Asang Triratna Ingle

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Summary

Passionate Machine Learning and Deep Learning enthusiast with hands-on experience in computer vision, NLP, audio signal processing, predictive analytics, and AI-driven automation. Experienced in CNN architectures (YOLO, U-Net, ResNet) and ML algorithms. Skilled in TensorFlow, OpenCV, LangChain, and Flask, with projects spanning image classification, video analysis, and NLP applications. Worked on RAG-based QA bots and retrieval systems using open-source LLMs. Eager to leverage AI for impactful, scalable, and multimodal solutions.

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**

- Built a real-time traffic monitoring system using YOLOv8 for vehicle detection and SORT for ID-based tracking.
- Applied custom region mask and dual-line logic to calculate vehicle speed using timestamp differences.
- Enabled automatic logging and saving of overspeeding vehicle images with ID, speed, and timestamp.
- Utilized Python, OpenCV, and TensorFlow with modular overlays.

RAG with Gemini + Qdrant + Cohere Reranker (Live Link) **2025**

- Developed a Streamlit-based RAG app integrating Google Gemini for answer generation, Qdrant for vector storage, and Cohere Reranker for enhanced retrieval precision.
- Implemented text chunking (1000 chars, 150 overlap) and embeddings with all-MiniLM-L6-v2 (384-dim); managed embeddings in Qdrant vector DB.
- Designed retrieval pipeline with top-k (10) search → Cohere reranking → top-3 context for grounded responses with inline citations.
- Added response latency tracking and token usage estimation, optimizing for speed and cost using Gemini Flash.

Media Sync Engine – Automated Sports Commentary Generator **2025**

- Developed a FastAPI backend integrating BLIP for frame analysis and caption generation from video highlights.
- Leveraged Llama 3 (via Ollama) with structured prompts to convert captions into emotionally engaging ESPN-style commentary scripts.
- Implemented text-to-speech (gTTS) and synchronized generated audio with video using MoviePy for full commentary playback.
- Built a Streamlit interface for easy video upload, server interaction, and one-click commentary video download.

Malaria Detection using CNN + DWT (under Dr. Nikhil Dhengre) **2025**

- Developed a hybrid CNN-DWT model achieving 96.14% accuracy, F1 = 0.9614, and MCC = 0.9229.
- Applied Discrete Wavelet Transform for multi-resolution image analysis prior to CNN processing.
- Implemented using TensorFlow/Keras on Google Colab GPU with EarlyStopping and custom callbacks.

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: ANN, CNN, RNN, YOLO, U-Net, ResNet
Techniques: Computer Vision, NLP, audio signal processing, RAG, Neural Networks, Information Retrieval, Generative AI