Prem Katyain

+91-9109766552 | katyain1prem@gmail.com | linkedin

Education

Birla Institute of Technology, Mesra — Ranchi, JH
Bachelor of Technology in Electrical and Electronics Engineering; CGPA: 7.8 — *2022 – Present*

DAV Public School — Jamshedpur, JH
Class 12th (CBSE) - 92% — *2021 – 2022*

Projects

Electric Fault Detection using Random Forest & Neural Networks

Personal Project | Electrical Systems | Classification | Machine Learning | *GitHub: link*

- Performed comprehensive Exploratory Data Analysis (EDA) on three-phase voltage and current data to analyze fault types and address class imbalance.
- Engineered domain-specific features using symmetrical components (`I_zero`, `I_positive`, `I_negative`) to improve model separability.
- Achieved **98.2% accuracy** using a **Random Forest classifier**; reduced false positives in the "No Fault" class through **custom softmax thresholding logic**.

Electric Vehicle Charging Demand Forecasting

Personal Project | ACN Dataset | Time Series | Machine Learning | *GitHub: link*

- Developed a **SARIMA**-based time series model to forecast EV charging demand from hourly `charging_current` data.
- Performed data cleaning, exploratory analysis, seasonal decomposition, and **ADF** test to evaluate stationarity and cyclic trends.
- Achieved a **Mean Absolute Error (MAE) of 2.71**; generated 7-day hourly forecasts for operational demand planning.
- Visualized actual vs predicted demand to derive insights for usage patterns and load scheduling.

Customer Churn Analysis – Telecom Dataset

Python | Data Analysis | Seaborn/Matplotlib | Business Insights | *GitHub: link*

- Performed in-depth exploratory data analysis on **7,000+ customer records** to identify key churn drivers using **demographic, service, and billing features**.
- Uncovered churn patterns related to **senior citizen status, fiber-optic usage, monthly contracts, and lack of automatic payments**.
- Visualized 20+ categorical and numerical variables using **heatmaps, countplots, pie charts, and grouped bar graphs**.
- Provided actionable recommendations to reduce churn, including bundling services, promoting long-term contracts, and offering auto-payment incentives.

Book Recommender System

Machine Learning | Python | Flask | Deployment on Render | *Live Demo: link* | *GitHub: link*

- Built a Book Recommender System using **collaborative filtering** (unsupervised learning) to suggest 5 similar books based on user input.
- Computed similarity scores using **cosine similarity** from `sklearn.metrics.pairwise`; performed data cleaning and feature engineering.
- Developed a **Flask-based web app** that also displays the top 50 most popular books.

Skills

- **Programming and Scripting** – Python, SQL, MATLAB
- **Data Analysis and Visualization** – Power BI, Pandas, Matplotlib, Seaborn
- **Machine Learning and AI** –Scikit-learn, TensorFlow
- **Data Science Tools and Techniques** –Data Preprocessing, Feature Engineering, Model Evaluation, Supervised and Unsupervised Learning
- **Other** –NumPy, Jupyter Notebook, Git, Excel

Certifications

- **IBM Data Analyst Professional Certificate** – Coursera (2025)
  Completed end-to-end specialization covering Excel, SQL, Python, data visualization, and dashboarding.
- **Machine Learning Specialization** – DeepLearning.AI on Coursera (2025)
  Mastered supervised learning (linear regression, logistic regression, neural networks, decision trees), unsupervised learning (clustering, anomaly detection), recommender systems, and reinforcement learning.

Domain Interests

- Strong interest in applying data science to domains like energy systems, electric mobility, and operational forecasting..
- Leverage my electrical engineering background to solve real-world problems using predictive analytics and machine learning.