Case Study“AI-Project“: Turnover forecast using Machine Learning and Deep Learning (Collaboration with NKD)

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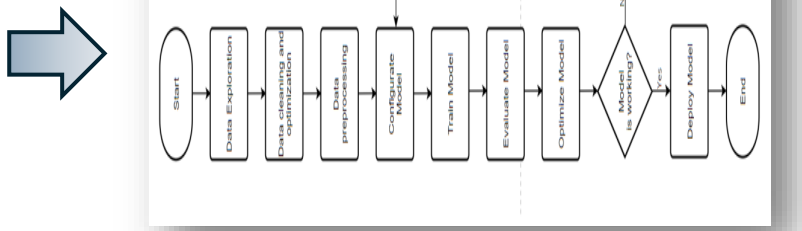
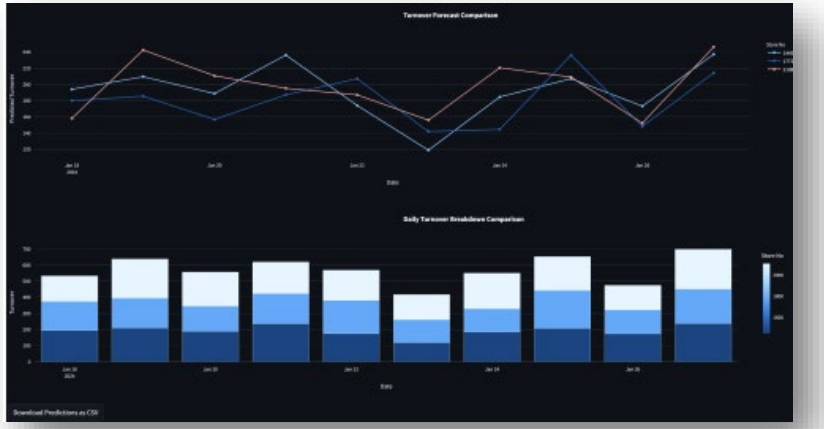
This project aimed to develop a machine learning solution for forecasting retail store turnover based on the NKD dataset. Two models, LSTM and XGBoost were evaluated. XGBoost model emerging as superior after comprehensive feature engineering, including lag features, cyclical encoding, normalization, and one-hot encoding. The optimized XGBoost model achieved strong performance metrics: MAE = 6.48, MSE = 124.53, and R^2 = 0.96, demonstrating high accuracy in capturing turnover trends.

Deployed with a user-friendly interface developed and hosted live using Streamlit, the model provides real-time forecasts, enables data extraction and local storage of predictions, and can be accessed instantly via a QR code.

Keywords – XGBoost, LSTM, Feature engineering, MAE/MSE/R^2, Lag features, Cyclical encoding, Normalization, One-hot encoding



Methodology flow chart



Visualized turnover predictions