COOKR HACKATHON

21PT28 - Sherin. J.A 21PT34 - V. Shamyuktha

1. FlavorFinder

INTRODUCTION

"FlavorFinder" allows users to input an Indian food dish and select ingredients and cooking methods, providing predictions on dietary features like diabetic-friendliness based on machine learning models.

INPUTS

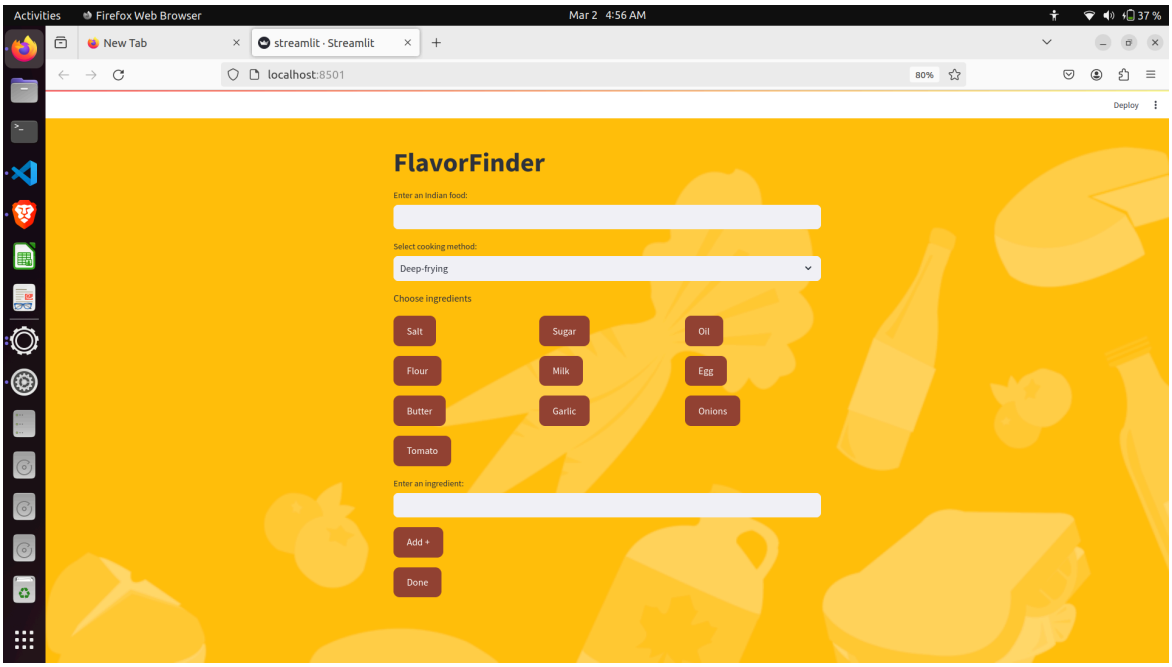
- Indian dish name: This input identifies the specific dish for which the user seeks information.
- Ingredients: represent the components used in preparing the selected Indian food dish.
- cooking method: characterizes the technique utilized in cooking the dish, which influences its flavor and nutritional aspects.

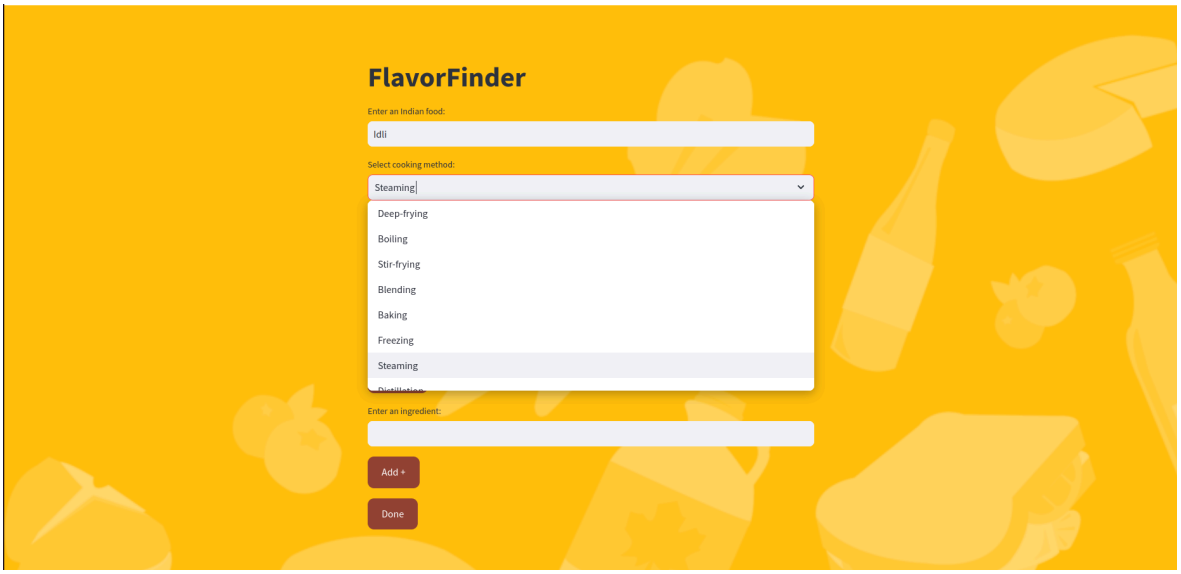
APPROACH

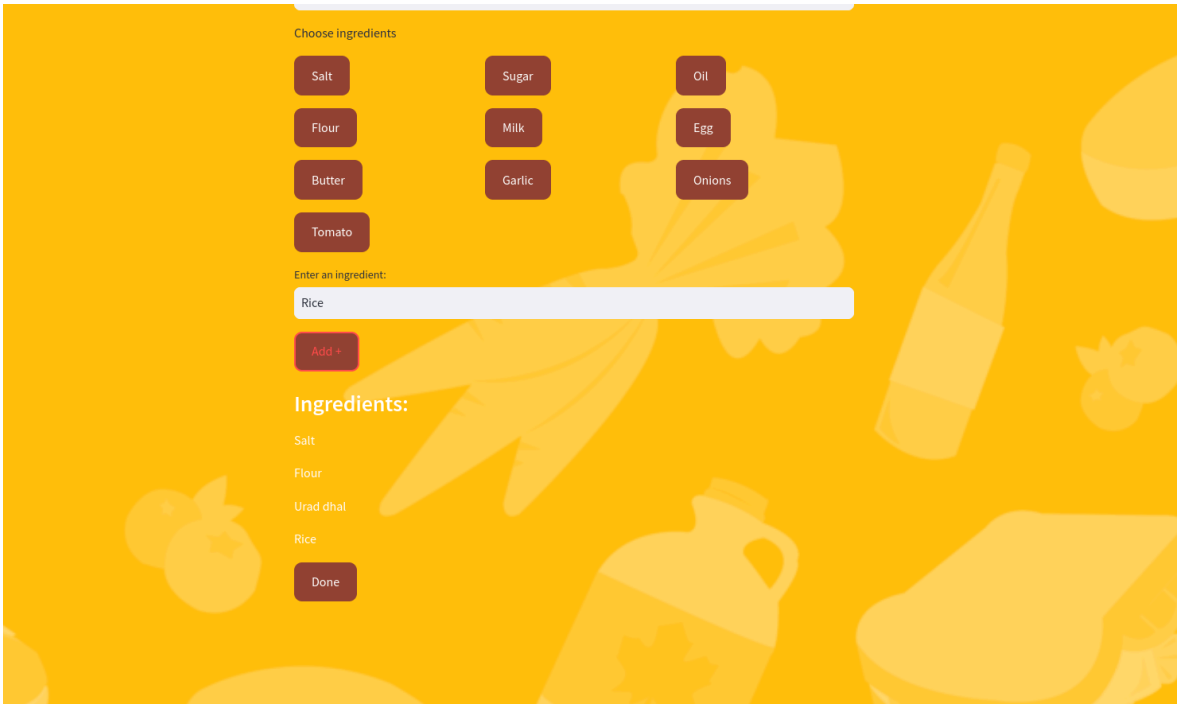
- ### Data preprocessing:
    - Data Imputation:
        - The code uses SimpleImputer from scikit-learn to fill missing values in the dataset with the most frequent value along each column.
    - Label Encoding:
        - Categorical variables are encoded using LabelEncoder, which assigns a unique numerical value to each category within a feature.

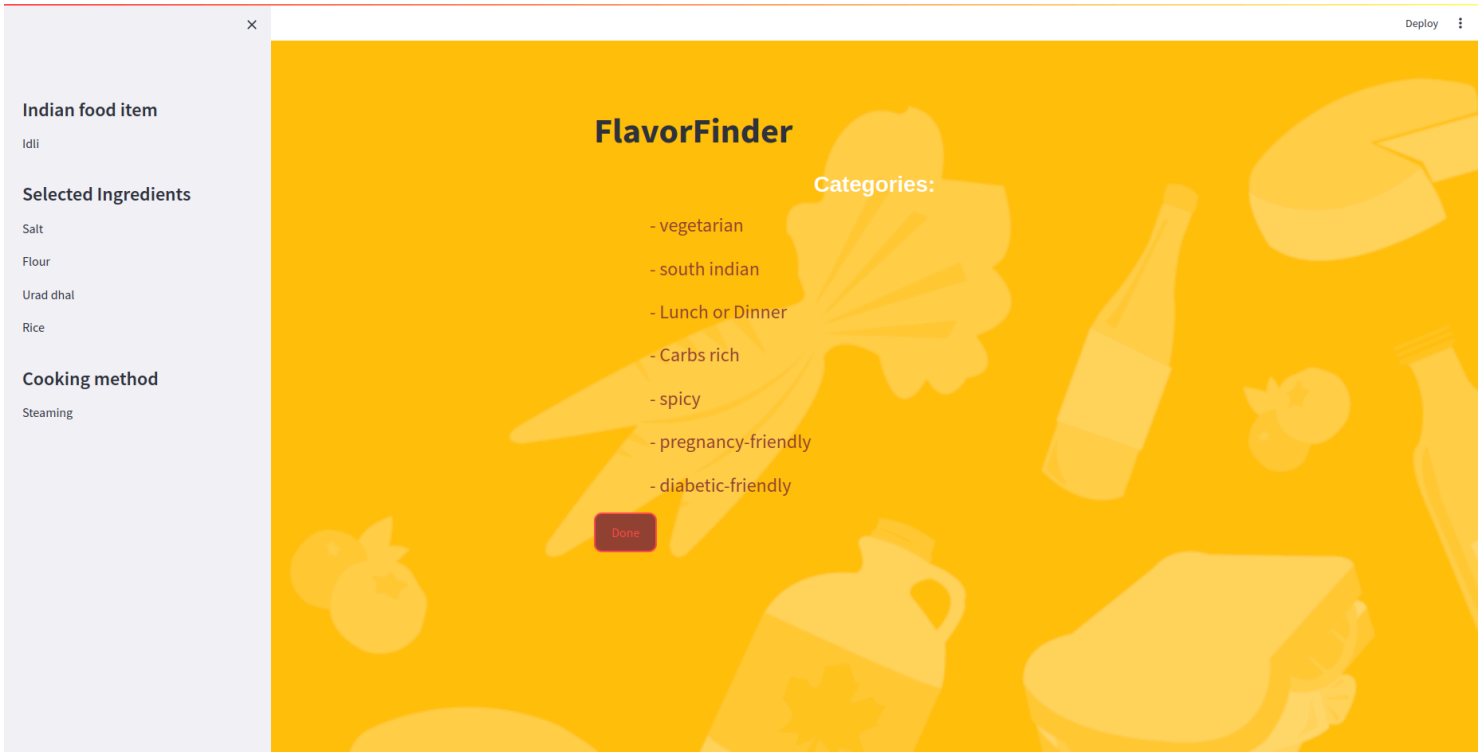
        - This is performed for categorical columns like 'diet', 'flavor_profile', 'course', and others.

- ## Features:
    - Indian dish name
    - Ingredients
    - Cooking method
- ## Model Selection:
    - The code employs a MultiOutputClassifier with a RandomForestClassifier as the base estimator to handle the multi-output classification problem.
    - This model is trained on the training set to predict multiple target variables simultaneously.
- ## Prediction:
    - The model predicts the categories or attributes such as diet, region, meal type, nutrition quality, pregnancy-friendly, Based, and diabetic-friendly for a given food item based on its name, ingredients, and cooking method.
    - This prediction process utilizes the learned patterns from the training data to generate accurate predictions for each target variable, aiding in categorizing or labeling new food items effectively.




FlavorFinder
Enter an Indian food:
Idli
Select cooking method:
Steaming
Deep-frying
Boiling
Stir-frying
Blending
Baking
Freezing
Steaming
Enter an ingredient:
Add +
Done


Choose ingredients
Salt
Sugar
Oil
Flour
Milk
Egg
Butter
Garlic
Onions
Tomato
Enter an ingredient:
Rice
Add +
Ingredients:
Salt
Flour
Urad dhal
Rice
Done



2. Parcel Pulse

INTRODUCTION

“Parcel pulse” implements a rider assignment algorithm based on location proximity and time constraints, employing KD trees for efficient search and various assignment rules for optimization.

INPUTS

- Excel file:
    - customer name
    - order id

    - kitchen name
    - customer location (x,y coordinates)
    - kitchen location (x,y coordinates)
    - order time
    - ready time
- TEXT FILE:
    - Names of all the riders available

ASSUMPTIONS

1. We have modeled the location of the customer and the location of the kitchen as a k-dimensional tree.
2. The type of distance used here is Manhattan distance.
3. A rider takes 10 mins to cover a 1 km distance.

APPROACHES

- ### From two different kitchens (1 km apart):
    - We retrieve the kitchen locations for two different orders and compute the difference between them.
    - If the difference is less than or equal to 1 kilometer, we assign both orders to the same rider.
    - To calculate distance, we employ the Manhattan distance formula.
- ### To two different customers (1 km apart):
    - We retrieve the CUSTOMER locations for two different orders and compute the difference between them.
    - If the difference is less than or equal to 1 kilometer, we assign both orders to the same rider.
    - To calculate distance, we employ the Manhattan distance formula.
- ### Ready at the same time(10 mins apart):
    - We obtain the ready times for two different orders and calculate the difference between them.
    - If the difference is less than or equal to 10 minutes, we assign both orders

to the same rider.
    - To manipulate time, we utilize the datetime library.

- ### 2nd kitchens pick up on the way to the customer:
    - We determine the path between the kitchen and the customer who ordered at that kitchen.
    - If the same customer has ordered at another kitchen, and if that kitchen is along the path, we assign the same rider.
    - To find the path, we utilize KD trees.

- ### Ready at the time the rider reaches the second kitchen:
    - We will calculate the duration between the ready times of two different orders from two different kitchens.
    - We estimate the time it takes for the rider to reach the restaurant by multiplying the distance by 10, using the Manhattan distance formula.
    - If the estimated time for the rider to arrive is less than or equal to the duration between the orders, we will assign both orders to the same rider.

- ### 2nd customer drop on the way to the 1st customer:
    - We will determine the path between the kitchen and the customer who placed an order at that kitchen.
    - If another customer has also ordered at the same kitchen and if that customer is along the path we will assign the same rider to both customers.
    - The path calculation utilizes KD trees.

RULES

- ### Rule1:
    - Two orders - From the same kitchen.
    - To the same customer.
    - Ready at the same time (10 mins apart).

Molly	ord13	Maggie's Grill	(12,11)	(10,14)	13:45	14:15
Molly	ord33	Maggie's Grill	(12,11)	(10,14)	13:45	14:20

Rider name: Ethan Nguyen

	ord1	ord11	ord13	ord21	ord23	ord3	ord31	ord33	ord35
customer_name	Alice	Kelly	Molly	Ursula	Iris	Charlie	Alice	Molly	Olivia
Kitchen_name	Sam's Diner	Sandy's Sandwiches	Maggie's Grill	Ulysses' Udon	Betty's Bagel Bar	Ella's Eatery	Sam's Diner	Maggie's Grill	Oscar's Pancal House

- **Rule2:**
  - Two orders.
  - From two different kitchens (1 km apart).
  - To the same customer.
  - Ready at the same time (10 mins apart).

Nathan	ord14	Nick's Noodles	(10,16)	(12,18)	15:00	15:45
Nathan	ord34	Nick's Oyster Bar	(10,16)	(12,19)	15:00	15:50

Rider name: Liam Garcia

	ord10	ord14	ord16	ord24	ord26	ord30	ord34	ord7
customer_name	Jack	Nathan	Peter	Xavier	Zachary	Dana	Nathan	Grace
Kitchen_name	Tommy's Tavern	Nick's Noodles	Paul's Pancake House	Xander's Xanadu	Zelda's Zesty Zoodles	Danny's Deli	Nick's Oyster Bar	Olive's Bistro

- **Rule3:**
  - Two orders.
  - From the same kitchen.
  - To two different customers (1 km apart).
  - Ready at the same time (10 mins apart).

David	ord4	Patrick's Place	(15,11)	(17,15)	10:00	10:35
Emily	ord5	Patrick's Place	(15,10)	(17,15)	10:00	10:30

Rider name: Ethan Nguyen

1	ord13	ord21	ord23	ord3	ord31	ord33	ord35	ord4	ord5	ord6
	Molly	Ursula	Iris	Charlie	Alice	Molly	Olivia	David	Emily	Frank
y's wiches	Maggie's Grill	Ulysses' Udon	Betty's Bagel Bar	Ella's Eatery	Sam's Diner	Maggie's Grill	Oscar's Pancake House	Patrick's Place	Patrick's Place	The Rusty Spoon

- **Rule4:**
  - Two orders.
  - From two different kitchens (1 km apart).
  - To the same customer.
  - Ready at the same time (10 mins apart).

Nathan	ord14	Nick's Noodles	(10,16)	(12,18)	15:00	15:45
Nathan	ord34	Nick's Oyster Bar	(10,16)	(12,19)	15:00	15:50

Rider name: Liam Garcia

	ord10	ord14	ord16	ord24	ord26	ord30	ord34	ord7
customer_name	Jack	Nathan	Peter	Xavier	Zachary	Dana	Nathan	Grace
Kitchen_name	Tommy's Tavern	Nick's Noodles	Paul's Pancake House	Xander's Xanadu	Zelda's Zesty Zoodles	Danny's Deli	Nick's Oyster Bar	Olive's Bistro

- **Rule5:**
  - Two orders.
  - From two different kitchens (1 km apart).
  - To the same customer.
  - Ready at the same time (10 mins apart).

Nathan	ord14	Nick's Noodles	(10,16)	(12,18)	15:00	15:45
Nathan	ord34	Nick's Oyster Bar	(10,16)	(12,19)	15:00	15:50

Rider name: Liam Garcia

	ord10	ord14	ord16	ord24	ord26	ord30	ord34	ord7
customer_name	Jack	Nathan	Peter	Xavier	Zachary	Dana	Nathan	Grace
Kitchen_name	Tommy's Tavern	Nick's Noodles	Paul's Pancake House	Xander's Xanadu	Zelda's Zesty Zoodles	Danny's Deli	Nick's Oyster Bar	Olive's Bistro

- Rule6:
  - Two orders.
  - To the same customer.
  - 2nd kitchens pick up on the way to the customer.
  - Ready at the time the rider reaches the second kitchen (10 mins apart).

Ursula	ord38	Danny's Deli	(15,17)	(15,19)	13:45	14:35
Ursula	ord39	Sandy's Sandwiches	(15,17)	(13,21)	13:45	14:50

Rider name: Isabella Patel

	ord18	ord2	ord25	ord28	ord37	ord38	ord39	ord41
customer_name	Rachel	Bob	Yvonne	Ben	Yvonne	Ursula	Ursula	Wendy
Kitchen_name	Queenie's Quaint Cafe	Ella's Eatery	Yolanda's Yogurt Shop	Betty's Bagel Bar	Zelda's Zesty Zoodles	Danny's Deli	Sandy's Sandwiches	Walter's Waffles

- Rule7:
  - Two orders.
  - 2nd customers drop on the way to the 1st customer (Vice Versa).
  - 2nd kitchens pick up on the way to the customer.
  - Ready at the same time (10 mins apart or by the time rider reaches the kitchen).

Olivia	ord15	Oscar's Oyster Bar	(18,13)	(20,16)	11:15	12:00
Kelly	ord40	Paul's Pancake House	(11,19)	(10,21)	09:00	09:30

Rider name: Sophia Parker

	ord15	ord17	ord19	ord27	ord36	ord40	ord8
customer_name	Olivia	Quinn	Sam	Amy	Rachel	Kelly	Henry
Kitchen_name	Oscar's Oyster Bar	Queenie's Quaint Cafe	Sam's Diner	Adam's Apple Pie Palace	Paul's Pancake House	Paul's Pancake House	The Golden Griddle

- Rule8:
  - Two orders.
  - From the same kitchen.
  - 2nd customers drop on the way to the customer 1st (Vice Versa).
  - Ready at the same time (10 mins apart).
  - Assign the pick-up to the same rider.

Kelly	ord40	Paul's Pancake House	(11,19)	(10,21)	09:00	09:30
Rachel	ord36	Paul's Pancake House	(11,15)	(10,21)	08:30	09:25

Rider name: Sophia Parker

	ord15	ord17	ord19	ord27	ord36	ord40	ord8
customer_name	Olivia	Quinn	Sam	Amy	Rachel	Kelly	Henry
Kitchen_name	Oscar's Oyster Bar	Queenie's Quaint Cafe	Sam's Diner	Adam's Apple Pie Palace	Paul's Pancake House	Paul's Pancake House	The Golden Griddle