Shrinkhla Pandey

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Education

Vellore Institute of Technology Oct 2022 – Sep 2027
Integrated Masters of Technology, Artificial Intelligence CGPA - 8.98

Experience

Project Intern Oct 2025 – Dec 2025
TATA Steel Jamshedpur(Data Office)

- Developed a face-based identity verification system using deep feature embeddings and cosine similarity to support secure access control, achieving **95.8%** accuracy and **0.94** F1-score.
- Designed and implemented a real-time inference pipeline using FastAPI and React, integrating authentication, request validation, and activity logging to ensure secure and reliable operation in production environments.
- Built and optimized the end-to-end face detection and recognition workflow using YOLOv8, reducing inference latency from **480 ms to 120 ms** through pipeline optimization, preprocessing improvements, and efficient model deployment.

Projects

SAR Image Colorization |*PyTorch, U-Net, Docker* | GitHub Nov 2025 – Ongoing

- Designed and trained a customized U-Net architecture on **50,000+** paired SAR–RGB images, improving reconstruction quality by reducing MSE from **0.039 to 0.033** and achieving **0.91 SSIM**.
- Built an optimized data preprocessing and augmentation pipeline, reducing training time by **22%** and improving model generalization across different satellite imaging conditions.

Deep Image Steganography |*Stable Diffusion, DDPM, OpenCV*| Github Jun 2025 – Oct 2025

- Designed a hybrid DDPM and Stable Diffusion based framework for secure data embedding in digital images, supporting high capacity message hiding with minimal visual distortion.
- Implemented a custom encoder–decoder pipeline achieving **99.82%** SSIM and reducing steganalysis detection accuracy by **87%** across benchmark test images.
- Automated large-scale evaluation on **10,000+** images with version-wise logging and performance comparison to guide model optimization. *(https://image-stego-c5n5.onrender.com)*

Conversational AI Chatbot |*Gradio, Transformers (HuggingFace), PyTorch* | Github May 2025 – Jun 2025

- Built a context-aware conversational system using **LLaMA 3.2–1B** with embedding-based memory, achieving **95%** conversational coherence and **91%** intent classification precision.
- Designed prompt filtering, sentiment analysis, and response validation modules to improve output stability and reduce irrelevant responses by **30%**.
- Optimized backend request handling and caching mechanisms, reducing average response latency by **27%** during multi-user testing.

Technical Skills

Programming: Python, C++, Java, SQL (PostgreSQL)
Coursework: Data Structures & Algorithms, DBMS, Operating System, Computer Networks
AI & Machine Learning: Deep Learning, CNNs, U-Net, YOLOv8, Embedding Models, NLP, Generative AI
Frameworks & Tools: PyTorch, TensorFlow, NumPy, Pandas, OpenCV, Hugging Face Transformers, Docker
Tools & Platforms: Docker, Git, GitHub, FastAPI, Gradio

Extra-Curricular & Achievements

- **Semifinalist, NASSCOM Tech Developer Hackathon 2025 (Selected among top teams from 1,200+ participants)**: Developed an agentic AI-based call automation system with autonomous intent detection.
- **Co-author, IEEE ICIIP 2025**: Published a peer-reviewed research paper on machine learning-based assistive scene description systems. Available online: *ieeexplore.ieee.org/document/11346259*
- **Core Member, Eureka Club (PR & Outreach Team)**: Organized **7+** technical workshops attended by over **1,000+** students and led a 5-member outreach team.