ANAMIKA RAJESH

Aspiring ML Engineer

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SUMMARY

- B.Tech. in Data Science and A.I. student at IIT Bhilai **(Graduating 2027)**.
- Strong foundation in building **end-to-end ML workflows** with a focus on Deep Learning, **Transformers**, and NLP.
- Proven analytical and **problem-solving skills** demonstrated through speech translation and data analysis projects.

EXPERIENCE

Summer Research Intern 05/2025 – 07/2025
IIT Bhilai *Bhilai, India*

- **Tech Stack:** Python, NumPy, Pandas, Matplotlib
- Developed and simulated a novel signal-magnitude-based tracking algorithm for a mobile receiver in a RIS-assisted wireless system.
- Optimized RIS configurations and simulated a random waypoint mobility model to enhance tracking performance.
- Conducted **performance analysis** of algorithm scalability and localization accuracy under dynamic movement scenarios.

EDUCATION

B.Tech. in Data Science and Artificial Intelligence **Expected 05/2027**
Indian Institute of Technology (IIT), Bhilai CGPA: **8.28/10.0**
Higher & Secondary Education (CBSE) 2021 – 2023
Santhinikethan Public School Class XII: **94.2%** | Class X: **95.4%**

SKILLS

- **Programming Languages: Python**, C/C++, Java, Shell Scripting
- **ML Frameworks: PyTorch**, **TensorFlow**, Keras, **Scikit-Learn**, **OpenAI Whisper**
- **ML Concepts:** Deep Learning, NLP, **Sentiment Analysis**, **Recommender Systems**, **Transformers** (DistilBERT, RoBERTa, Conformer, ViT), Vision-Language Models (VLMs), **End-to-End ML Workflows**, GBDTs, CNNs, LSTMs
- **Data Processing/Analysis:** NumPy, Pandas, Matplotlib, Seaborn, Plotly, Librosa, SpecAugment, TF-IDF, Regex, **NLTK**, **VADER**, **WordCloud**
- **Tools/Platforms:** Git, GitHub, Linux, **AWS**, Visual Studio Code, LaTeX, **Streamlit**, **AssemblyAI API**

ACHIEVEMENTS AND CERTIFICATIONS

- **NTSE Scholar** (Cleared Stage I & II) *NCERT, 2020*
- **Deep Learning Fundamentals** *NVIDIA Deep Learning Institute, 05/2025*

PROJECTS

End-to-End Speech Translation for Low-Resource Indic Languages 08/2025 – Present

Ongoing Project

- **Tech Stack: PyTorch**, FAIRSEQ, **Transformers**, Pandas, Librosa, SpecAugment
- Developing an **end-to-end speech translation pipeline** (Marathi-to-Hindi), directly relevant to **automated transcriptioning** tasks.
- Implementing and training a **Conformer-based encoder** and **Transformer decoder** using the FAIRSEQ S2T framework.
- Managing the full **data workflow**: pre-training the encoder on Mozilla Common Voice and fine-tuning on a WSLT corpus.
- Utilizing **SpecAugment** for robust audio **feature extraction** and augmentation to improve model robustness.
- Establishing a reproducible, open-source E2E baseline to benchmark translation quality for this low-resource pair.

Amazon ML Challenge 2025 08/2025 – 09/2025

Team Lead (Team: AI Rangers)

- **Tech Stack: PyTorch**, **Transformers** (Qwen 2-VL, ViT, RoBERTa), Scikit-learn, Pandas
- Led "AI Rangers" team to a **Top 3.5% finish (Rank 700/20,000+)** in a multimodal price prediction challenge.
- Fetched, preprocessed, and managed a dataset of **75,000+ image-text pairs** for training and inference.
- Implemented and finetuned a **Qwen 2-VL 7B** model for end-to-end multimodal price prediction from catalogue content.
- Developed and benchmarked a **two-tower model** (ViT-base + RoBERTa/TF-IDF) to process image and text modalities separately.
- Achieved a final SMAPE score of 49.0 on the test set, demonstrating robust prediction accuracy.

Multilingual Meeting Notes Generator 06/2025 – 07/2025

Full-Stack ML Project

- **Tech Stack: Streamlit**, **AssemblyAI API**, **OpenAI Whisper**, Python, Multilingual LLMs
- Developed an end-to-end application to automatically generate comprehensive English meeting notes from multilingual audio.
- Designed the user interface with **Streamlit** for audio file uploads and to display results.
- Integrated **AssemblyAI's Universal API** for automatic language detection (99+ languages) and high-accuracy, speaker-diarized transcription.
- Benchmarked cloud API performance against local transcription by implementing and evaluating **OpenAI's Whisper** model.
- Utilized a multilingual LLM to process the transcription for English summarization, speaker-level analysis, and action item extraction.

Lyric-Based Emotion and Sentiment Recommender 04/2025 – 05/2025

NLP & Recommender System Project

- **Tech Stack: PyTorch**, **Transformers** (DistilBERT, RoBERTa), **NLTK**, **VADER**, **Scikit-learn**, **WordCloud**, Seaborn
- Engineered a dataset by aggregating lyrics and metadata for 740+ Taylor Swift songs; built a text-cleaning pipeline using **Regex** and **NLTK**.
- Benchmarked sentiment analysis models, including rule-based **VADER** and a pre-trained **DistilBERT** model.
- Implemented a multi-class emotion classifier using a **RoBERTa-base-go_emotions** model to categorize songs into 27 distinct emotional labels.
- Built a content-based recommender system to suggest songs based on the detected sentiment or emotion of a user's text input.
- Created **WordCloud** and **t-SNE** visualizations from **BERT** embeddings to analyze lyrical themes and cluster songs by sentiment.

Library Traffic Analysis and Targeted Advertisement 01/2025

Data Analysis Project

- **Tech Stack:** Python, Pandas, Matplotlib, Seaborn
- Collected and analyzed library logbook data from 70+ students over a 5-day period to identify usage patterns and solve overcrowding.

- Identified key operational insights: peak traffic (11 AM - 12 PM), busiest days (Jan 7), and an average student session length of 3.84 hours.
- Addressed data integrity challenges from manual logbooks (e.g., unclear handwriting, missed entries) by structuring and cleaning the dataset.
- Proposed a system for targeted ”advertisements” to students, notifying them of real-time seat availability and quiet study periods based on traffic analysis.

LEADERSHIP AND ACTIVITIES

- **Mentor Coordinator**, Student Mentorship Program (SMP), IIT Bhilai 2025 – 2026
- **Secretary**, Nirvana - Mental Health & LGBTQ+ Support Group 2024 – 2025
- **Management Executive**, National Service Scheme (NSS), IIT Bhilai 2024 – 2025
- **Mentor**, Student Mentorship Program (SMP), IIT Bhilai 2024 – 2025