ESTIMATING STOCK KEEPING UNIT USING ML

Project Proposal

Introduction:

Demand forecasting is a core requirement for effective inventory and supply chain management. Misestimating demand can result in financial losses, customer dissatisfaction, and inefficient operations. Machine learning can significantly enhance accuracy in demand prediction by learning patterns in historical data.

Problem Statement:

The current process for SKU-level demand estimation is either manual or rule-based, which lacks scalability and accuracy. We aim to replace this with a machine learning-based system that predicts future sales using engineered features from historical data.

Proposed Solution:

We propose to develop a supervised regression-based machine learning model that learns from sales trends, price fluctuations, and other promotional data to estimate demand for SKUs. The final model will be deployed as a user-friendly web application using Flask.

Solution Features:

- Predict SKU-level demand using historical data inputs
- Feature engineering using lag values, rolling averages, and interaction terms
- Use of robust models like Random Forest and XGBoost
- A web interface that allows users to input recent sales data and receive immediate predictions

Benefits:

- Improved accuracy in forecasting
- Better inventory control and cost savings
- Scalability for real-world applications
- Easy access via a web interface

This proposal outlines an ML-powered approach to solving real-world forecasting challenges using structured workflows and collaborative teamwork.