Goteti Sai Abhinav

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Education

The LNM Institute of Information Technology, Jaipur, Rajasthan 2022 - 2026
Bachelor of Technology in Communication and Computer Engineering
Sri Prakash Vidya Niketan, Payakaraopeta, Andhra Pradesh 2022
Class XII, CBSE

Skills

Programming Languages: C, Python, MySQL

Frameworks/Libraries: PyTorch , Numpy, Pandas, Scikit-learn, Flask, Git, Docker

Concepts: Statistics, Machine Learning, Deep Learning

Soft Skills: Problem Solving, Commitment, Teaching

Projects

Audio Image classification using Hybrid Quantum Neural Network| *project link*

Academic Project| Team size: 3| *PyTorch, Qiskit , CNN, MLP, Auto Encoders*

- Developed a hybrid classical-quantum neural network to distinguish between COPD, Pneumonia, and Healthy states using audio images from lung sound signals with 90.5% overall accuracy.
- **My contribution:** Statistical analysis on audio dataset and addressed class imbalance problem, where COPD was the dominating class, using MLP-based Variational Auto Encoder.
- Conducted in-depth statistical analysis on a dataset of 920 audio files of varying length from 126 patients to identify and address biases and prepare for model development.
- Investigated class imbalance at the patient level, by creating of disease-per-patient histograms to distinguish between widespread, low and high-severity cases in a small number of patients.
- Quantified demographic and data collection biases, including age distribution and non-uniform sampling across 7 chest locations.
- Engineered an MLP-based Variational Autoencoder (VAE) to resolve the critical class imbalance problem. This involved designing the architecture (3-layer encoder, 2-layer decoder) to generate high-quality synthetic data for the underrepresented Pneumonia class.
- Validated the data generation by achieving a 0.70 cross-correlation between synthetic and real samples.
- Achieved an **F1-score of 0.937** on the majority class (COPD) and **0.893** on the minority classes.

California House Price Predictor Application | *application link| github link*

Scikit-learn, Pandas, Flask, Matplotlib, Seaborn, Pickle, Git, Docker, Optuna

- Pipelined the preprocessing stage using Scikit-learn's ColumnTransformer to apply feature-specific scaling (StandardScaler, Log Transformation) based on statistical analysis of distributions.
- Trained a SGDRegressor model using a custom mini-batch training loop with partial_fit and obtained best hyperparameters using Optuna.
- Achieved an **R^2 score of 0.62, MAE: 0.53, RMSE: 0.71** on test set and analyzed residual plots to validate linear regression assumptions.
- Developed a web application with Flask and HTML, allowing users to input feature values

and receive price predictions from the serialized (pickle) model.
- Containerized the application using Docker and published the image to Docker Hub.

Training

Summer School on Deep Learning - *IIITDM Jabalpur* (June 2025) | ***github link***
Learnings: Neural Networks and their Optimization, Generative models (GAN, VAE, Diffusion Model), Large Language Models.

Achievements

- Qualified GATE 2025 with All India Rank 2472 in Data Science and Artificial Intelligence stream. ***(score_card)***
- Achieved Certificate of Excellence in Summer School 2025 on Deep Learning organized by IIITDM Jabalpur. ***(certificate)***

Positions of Responsibility

Teaching Assistant in AI-ML Laboratory course: Mentored 100+ students every week in solving questions from the book "AI: The modern Approach", written by S.Russell and P.Norvig through programming in Python ***(certificate)***.

Relevant Coursework

Data Structures and Algorithms	Database Management Systems	Object-oriented Programming
Computer Networks	Modern approach to AI	Operating Systems
Knowledge Graphs	Probability	Linear Algebra

Extra Curricular

- Member and Problem Setter in Astronomy club, LNMIIT (2022-2024).
- Member of Quizzinga, The LNMIIT Quiz club (2022-2024).

Personal Interests

- Badminton, Chess, Cricket
- Sketching, Reading Mythological Epics, Travelling