Anwesa Mondal

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Education

Indira Gandhi Delhi Technological University for Women *Aug 2024- Present*
B.Tech in Computer Science Engineering with specialization in Artificial Intelligence (8.7 CGPA)

- **Computer Science:** Database Management System, Object Oriented Programming, Data Structures and Algorithms
- **Mathematics:** Probability and Statistics, Linear Algebra, Vector Calculus, Advanced Calculus, Discrete Mathematics

Experience

National Institute of Technology, Rourkela—*Research Internship* [*Completion certificate*] *May 2025- July 2025*

- Designing a hybrid model using LSSVM and Random Forest for sensor degradation data with high missing rates (10–80%).
- Benchmarking against baseline methods using RMSE, MAE, and variance on real-world multi-sensor time series.

Carnegie Mellon University – Computational Biology Dept. —*Research Internship* *June 2025- Present*

- Assisting in a collaborative project between Carnegie Mellon University and Harvard Medical School on 3-dimensional brain Magnetic Resonance Imaging (MRI) surface registration using neural deformation field learning.
- Working under Dr. Taylor Zeng to implement and evaluate anatomical alignment techniques for medical image analysis.

Publications

- Abstract titled "A Grid-Tuned LSSVM and Ensemble Learning Framework for Missing Data Imputation" accepted for presentation and publication at the 5th Indian IEOM Conference 2025, VIT Vellore, India (Nov 6–8, 2025) [*Letter*]

Technologies

Programming Languages: C++, Python, R.
Skills: Problem-Solving, Machine Learning, Deep Learning, Data Analytics, RAG Systems, PostgreSQL, Generative AI
Libraries: NumPy, Pandas, Matplotlib, Scikit-Learn, TensorFlow, PyTorch, LangChain, OpenAI, SciPy, Seaborn, BeautifulSoup, Streamlit, Flask, OpenCV, Mediapipe, NLTK, Tiktoken, Transformers, Plotly, Pillow, Uvicorn

Projects

SafeDrive – AI-powered road safety and insurance system *SafeDrive*

- Built GenAI-powered analytics and real-time alert systems using the Gemini API to analyze driving behavior (jerk, speed, etc.) for insurance claim suggestions and detect drowsiness with MediaPipe, triggering emergency alerts via Twilio.
- Developed an AI chatbot for live claim support and dynamic GPS-based risk analysis using accident-prone zone data.
- **Technologies:** Gemini API, Twilio, FastAPI, RESTful API, Python, OpenCV (support integration) , MediaPipe

Speedline - AI-powered train traffic management system *Speedline*

- Developed real-time AI system for dynamic train scheduling, increasing punctuality and efficiency on rail networks
- Implemented conflict-free scheduling using track, signalling, and platform constraints, reducing operational bottlenecks
- Designed predictive delay modules with dynamic rerouting, delivering actionable alerts and automated conflict resolution
- **Technologies:** Next.js, FastAPI, Groq

GPT-2 from scratch *github*

- Tokenized the TinyStories dataset using tiktoken, reducing overhead, ensuring effective positional embedding generation
- Built a small language model for text generation of around 50-60 million parameters, leveraging self-attention mechanism
- Implemented training pipeline with cross-entropy loss and Adam optimizer, improving convergence and GPU management
- **Technologies**: Python, PyTorch, tiktoken, Huggingface, Google Colab

Practice Project : Whatsapp Chat Analyzer, Healthcare app, Moon Crater Detection, Virtual Paint, Movie Recommender.

Achievements

- Won Industrial Ideathon 2025 by the Delhi Government; felicitated by the CM, who vowed to collaborate with our team
- Received felicitation from my university for my achievements, enhancing institutional reputation and pride.
- 5-time finalist in national-level hackathons organized by government bodies and leading institutes across the country.