



Food and Recipe Recommender

LHL Final Project by Cynthia Okaja

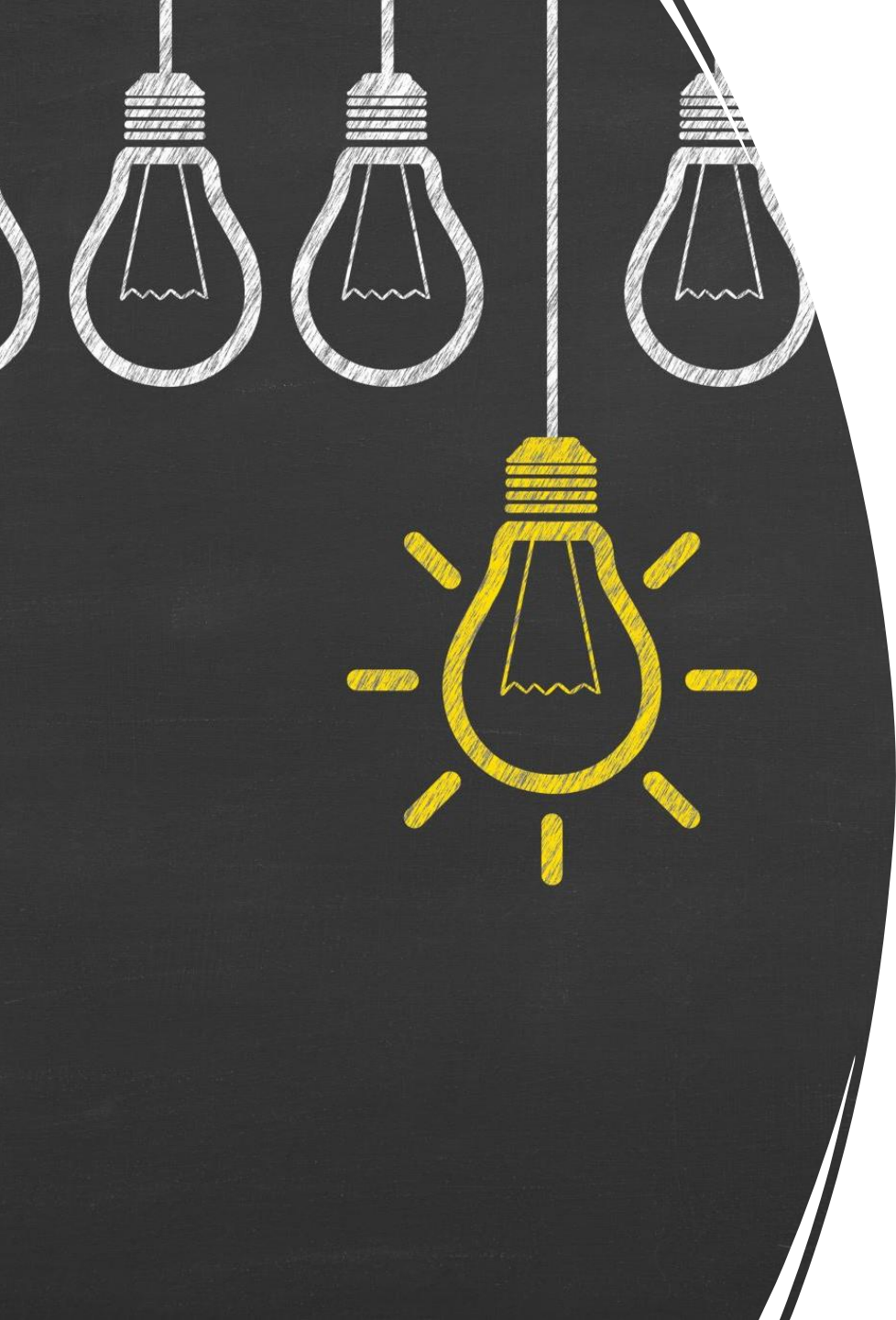
14th September 2023



Project Goals

- To create a recommender system that will assist users in finding recipes that match the ingredients they currently have in their kitchen and recommend similar recipes based on their preference.





Project Execution

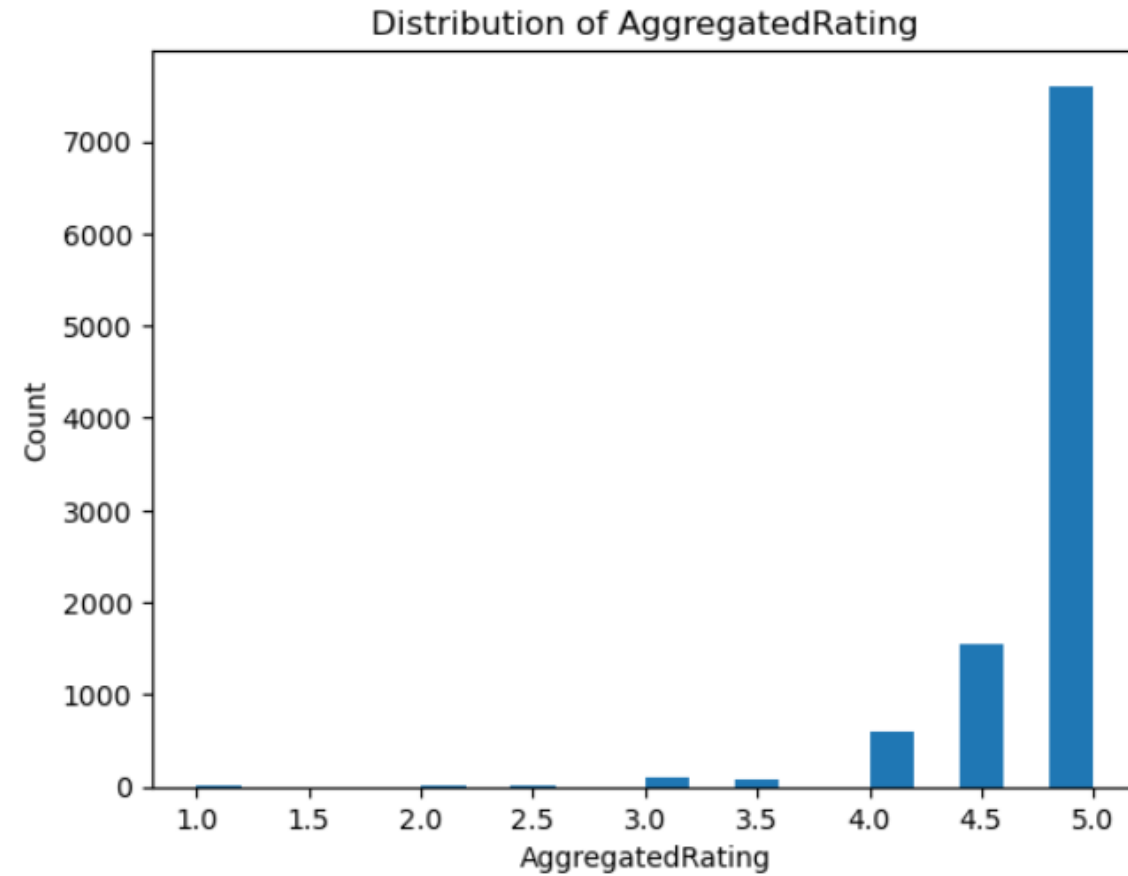
- Data Gathering
- Data Preprocessing
- EDA
- Recommender Systems

Data Gathering & Preprocess ing

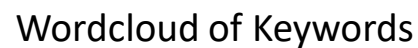
- Data Source - [Foodcom Recipes and Reviews](#)
- Getting familiar with the dataset and merging the two df
- Dropped null values and selected columns of interest
- Created a sample df of 10,000 rows

	Name	RecipeCategory	Keywords	RecipeIngredientQuantities	RecipeIngredientParts	AggregatedRating
0	Kohlsuppe - Cabbage Soup	One Dish Meal	c("Pork", "Vegetable", "Meat", "German", "Euro...	c("1", "6", "4", "1/2", "1 1/2", NA, NA)	c("cabbage", "chicken broth", "bacon", "onion"...	5.0
1	Salmon Marinade	Asian	c("Savory", "Beginner Cook", "Easy", "Inexpens...	c("3", "2", "6", "3")	c("fresh garlic cloves", "Dijon mustard", "oli...	5.0
2	Pink Potato Soup	Potato	c("Vegetable", "Low Protein", "Low Cholesterol...	c("3", "1", "1", "1", "4", "2", "1/2", "1", "1"...	c("potatoes", "celery rib", "carrot", "onion", "...	4.0
3	Rich Lemon Cake	Dessert	c("Fruit", "Kid Friendly", "Kosher", "Potluck"...	c("1", "1 1/4", "3", "1", "2", "1", "1", "3", ...	c("butter", "sugar", "eggs", "lemon, zest of", ...	5.0
4	Baked Chicken Thighs	Chicken Thigh & Leg	c("Chicken", "Poultry", "Cheese", "Meat", "Eur...	c("8", "5", "1", "1/4", "1/2", "2", NA, NA)	c("chicken thighs", "butter", "prepared mustar...	5.0
5	Pioneer Woman Apple Dumplings	Dessert	c("Apple", "Fruit", "Low Protein", "< 60 Mins"...	c("2", "2", "1", "1 1/2", "1", "1", "1")	c("granny smith apples", "butter", "sugar", "v...	5.0
6	Rice and Artichoke Hearts Baked	Lunch/Snacks	c("Brown Rice", "Rice", "Grains", "Cheese", "V...	c("1/2", "1", "1", "4", "1/2", "1/3", "1/8", NA)	c("cooked brown rice", "cheddar cheese", "eggs...	4.5
7	Brown Rice Broccoli Casserole	Brown Rice	c("Long Grain Rice", "Rice", "Vegetable", "< 6...	c("1 1/2", "1", "1", "1/2", "2")	c("long grain brown rice", "cheddar cheese", "...	4.0
8	Barbecued Lobster Tails	Lunch/Snacks	c("Lobster", "Grains", "Fruit", "Canadian", "V...	c("1", "1", "1/8", "1/8", "1/2", "1", "2")	c("paprika", "white pepper", "garlic powder", ...	5.0
9	Broccoli Cheese Soup	Cheese	c("Vegetable", "Low Protein", "Winter", "Brunc...	c("1", "2", "1", "1", "1", "4", "3", "1/2", "1"...	c("potato", "carrots", "onion", "frozen brocco...	5.0

EDA



Histogram of Aggregated Ratings



Food Recommender

- Simple recommender
 - Collecting user input

```
Enter your dietary preferences (comma-separated): low cholesterol
Enter the ingredients you have (comma-separated): pork, vegetable, olive oil, garlic
```

- Filtered recipes based on dietary preference
- Filtered recipes with matching ingredients
- Sorted results based on the top aggregated rating
- Output

Top Recommendations:			AggregatedRating	Keywords
	Name	RecipeCategory		
19	Chili, Kid Friendly, Big Batch	Beans	5.0	c("Meat", "Low Cholesterol", "Healthy", "< 30 ...
4352	Baba Ghanouj (Roast Eggplant Puree)	Vegetable	5.0	c("Lebanese", "Southwest Asia (middle East)", ...
6640	T.g.i. Fridays Jack Daniels Grill Glaze	Sauces	5.0	c("Pineapple", "Tropical Fruits", "Fruit", "Ca...
6638	Wonderful Salsa	Sauces	5.0	c("Vegetable", "Low Protein", "Low Cholesterol...
6600	Turkey Soup	Poultry	5.0	c("Meat", "Low Cholesterol", "< 60 Mins")

Food Recommender using NLP

- Text Preprocessing – “Ingredients”
 - Tokenization and lowercasing
 - Removing stopwords
 - Stemming
- Content based recommendation using TF-IDF
 - TF-IDF vectorization
 - Calculate cosine similarity between recipes based on ingredients
 - Defining recommendation based on user history

	Name	RecipeCategory	RecipeIngredientParts
150	Pineapple-Cherry Dump Cake	Dessert	c light cherri pie fill water canola oil pecan
8069	5 Ingredient Dump Cake	Dessert	c crush pineappl cherri pie fill butter pecan
7892	Cherry Pie Squares	Dessert	c butter sugar egg vanilla flour cherri pie fill
4815	Cherry Pie Filling Bread	Quick Breads	c egg vanilla extract flour sugar bake soda sa...
2594	Easy Cherry Danish	Dessert	c margarin sugar cherri pie fill confection su...



Conclusion

- Was able to collect user input and personalized recommendation models to provide users with the most relevant recipe suggestions

Challenges and Future Goals

- Challenges
 - Data Sourcing – Spoonacular API
 - Handling large dataset – long code run time
- Future Goals
 - Deployment - for users to input their preferences and view recipe recommendations
 - Better workstation to handle recommendation system using more recipes





THANK YOU