Asang Triratna Ingle

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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