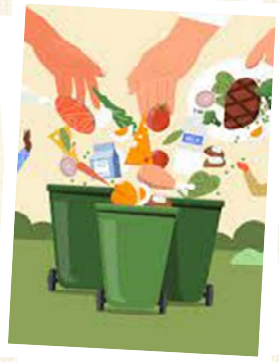# DishDelight

Brian Jue

The Problem

In 2022, National Zero Waste Council conducted a research in Canada and the following were the results:

"**63%** of the food Canadians throw away could have been eaten."

"For the average Canadian household that amounts to **140 kilograms of wasted food per year – at a _cost of more than $1,300 per year!_**"

Solution – ' Recipes for leftover Ingredients'

An application that recommends a recipe based on user's preference and input ingredients.
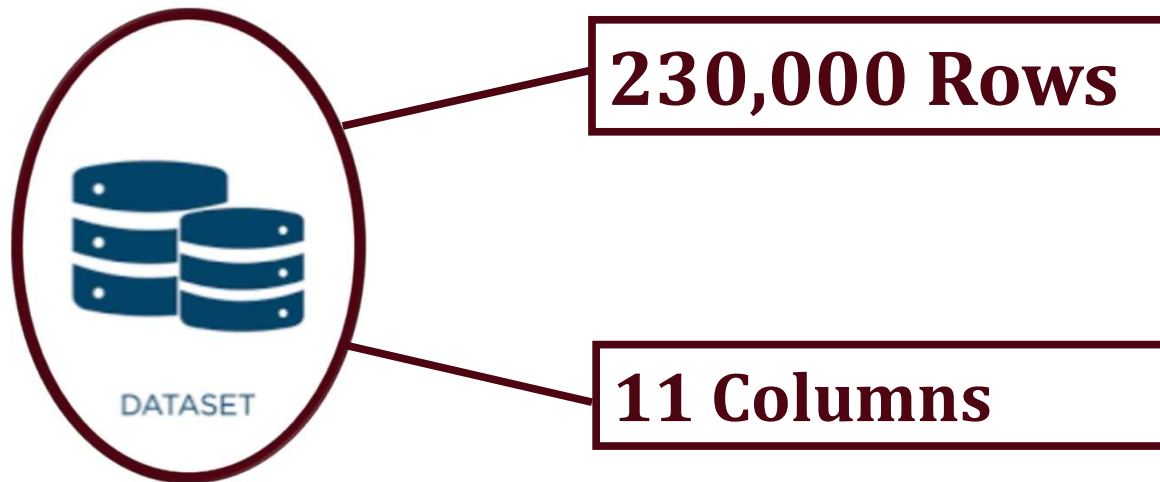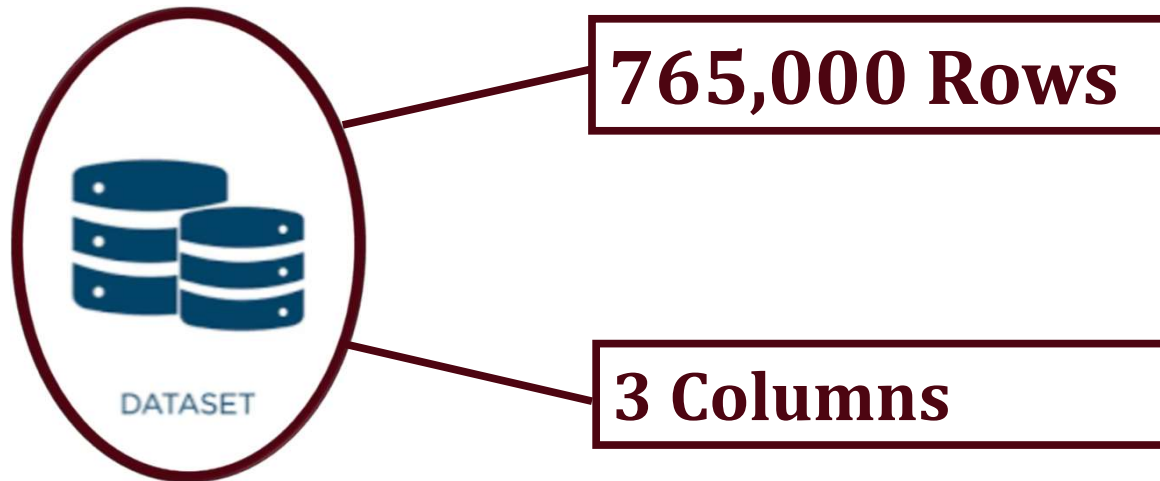
Dataset

DATASET

Data Source

Web-scrapped Food.com data from Kaggle

- 1999 – 2008
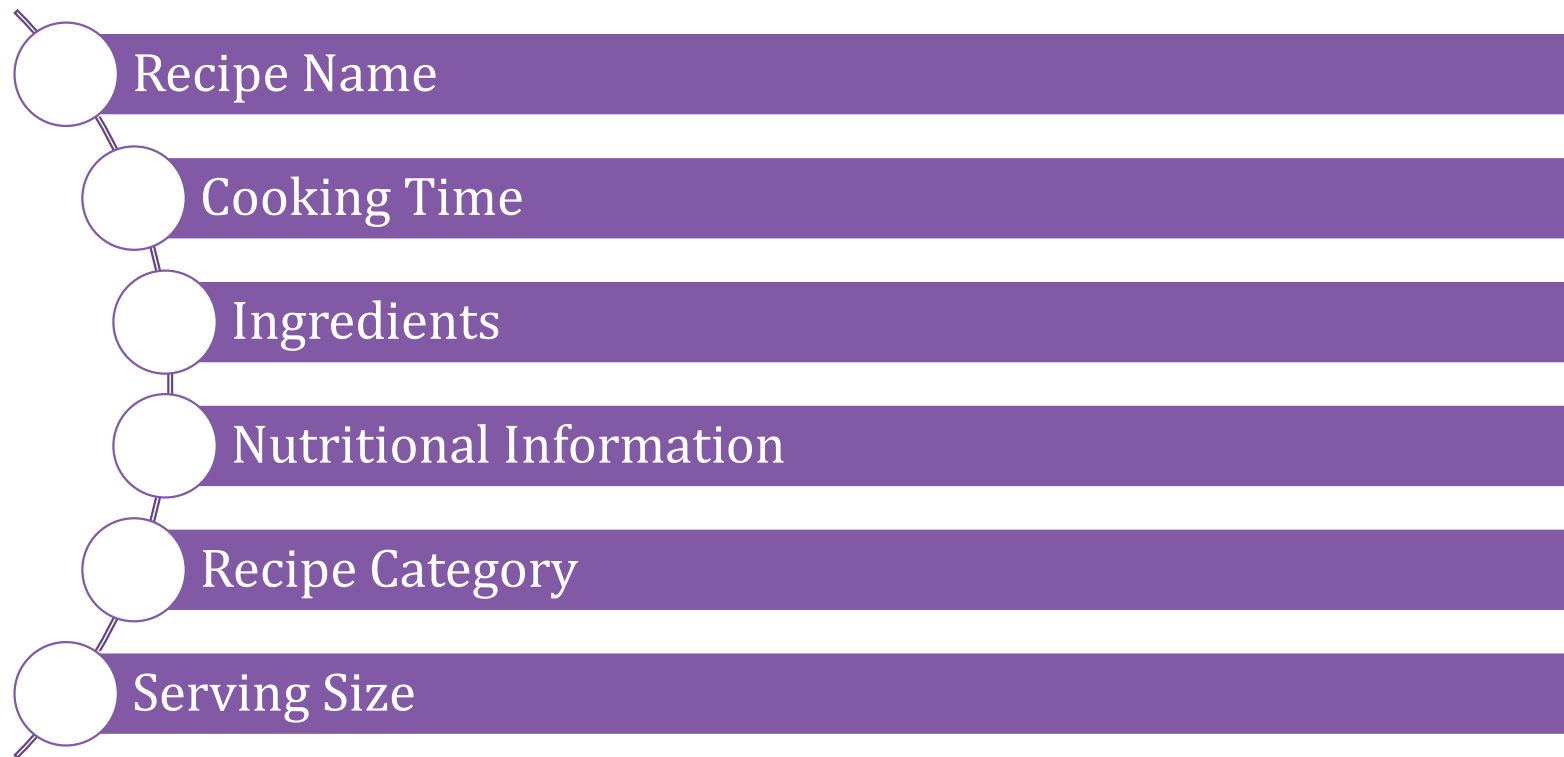- Recipe Dataset
- Review Dataset
- 3 Datasets merged

Recipe Dataset

230,000 Rows
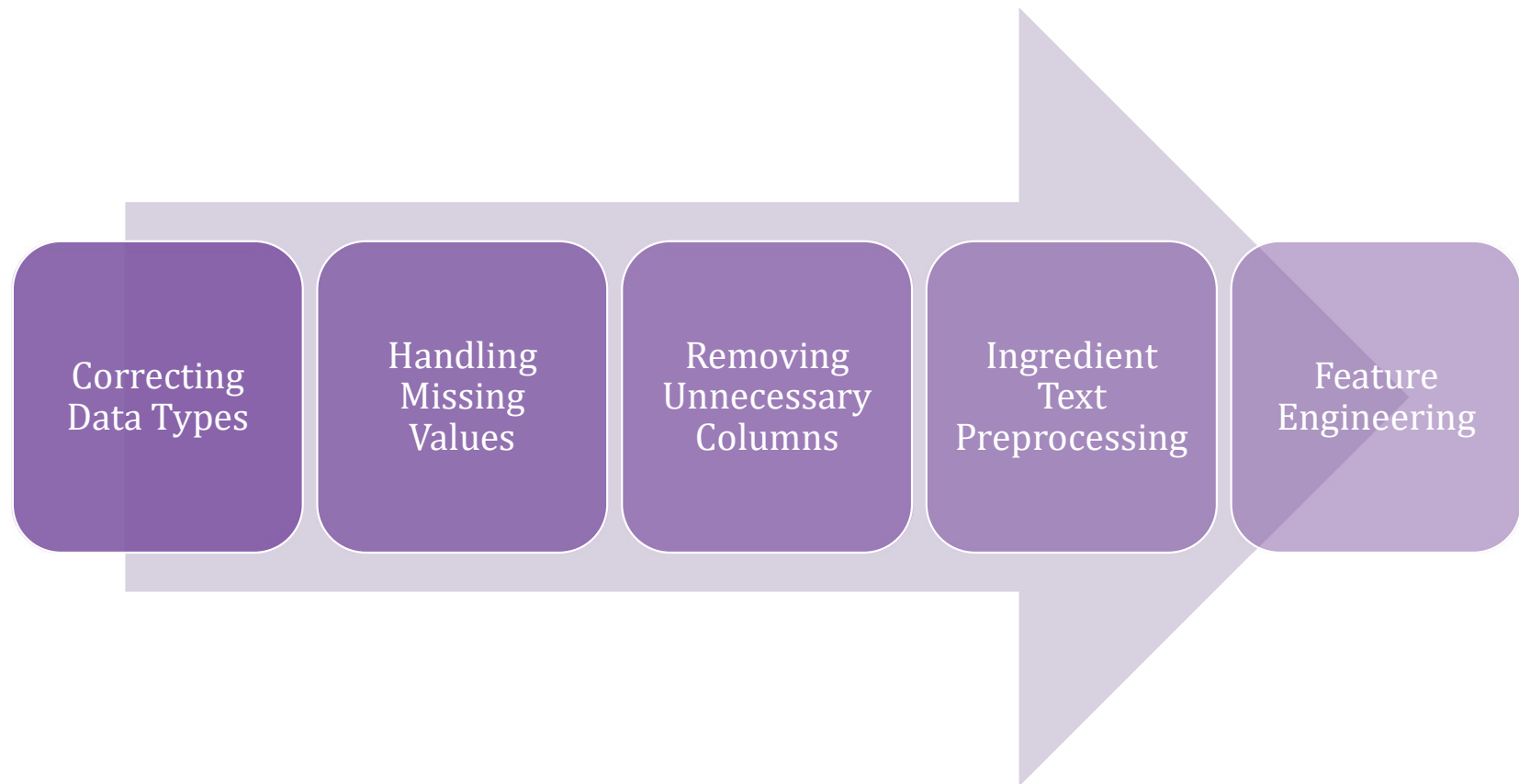
11 Columns

Review Dataset

765,000 Rows

3 Columns

DATASET

Describing the Recipe Data Columns

- Recipe Name
- Cooking Time
- Ingredients
- Nutritional Information
- Recipe Category
- Serving Size

Clean-up Process

Correcting Data Types → Handling Missing Values → Removing Unnecessary Columns → Ingredient Text Preprocessing → Feature Engineering

Exploratory Data Analysis

User Review Interactions over the Years

Recipes Added spanning 1999 to 2018

Frequecny Distribution of Ratings

Models

COLLABORATIVE FILTERING

Read by both users

Similar users

Read by her,
recommended to him!

	RecipeName	AggregatedRating
17665	Curried Mixed Nuts	5.00
31947	Beef Brisket With Cherry-Merlot Sauce and Cara...	5.00
2829	Emerald Mashed Potatoes	4.69
10637	Mama Iuliucci's Famous Meat-A-Balls (Italian M...	4.50
98595	Vij Family's Chicken Curry - My Version	4.33
1170	Lamb Leg Steak With Maple Chevre Shiitake Sauce	4.00
7560	Classic Pie Crust, Idiot Proof Step-By-Step Ph...	4.00
10145	7 Layer Bean Dip	4.00
19300	Roasted Potatoes With Tomatoes & Rosemary	3.67
14933	The Best Oven Roasted Ribs	3.00

FunkSVD

Fraction of Concordant Pairs:

56%

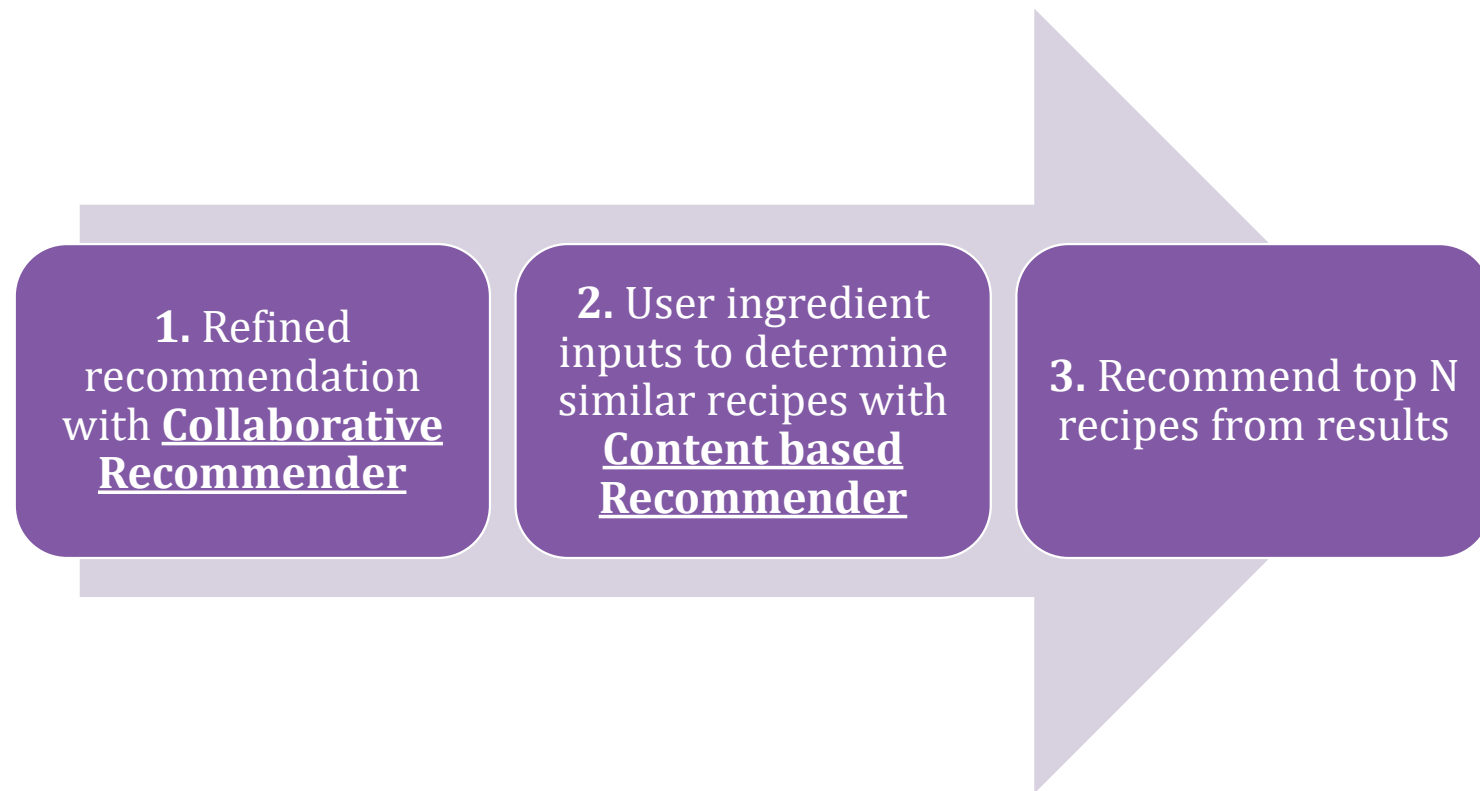|	RecipeName
0	Hibachi Chicken and Fried Rice
1	Stupid Simple Sugar Cookies
2	Southwestern Potato Phyllo Samosas
3	Carrabba's Spicy Sicilian Chicken Soup
4	Cornbread (Egg-Free/Vegan)
5	Upside-Down Fresh Fig Cake
6	Dutch Apple Pie (Oma's Appeltaart)
7	Vegan Slow-Cooker Pinto Beans
8	Bahama Mama Banana Rum Cake
9	Shrimp and Scallop Scampi

CONTENT-BASED FILTERING

Read by user

Similar articles

Recommended to user

Word2Vec

Mean Embeddings

Cosine: 90%

Jaccard: 10%

Input

- "Chicken, Onion, Spinach, Garlic, Pasta"
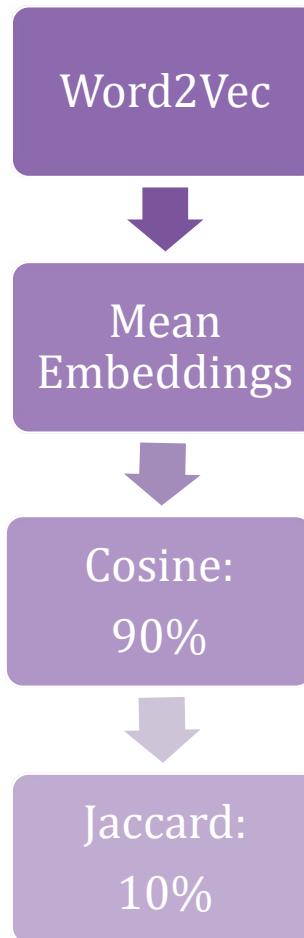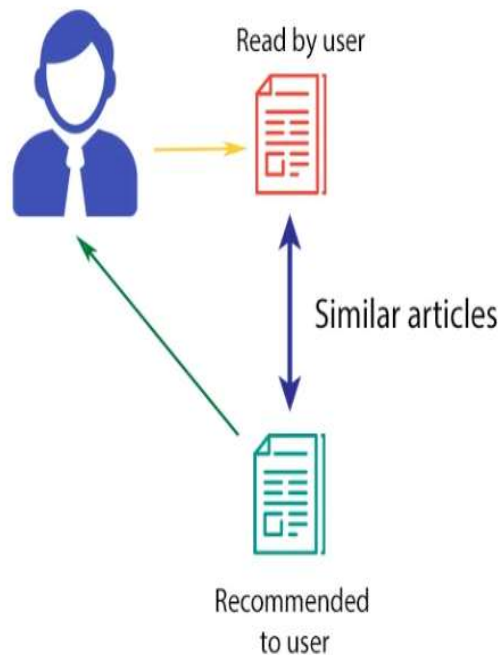
```
                                                     recipe
0    Too Tired, &amp; Broke, Yellow Rice and Chicken
1                 Nif's Butterflied Grilled Whole Chicken
2                              Erica's Chicken Salad
3                                 Puerto-Rican Chicken
4                     Slow Cooker Chicken Sloppy Joes
5                 Raspberry Vinaigrette Chicken Breast
6      Yummy Crock Pot Shredded Chicken for Tacos!
7                 Quick and Easy Blackened Chicken
8                                      Pickle Chicken
9                                Japanese Golden Curry
```

Hybrid Model

1. Refined recommendation with **Collaborative Recommender**

2. User ingredient inputs to determine similar recipes with **Content based Recommender**

3. Recommend top N recipes from results

Limitations

- Cold Start
- Collaborative Recommender: missing user-item pairs not interacted

Future Steps

- More Parameters
- Implement via Streamlit
- Different Collaborative Evaluation metrics & Build anti test set

Questions?