

Deep Patel

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Education

Bachelor of Technology in Computer Science and Engineering

Dec 2021 - May 2025

Indian Institute of Information Technology Raichur, Karnataka

CGPA: 8.00

- **Relevant Coursework:** Computer Architecture, Software Engineering, Operating Systems, Databases, IoT, Algorithms, Machine Learning, NLP, Image Processing, Generative AI, Quantum Machine Learning & Computing

Experience

Research & Development Intern | Tarutium Global Consulting

May 2024 - Jul 2024

- Engineered an **end-to-end NLP pipeline** integrating Twitter API, spaCy, PostgreSQL, and WebGIS to extract, geotag, and plot location mentions from tweets, enhancing **disaster event tracking** by 80%.
- Designed and implemented a Python GUI to orchestrate API-driven data ingestion, preprocessing, and pipeline automation—processing 100+ records and reducing manual effort by 80%.

Projects

DELTA : DeepSeek for Event-based Location Tracking and Analysis

- Integrated the **DeepSeek-R1 1.5B** model from **Ollama** to perform zero-shot named entity extraction on over 2,800 disaster-related tweets (earthquakes, wildfires, hurricanes) across **6 nations**; conducted detailed model dissection along with **PEFT** while preserving **data privacy** through full **local execution**.
- Synthesized an end-to-end Streamlit-based **multimodal web application** that retrieved, cleaned, and summarized queried YouTube videos using DeepSeek-R1; generated concise 250-word summaries with integrated **text-to-speech** audio output, enabling real-time, accessible information delivery across 9+ videos per query.

RumbleRadar : NLP Framework for Disaster Risk Reduction

- Optimized Named Entity Recognition by fine-tuning the lightweight spaCy model using PyTorch, significantly elevating accuracy from 30% to 96% across 50,000+ tweets spanning more than 5 earthquake events.
- Developed a **Streamlit**-based NLP web application for **Aspect-Based Sentiment Analysis** of 10+ aspects of disaster and **Topic Modeling**, delivering real-time insights for earthquake response strategies.

QRClassify : Counterfeit QR Code Detection Using Copy Detection Patterns (CDP)

- Constructed an QR code authentication pipeline by developing a feature extraction module that computed 10 key features like entropy, kurtosis, variance, and SNR, enabling clear differentiation of original prints from counterfeits.
- Deployed dual classification methods using traditional models (Decision Tree, Random Forest, SVM, XGBoost, k-NN) and deep learning (FFNN, CNN, ResNet-18), achieving up to 100% accuracy and F1-score.

Publications & Contributions

- **Patel, D.,** Bhattacharjee, P., Reza, A., Pradhan, P. (2025). "Earthquake Response Analysis with AI". In: Nguyen, N.T., et al. Recent Challenges in Intelligent Information and Database Systems. ACIIDS 2025. Communications in Computer and Information Science, vol 2495. Springer, Singapore. ([Link](#))
- **Patel, D.,** & Kumar, N. (2024). *Indian Constituencies* [Data set]. Kaggle. ([Link](#)) Collected and structured **Lok Sabha Elections 2024** data from *myneta.info* using **BeautifulSoup**, **Selenium**, for analysis on **candidate demographics**.

Technical Skills

- **Programming Languages:** Python, C, C++, SQL, JavaScript
- **Libraries & Frameworks:** PyTorch, TensorFlow, Hugging Face, Transformers, Streamlit, spaCy, NLTK, LangChain, Flask
- **Technologies & Tools:** Jupyter Notebook, Google Colab, MATLAB, LM Studio, Docker, Git, GitHub
- **Core Competencies:** Machine Learning, Deep Learning, Computer Vision, Natural Language Processing, LLM Fine-Tuning, Local LLM Execution, RAG, Agentic AI

Certifications & Achievements

- **AIR 512** in GATE 2025 (Data Science & Artificial Intelligence) | Score: 635/1000
- **Ethical Hacking** (NPTEL): (Top 1% + Gold Medalist)
- **Python for Data Science and Machine Learning** (Udemy)