Shakti Labhaniya

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Education

Vellore Institute of Technology **Oct 2022 – Present**

Integrated MTech in Artificial Intelligence *CGPA: 9.04/10*

– *Relevant Coursework: Data Structures & Algorithms, Machine Learning, Generative AI, Deep Learning*

Experience

Machine Learning Intern **Oct 2025 - Dec 2025**

Indian National Centre for Ocean Information Services (INCOIS) ***Hyderabad***

– Implemented a multi-class fog–cloud classification pipeline using Random Forests, a custom Pattern Recognition Filter, supported by a Python-based polygon labeling tool, enabling structured training over 10 atmospheric classes.

– Operationalized a fully automated, near-real-time fog detection and severity monitoring pipeline using Python-based SMTP/MIME, integrating multi-sensor (AVHRR, VIIRS) and multi-satellite data with 100% per-file alert delivery.

– Achieved 95.97% overall classification accuracy, mIoU of 0.8703, False Alarm Rate (Fog) of 0.0178, and Critical Success Index (CSI) of 0.9814, indicating reliability and robustness in nighttime and daytime fog detection.

Projects

PageSense: Webpage-aware LLM Chrome Extension **Nov 2025 - Ongoing**

– Built a fully local, browser-aware conversational AI using LLaMA-3.2-1B with Ollama, including a Manifest V3 Chrome extension with DOM-aware metadata extraction and Wikipedia-specific parsing for accurate context.

– Optimized real-time inference and streaming performance by implementing token-level generation controls, achieving sub-100 ms page ingestion latency and a 59.5% reduction in response time (6.33 ms → 2.56 ms).

– Accelerated conversational retrieval by integrating a Zilliz Cloud (Milvus) vector database, delivering sub-50ms latency for semantic searches and ensuring context persistence across multiple browsing sessions.

Deep Image Steganography **June 2025 - Aug 2025**

– Architected and implemented a deep learning–based image steganography system using Stable Diffusion (runwayml/stable-diffusion-v1-5) and DDPM, featuring a custom alpha-blending encoder–decoder for secure, high-capacity data hiding.

– Standardized the data pipeline to 512×512 image resolution and developed a custom Flickr8k dataset loader with batch-wise processing, enabling efficient large-scale evaluation and consistent training across steganography experiments.

– Evaluated and optimized reconstruction quality using standard image metrics, achieving high SSIM scores (0.9644–0.9982) and low MSE by refining pixel-level blending techniques.

Technical Skills

Languages: Python, Java
AI/ML: Machine Learning, PyTorch, TensorFlow, Keras, Scikit-learn, OpenCV, MLflow, Hugging Face Transformers
Specialized skills: Local LLM Deployment (Ollama), RAG Pipelines, LangChain, LLM Prompt Engineering
Databases, Cloud and Version Control: Vector Databases, AWS, Docker, Git, Github

Research & Achievements

- Shakti Labhaniya, et al. "*A Survey of Machine Learning Techniques for Enhancing Scene Description in Assistive Systems*" Proceedings of the IEEE International Conference on Image Information Processing (ICIIP 2025), 2025. Available online: https://ieeexplore.ieee.org/document/11346259
- Presented "*Real-Time Fog Detection and Mapping Using Multi-Sensor AVHRR–VIIRS Satellite Data and Machine Learning Techniques*" research work at AERIS-2026 National Conference.
- Semifinalist – NASSCOM Tech Developer Hackathon **Aug 2025 – Sept 2025**