Project Title: GrocerGenius : AI-Based Supermarket Sales Prediction

Objective

Build an Artificial Intelligence model to predict supermarket sales based on historical data and provide an intuitive user interface for interacting with the model.
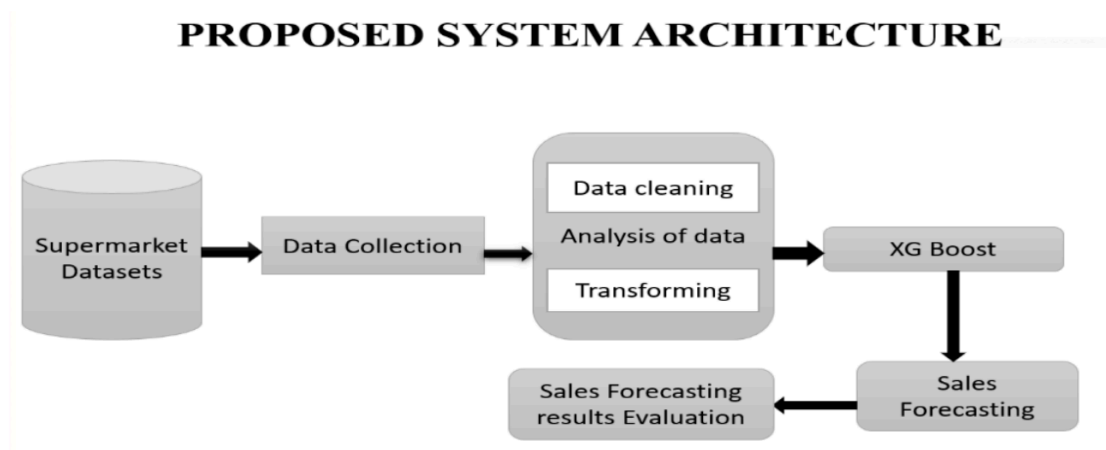
Dataset

- **Supermarket Sales Dataset**: Information about sales transactions.

Project Workflow

1. Data Collection and Exploration
2. Exploratory Data Analysis (EDA)
3. Data Preprocessing
4. Model Building
5. Model Evaluation
6. Deployment and Documentation

Architecture Diagram :

Components

- **User Interface**: Handles data upload and displays predictions.
- **Data Processing Pipeline**: Processes data, trains the model, and optimizes it.
- **Storage and Deployment**: Manages storage of the model and data, and handles deployment.

Detailed Plan

Milestone 1: Weeks 1-2

- **Data Collection and Exploration**
  - Define the prediction task and understand dataset features.

- ○ Download, load, and familiarize with the dataset.
- ○ Perform initial exploration and identify feature types.
- **Exploratory Data Analysis (EDA)**
  - ○ Analyze and visualize individual features and their distributions.
  - ○ Explore relationships between features and identify patterns.

Milestone 2: Weeks 3-4

- **Data Preprocessing**
  - ○ Handle missing values and perform feature engineering.
  - ○ Encode categorical features and normalize numerical ones.
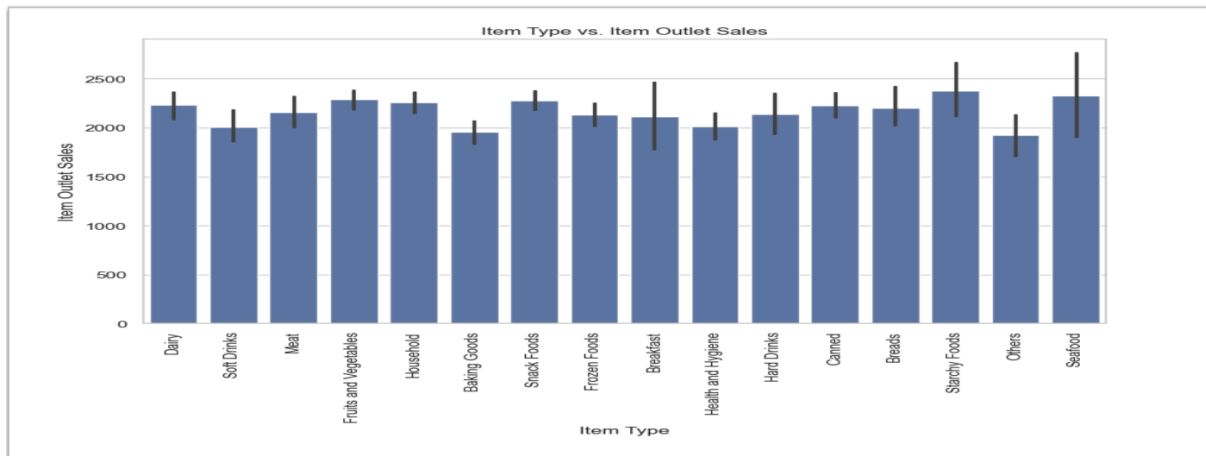
- **UI Development**
  - ○ Develop components for data upload and result display.

Milestone 3: Weeks 5-6

- **Model Building and Evaluation**
  - ○ Split data, select models, and train using cross-validation.
  - ○ Optimize hyperparameters and evaluate models using relevant metrics.
  - ○ Compare models, select the best, and retrain it on the full dataset.

Milestone 4: Weeks 7-8

- **Deployment and Documentation**
  - ○ Deploy the model using a web framework and create an API.
  - ○ Prepare presentation and comprehensive documentation.
  - ○ Submit final code and documentation to GitHub.

Milestone Evaluation

Milestone 1: Week 2

- Completed initial exploration and EDA.

Milestone 2: Week 4

- Finished data preprocessing and UI development.

Milestone 3: Week 6

- Finalized model building and evaluation.

Milestone 4: Week 8

- Completed deployment and documentation.