Mansi Kaushik

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Professional Summary

Computer Science undergraduate with experience in data analysis, predictive modeling, and scalable data pipelines. Proficient in Python, SQL, Pandas, Scikit-learn, and Power BI, focused on extracting insights and deploying data-driven solutions..

Education

Vellore Institute of Technology, India **Sep 2023 – May 2027**

BTech in Computer Science and Engineering (CGPA: 8.8)

Technical Skills

- **Languages/Frameworks/Cloud & Deployment/Tools:** Python, Java, SQL, Numpy, Pandas, Matplotlib, Scikit-learn, TensorFlow, PyTorch, Flask, OpenCV, AWS, Docker, Streamlit, Power BI, Jupyter Notebook, Git/GitHub.

Research, Patents & Publications

IEEE Xplore

(A Multimodal Narration System for Enhancing Accessibility for the Visually Impaired)

- Published in IC-CGU 2025: Developed an AI-driven OCR/TTS system for real-time visual-to-audio narration.
- Achieved 90.96% OCR accuracy and 92.77% F1-score; optimized TTS module for 4.14/5 mean user rating.

Patent (Under Review)

(A Distributed Meta-Learning Framework for Rapid Anomaly Adaptation in Non-IID Financial Networks)

- Developed a novel Federated Meta-Learning framework that replaces global model convergence with meta-initialization, enabling few-shot anomaly detection (5 samples) in highly non-IID financial environments.
- Introduced a meta-gradient exchange mechanism with bi-level optimization, achieving faster edge adaptation and significantly reducing communication overhead and latency in decentralized systems.

Projects

Predictive Maintenance platform | Link | GitHub

(Python, PyTorch, XGBoost, SHAP, Streamlit, Flask, Pandas, Plotly, Docker)

- Architected and deployed an end-to-end Predictive Maintenance platform using Python, PyTorch, XGBoost, Flask, Streamlit, Pandas, Plotly, and Docker, implementing ETL pipelines, automated feature engineering, REST APIs, and interactive analytics dashboards for operational risk scoring and maintenance forecasting.
- Developed and optimized a hybrid machine learning pipeline combining LSTM sequence modeling and XGBoost tabular learning for Remaining Useful Life (RUL) prediction, achieving $R^2 = 0.89$ and RMSE = 0.08 while improving simulated risk mitigation by 3%.
- Implemented SHAP-based explainable AI, defensive data validation, standardized API responses, logging, timeout handling, and graceful fallback mechanisms, reducing projected maintenance costs by 25–30%, downtime by up to 40%, and analyst effort by 112.5 hours/week across 75 users.

T2-Hydro: Predictive Geospatial Analytics | Link | GitHub

(Python, LSTM / Transfer-LSTM, SHAP, Scikit-learn, Streamlit, Flask, Pandas, Plotly, Docker)

- Built an end-to-end ETL and time-series forecasting pipeline on multi-year hydrometeorological datasets using Python, Pandas, and PyTorch, performing EDA, preprocessing, feature engineering, and climate-risk modeling to improve data coverage and integrity by 25.
- Developed a Transfer Learning-based LSTM ensemble for drought forecasting and climate risk prediction, achieving out-of-sample R^2 0.82 and RMSE 0.09 while reducing high-cost false negatives by 32
- Designed and deployed a production-oriented climate intelligence platform using Flask, Streamlit, Plotly, and SHAP, enabling explainable AI-driven drought analytics, interactive forecasting dashboards, and real-time prediction workflows that reduced analyst triage effort by 112.5 analyst-hours/week.

Certifications

- Applied Machine Learning in Python- University of Michigan.
- Data Analysis with Python– freeCodeCamp.