Meal Delivery Demand Forecasting

Project Overview:

Client Background

Our client operates a meal delivery company that serves multiple cities through various fulfilment centres. These centres are responsible for dispatching meal orders to customers, ensuring timely and efficient delivery.

Project Objective

The primary objective of this project is to assist the client in accurately forecasting the demand for meal orders in the upcoming weeks. This will enable the client to optimise the replenishment of raw materials and manage staffing requirements effectively, ensuring smooth operations and minimising waste.

Business Need

1. **Perishable Inventory Management**:
    - The majority of raw materials used in meal preparation are perishable. Accurate demand forecasting is crucial to maintaining the right inventory levels, reducing spoilage, and minimising waste.
2. **Staffing Optimization**:
    - Staffing at fulfilment centres must align with the forecasted demand to ensure efficient operations. Understaffing can lead to delays and customer dissatisfaction, while overstaffing increases operational costs.

Features:

- Forecast the food order-client side
- Dashboard - client side

- Generate human-readable explanations of demand forecasts -client side
- Summarise costumer reviews - client side
- Recommend the food - user side
- Chatbot-user side for understanding about meal which is popular meals at specific restaurant.

LLM use case:

Customer Insights:

- **Use LLM to analyse and summarise customer reviews.**
- **Extract key themes, sentiments, and preferences.**
- **Chatbot for user to understand about food and restaurant .**

Forecast Explanation:

- **Generate human-readable explanations of demand forecasts.**

Recommendation

- Recommend the food based on customer desire (like spacy,sugar,veg etc)
- Recommend food items based on the most frequently ordered dishes at a specific restaurant.

Dashboard

- **Sales Trends Over Time**: Analyse how sales have changed over different weeks or months using barchart.
- **Pie Charts for Each Product by City**: Visualise the distribution of sales for each product across different cities.
- **Food Type Analysis**: Determine which type of food is selling the most using barchart.

- **Price Analysis of Each Food**: Analyse the price distribution of each food item.

Technologies:

1.Time series
2.LLM model
3.RAG / Fine-tuning
4.Langchain
5.python,numpy,scikit learn,pandas,matplotlib,seaborn
6.Power bi / Tableau
7.EDA,ETL,Web scrap
8.Django,html,css
7.MLflow and DVC
8.AWS,DVC