow-based acceleration.

RAG with Gemini + Qdrant + Cohere Reranker (Live Deployment) — 2025
− Built a retrieval-augmented generation system using Streamlit, Gemini, Qdrant, and Cohere Reranker.
− Used MiniLM-L6-v2 embeddings (384-dim) with 1000-char chunking + 150 overlap.
− Designed retrieval flow: top-10 vector search → reranking → top-3 context → grounded answer generation.
− Optimized inference latency and token consumption using Gemini Flash.

Accelerated Magnetic Resonance Imaging using Compressive Sensing (ViT + CNN Hybrid Model) — 2025
− Developed a ViT + CNN hybrid architecture to reconstruct high-quality MRI images from undersampled k-space.
− Forward model: $k = M \odot FFT(x)$; reconstruction via IFFT + learned refinement network.
− Achieved PSNR in the **29–34 dB** range across multiple undersampling masks.
− Implemented full CS pipeline: mask generation, FFT/IFFT transforms, deep reconstruction, and evaluation.

Malaria Detection using CNN + DWT (under Dr. Nikhil Dhengre) — 2025
− Built a hybrid CNN-DWT classifier achieving 96.14% accuracy, F1 = 0.9614, MCC = 0.9229.
− Used Discrete Wavelet Transform for multi-resolution feature extraction prior to CNN processing.
− Trained on TensorFlow/Keras with early stopping and custom callbacks on Colab GPU.

Technical Skills

Languages: Python, Embedded C
Frameworks/Libraries: Pandas, Numpy, Scikit-learn, Keras, TensorFlow, OpenCV, Streamlit, Hugging Face, LangChain, FastAPI, MoviePy
Visualization: Matplotlib, Seaborn
Deep Learning: CNNs, RNNs, Transformers, YOLO, U-Net, ResNet
Techniques: Computer Vision, NLP, Medical Imaging, RAG, Audio Processing, IR Systems, Generative AI