Saket Kumar

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SaketKumar | Saket Kumar

Academic Qualifications

Year	Degree/Certificate	Institute	CPI/%
2024 - Present	M.Sc (Economics)	Indian Institute of Technology Kanpur	**8.72**/10
2021-24	B.A. (Statistics)	Banaras Hindu University	8.01/10
2021	Class XII (CBSE)	Jawahar Navodaya Vidyalaya Samastipur	90.0%
2019	Class X (CBSE)	Jawahar Navodaya Vidyalaya Samastipur	96.0%

Scholastic Achievements

- Achieved **A* grades** in two courses at IIT Kanpur for exceptional performance.
- Secured **All India Rank 513** in **IIT-JAM 2024** Out of 3536 candidates.

Key Projects

Hybrid ARIMA–LSTM Modeling for Financial Time Series Forecasting | Course project (ECO723)|*May'25-June'25*

- Implemented **ARIMA(p,d,q)** and **GARCH(p,q)** models for financial return series (600+ obs.), capturing stationarity, volatility clustering, and long-memory effects.
- Designed a **hybrid ARIMA–LSTM model**, integrating linear ARIMA forecasts with nonlinear LSTM sequence learning, improving predictive accuracy by **22% over baseline**.
- Performed extensive **hyperparameter tuning** (units, dropout, activation, epochs, optimizers, layers) with time-series cross-validation to enhance robustness.
- Generated **rolling forecasts with variance estimates**, achieving **15% RMSE reduction** and demonstrating the superiority of hybrid deep learning–statistical models.

Heart Attack Risk Prediction Using Machine Learning on Personal Health Data | Self Project *Apr'25-May'25*

- Preprocessed a Kaggle heart disease dataset (**240k+ samples**) by applying **ordinal**, **one-hot**, and **binary encoding** to transform 40+ categorical features into numeric form.
- Tackled severe **class imbalance** (positive class 5%) using **undersampling**, **oversampling**, **SMOTE/SMOTENC**, and **class weighting**, boosting recall from **0.22** to **0.79**.
- Built and optimized **CatBoost** and **Logistic Regression** models, achieving **ROC AUC ≈ 0.88**, minority class **F1-score** improvement from **0.32** to **0.47**, and test accuracy up to **95%**.
- Automated preprocessing, resampling, threshold tuning, and evaluation pipelines in reusable **Python classes**, enabling reproducible experimentation on **49k+ test samples**.

Flight Price Prediction using Machine Learning Models | Self Project *Mar'25-Apr'25*

- Processed a flight fare dataset of **300k+ records** with features such as airline, route, class, duration, stops, and booking lead time.
- Performed **EDA, feature engineering**, and **hyperparameter tuning** with cross-validation to enhance model accuracy.
- Achieved strong predictive performance with **Random Forest** ($R^2_{adj} = 0.984$**, MAE=1166, RMSE=2856)** and **XGBRegressor** ($R^2_{adj} = 0.978$**, MAE=1866, RMSE=3369)**.
- Validated robustness with **MAPE of 7.9% (RF)** and **14.4% (XGB)**, demonstrating reliability for accurate flight price

Sentiment Analysis on IMDB Movie Reviews using LSTM | Self Project *July'25-Aug'25*

- Preprocessed the **IMDB dataset (50k reviews)** with text cleaning, tokenization, and sequence padding (200 tokens), and encoded labels for binary classification.
- Designed an **LSTM architecture** with embedding layers, dropout, and recurrent dropout, trained using TensorFlow/Keras with GPU acceleration.
- Performed **hyperparameter tuning** (batch size, epochs, embedding dimensions) and stratified 80/20 train–test split to enhance robustness.
- Achieved **85–87% test accuracy**, demonstrating robust sentiment prediction and applicability to real-world domains such as customer feedback and social media analysis.

Technical Skills

Programming: Python, R, SQL (MySQL), C++, MATLAB, LaTeX
Libraries & **Tools:** NumPy, Pandas, scikit-learn, TensorFlow, Matplotlib, Git, Stata, MS Excel

Relevant Courses

*** - Online Courses*

Introduction to Machine Learning (Ongoing)	Statistical Inference and Decision Theory
Applied Probability and Statistics	Descriptive Statistics and Distribution Theory
Supervised Machine Learning: Regression and Classification **	Computational Methods in Economics (A*)
Data Science Lab-1	Sample Surveys and Design of Experiments
Numerical Methods	Foundation of Financial Risk (A*)

Extra Curricular Activities

- **Cadet, NCC (12 Bihar Bn.)** – Earned **"A" Certificate**, demonstrating discipline and leadership.

Positions of Responsibility

- **Student Guide** – Mentored two Y25 students for academic, social, and cultural integration at IITK.
- **Prefect, Jawahar Navodaya Vidyalaya, Samastipur (2019–20)** – Led student activities and supported discipline, teamwork, and academic culture in the school.