Dhruv Kumar

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GitHub — LeetCode — LinkedIn

Education

Netaji Subhas University of Technology (NSUT), New Delhi **2023 – 2027**
Bachelor of Technology in Computer Science Engineering CGPA: 7.05/10

Experience

Smart India Hackathon (SIH) 2025 — Winner December 2024 – January 2025
AI/ML Developer — Indian Heritage & Culture (AICTE & Ministry of Culture)

- Developed an AI system to generate culturally accurate Indian mythological stories in multiple native languages for the BharatVerse project, addressing the need for accessible digital storytelling in regional languages.
- Architected a multimodal AI pipeline leveraging semantic search with Transformers, narrative generation using Qwen LLM, and FAISS vector retrieval to reduce story generation time to 5–7 seconds with integrated multilingual audio synthesis.
- Secured 1st place by demonstrating real-time story generation across 5 Indian languages, achieving 95%+ cultural accuracy through fine-tuned language models and prompt engineering techniques.

Projects

AI Medical Vision & Voice Assistant December 2024
Multimodal AI — Speech Recognition — Computer Vision

- Built an end-to-end multimodal healthcare assistant to enable hands-free medical image analysis for clinicians requiring real-time diagnostic support during examinations.
- Integrated Whisper API for accurate speech-to-text conversion, vision-language models for radiology image interpretation, and text-to-speech synthesis to create a conversational diagnostic interface with 3–4 second average response time.
- Validated system performance achieving 85–90% semantic relevance on curated medical query benchmarks, demonstrating practical utility for voice-driven clinical workflows in radiology and pathology departments.

Credit Risk Detection System October 2024
Machine Learning — Classification — Imbalanced Learning

- Developed a binary classification model to predict loan default risk from historical banking data with severe class imbalance (default rate below 5%), addressing challenges in identifying high-risk borrowers.
- Applied SMOTE oversampling technique to balance minority class representation by 250%, then trained ensemble classifiers with grid search hyperparameter optimization and 5-fold cross-validation to ensure model robustness.
- Achieved 89% test accuracy with precision 0.87 and recall 0.85, reducing false negative predictions by 40% compared to baseline models and enabling more reliable credit risk assessment for lending institutions.

House Price Prediction Model September 2024
Regression Analysis — Feature Engineering — Statistical Modeling

- Built a regression model to accurately predict residential property prices from real estate datasets containing 80+ features with missing values and nonlinear relationships between variables.
- Conducted exploratory data analysis identifying key pricing drivers, then engineered features including polynomial terms, interaction variables, and logarithmic transformations to capture complex pricing patterns, validated through stratified 5-fold cross-validation.
- Delivered R^2 score of 0.8629 on test data, explaining 86.29% of price variance with consistent cross-validated performance ($R^2 = 0.865$), outperforming baseline linear models by 12% in predictive accuracy.

Achievements

- **Winner — Smart India Hackathon (SIH) 2025** for "Indian Heritage and Culture" (AICTE & Ministry of Culture, Govt. of India).
- **Qualified Level 1 — Bharat AI Quest Hackathon 2025**, shortlisted among top participants nationwide.

Technical Skills

Programming Languages: Python, Java, SQL
Machine Learning: Scikit-learn, TensorFlow, Keras, PyTorch, Supervised/Unsupervised Learning
Deep Learning & NLP: Transformers, Hugging Face, NLTK, LSTM
Generative AI: Large Language Models (LLMs), FAISS,
Libraries: Pandas, NumPy, Matplotlib, Seaborn, Feature Engineering
Databases & Backend: SQL, Flask
Tools & Platforms: Git, GitHub, Jupyter Notebook
Core CS Fundamentals: Data Structures, Algorithms, Object-Oriented Programming