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Artificial Intelligence and Machine Learning
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EXPERIENCE

Machine Learning Intern at Infoteck Solutions *(Remote)* ***October 2024 – March 2025***

- Developed a custom Large Language Model (LLM) to process and convert files between formats automatically (XML to JSON), Enhancing data handling tasks to be faster and more efficient.
- Analyzed clients' AI systems to identify strengths and gaps, and used these insights to solve practical problems, improving performance.

ML Research Intern at Indian Institute of Information Technology, Nagpur *(Remote)* ***May 2024 - July 2024***

- Designed a hybrid architecture that integrates diffusion models with GAN-based discrimination for image generation.
- Developed an advanced generative model that integrates a diffusion model as the generator and a GAN-based discriminator to produce high-quality, realistic images. Leveraged Kaggle datasets via the Kaggle API and trained the model using NVIDIA T4 GPUs.
- **Technologies Used**: Python, TensorFlow, Keras, NumPy, Matplotlib, Kaggle API

PROJECTS

AI-Driven-Border-Security-and-Strategic-Management-System *(LINK)* ***December 2024***

- Developed a real-time face and weapon detection system integrating YOLOv8 for detecting weapons like pistols, rifles, knives, and persons. Haar cascade and LBPH detect and classify faces as "Soldiers" or "Terrorists," OSNet Re-ID is used to re-identify armed unauthorized individuals. The system tracks individuals across frames, assigns stable IDs, and raises alerts when an unknown person or "Terrorist" is detected carrying a weapon. ***Tools and technologies used*:** YOLOv8 (Ultralytics YOLO), OSNet, LBPH, Haar Cascades, OpenCV, Python, PyTorch, NumPy, Matplotlib, scikit-learn.

Skin Disease Prediction using Multi-Head Self-Attention and Report Generation ***May 2025***

- Developed an architecture that fuses metadata and image features using Multi-Head Self-Attention for skin disease classification.
- Employed a pre-trained Vision Transformer (ViT) for image feature extraction and trained the model on a modified PAD-UFES-20 dataset using an RTX 4050 GPU. ***Tools & technologies used:*** ViT Model, Python, PyTorch, NumPy, Matplotlib.

DeepFake Detection using Deep Learning *(LINK)* ***April 2025***

- Designed and implemented a deepfake detection system by integrating EfficientNet-B0 for spatial feature extraction and BiLSTM for temporal sequence modeling, enabling accurate detection of manipulated videos in the Celeb-DF v2 dataset.
- Performed frame extraction, face detection, and data augmentation to boost model robustness and trained the system on high-resolution videos using NVIDIA RTX 4050 GPUs. **Tools & technologies used:** Kaggle, PyTorch, Matplotlib, scikit-learn, Numpy, Seaborn

Language-Translation-and-Summarization *(LINK)* ***November 2024***

- Built an NLP pipeline using mBART for Hindi-to-English translation and Pegasus for concise summaries, tackling linguistic and cultural nuances for fluent outputs.
- ***Tools & technologies used:*** Python, PyTorch, pandas, matplotlib, nltk, transformers, pre-trained models like m-BART, and Pegasus.

Other Projects: *Sign Language Detection*, *Sentiment Analysis*, *Music Recommendation System using Reinforcement Learning*, *Earthquake Prediction*, *Crop Disease Prediction*, *Object Detection in Simulated space stations*, *Job scraping Automation using n8n*

TECHNICAL

Languages: Python, R, SQL
Developer Tools: Git/Github, MySQL, VS Code, Jupyter Notebook, Power BI, Google Dialogflow, Kaggle API, Linux
Frameworks: NumPy, Pandas, Scikit-learn, Matplotlib, OpenCV, Seaborn, NLTK, SpaCy, Gensim, Flask, Keras, TensorFlow, PyTorch, Hugging Face Transformers, FastAPI, React JS
Cloud/Databases: MySQL, XAMPP

EDUCATION

- **Indian Institute Of Information Technology, Nagpur** ***November 2022 – June 2026***

Bachelor's of Technology, Computer Science Engineering - Artificial Intelligence and Machine Learning

Relevant courses: Data Structures, Machine Learning, Artificial Intelligence, Natural Language Processing, Computer Vision Techniques, Robotics, Conversational AI, Reinforcement Learning, Deep Learning & Neural Networks.

CERTIFICATIONS AND ACHIEVEMENTS

- Nvidia Building Transformers-Based NLP applications.
- Nvidia Accelerated Computing with CUDA Python.
- Nvidia Certified Deep Learning.
- IBM Certified Data Analysis
- Deep Learning Image Generation with GANs and Diffusion Model, Udemy
- Generative AI, from GANs to CLIP, with Python and PyTorch, Udemy.
- .Prompt Engineering PRO, Udemy.