Idea

As a user I want to add my nutritional values and preferred ingredients into the app and get a recipe suggestion based on my rating history.

Build a recipe suggestion for the user according to the individual-defined nutritional goals that fit the rating history and fulfill their requested ingredients.

User flow

User has an active profile on food.com with a rating history

User enters nutritional preference into the app.

Nutritional distribution in %:

carbs (default 50%)
proteins (20%)
fats (30%)

User adds ingredients to the app.

Ingredients field:

to type in ingredients (only the ones listed in the data)

User fills out filters (if wanted).

Filters:

vegetarian
vegan
lactose-free
gluten-free
(high protein
low carb)

Machine recommends recipe(s) satisfying the nutritional values and including the requested ingredients based on ratings of users with similar food profiles.

Technical Explanation

recipe suggestion:
based on nutrition values: recipes with fitting nutrition (according to individual distribution) are recommended highest
based on ingredients: recipes with entered ingredients are recommended
based on rating: recipes that were rated high by users with similar rating history should be recommended first
default nutritional distribution should be set when set

Prediction value fitting recipe of more than 75% fit

Baseline model

Recipe-percentage-fit: We assume that we can provide each request with a minimum of one recipe that satisfies the preset criteria. We assume that a user with a similar rating history shares a similar taste.

Additional models

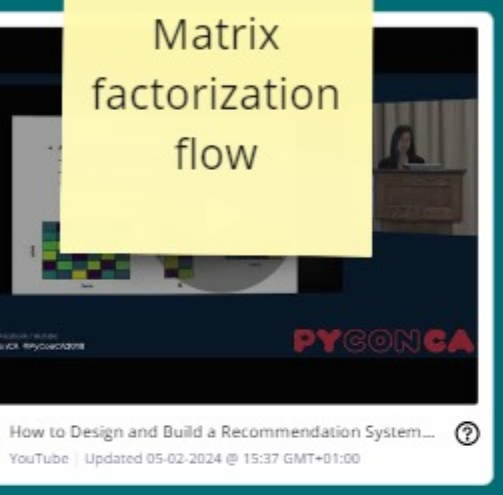
Low carb model: We assume that the Low Carb model will predict better fits for a user that has chosen filter: low carb.

High protein model: We assume that the high protein model will predict better fits for a user that has chosen filter: high protein.

KNN for similar recipes/ Collaborative Filtering

github repo

Matrix factorization flow



Recommendation system based on nutrition specifica
Uses different algorithms to classify recipes

Diet recommendation system preprocessing
Explore and run machine learning code with Kaggle Notebooks | Using data from Food.com - Recipes and Reviews

Food recipe - Association rules
Explore and run machine learning code with Kaggle Notebooks | Using data from Food.com - Recipes and Reviews

Searching for rules in dataset
Most frequent ingredients, cleaning ingredients column

EDA

Recipe Recommender
Explore and run machine learning code with Kaggle Notebooks | Using data from Food.com - Recipes and Reviews

Recipe recommendation based on nutrition facts
Knn for similar recipes (based on nutrition)

filtering data recipe and reviews
Explore and run machine learning code with Kaggle Notebooks | Using data from Food.com - Recipes and Reviews

Investigation about reviewers

Data Preprocessing
Merging datasets based on recipe ID

data_literacy_project_data_preprocessing
Explore and run machine learning code with Kaggle Notebooks | Using data from multiple data sources

Sentiment Analysis
Explore and run machine learning code with Kaggle Notebooks | Using data from Food.com - Recipes and Reviews

Sentiments analysis
Cleaning of review data

Modeling

recipe_preprocessing
Explore and run machine learning code with Kaggle Notebooks | Using data from Food.com - Recipes and Reviews

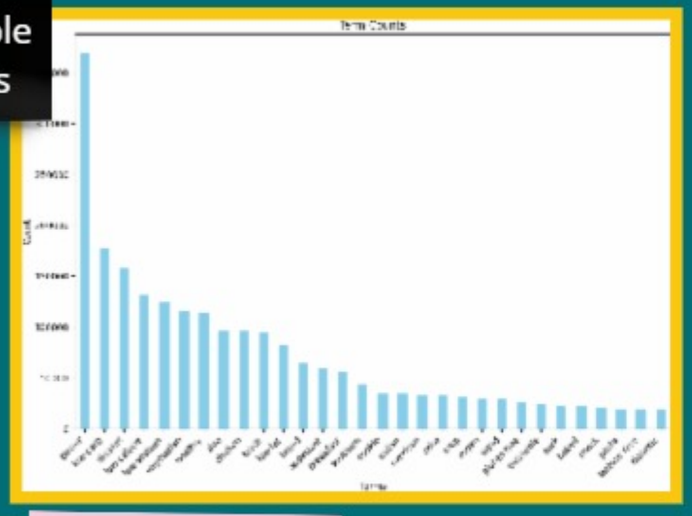
Recipe preprocessing with focus on reviews
Finding recipes

based on ingredient input according to rating

Collaborative Filtering - Matrix Factorization
Explore and run machine learning code with Kaggle Notebooks | Using data from Food.com - Recipes and Reviews

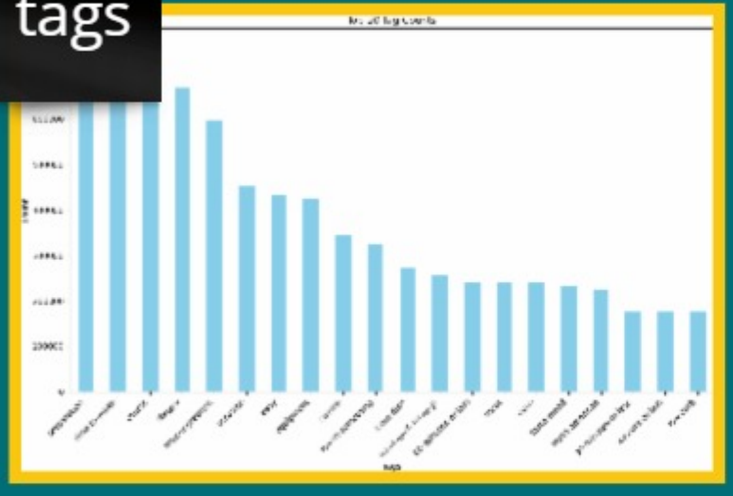
Matrix Factorization

our possible filters



final filters:
vegetarian
vegan
gluten-free
lactose-free

tags



	ReviewId	RecipeId	AuthorId	AuthorName	Rating	Review	DateSubmitted	DateModified
0	2	992	2008	gayg msft	5	better than any you can get at a restaurant!	2000-01-25T21:44:00Z	2000-01-25T21:44:00Z
1	7	4384	1634	Bill Hilbrich	4	I cut back on the mayo, and made up the differ...	2001-10-17T16:49:59Z	2001-10-17T16:49:59Z
2	9	4523	2046	Gay Gilmore ckpt	2	I think I did something wrong because I could ...	2000-02-25T09:00:00Z	2000-02-25T09:00:00Z
3	13	7435	1773	Malarkey Test	5	easily the best I have ever had. juicy flavor...	2000-03-13T21:15:00Z	2000-03-13T21:15:00Z
4	14	44	2065	Tony Small	5	An excellent dish.	2000-03-28T12:51:00Z	2000-03-28T12:51:00Z

Excluding recipes under 10 ratings + users under 5 ratings

	RecipeId	AuthorId	Rating
21	780	2312	5
45	4366	2178	5
130	3596	3794	5
151	480	4036	5
153	4807	2695	2

```
AuthorId  1533    1535    1634    1676    1792
RecipeId
44           0       0       0       0       0  \
49           0       0       0       0       0
54           0       0       0       0       0
56           0       0       0       0       0
62           0       0       0       0       0
...        ...     ...     ...     ...     ...
530645       0       0       0       0       0
533699       0       0       0       0       0
533997       0       0       0       0       0
534900       0       0       0       0       0
535779       0       0       0       0       0

AuthorId  1891    2148    2178    2310    2312     ...
RecipeId                                           ...
44           0       0       0       0       0  ...  \
49           0       0       0       0       0  ...
54           0       0       0       0       0  ...
56           0       0       0       0       0  ...
62           0       0       0       0       0  ...
...        ...     ...     ...     ...     ...  ...
530645       0       0       0       0       0  ...
533699       0       0       0       0       0  ...
533997       0       0       0       0       0  ...
...
534900       0       0       0       0       0
535779       0       0       0       0       0

[23356 rows x 16431 columns]
```

Next models:

Singular Value Decomposition (SVD) ? - similar to NMF

K-nearest Neighbors (KNN)

potential model: using sentiment

Reserach paper how adjectives can be used for recommendation system!

Deep Dive into Content-Based Recommender Systems: Unveiling the Power of Attribute-Based...

Exploring the Dynamics of Attribute-Based Recommendations in Content-Based Recommender Systems

Popular recommender system models & techniques

In this fourth post, we'll be building a recommendations model - content-based and collaborative filtering - for a recommender engine.

How to use Knn on movies + tags

Sentiment Analysis on Amazon Reviews using TF-IDF Approach.

Feature Extraction: TF-IDF (term frequency-inverse document frequency) Classification: SVM, Logistic Regression

How to use Knn on movies + tags

Using Reviews to Create a Recommender System That Works

If you have ever bought a product online and marveled at the inanity and non-applicability of the 'related items' that haunt the buying and after-sales process, you already understand that popular and mainstream recommender systems tend to fall short in...

3-) Text-based Similarities

You can generate content-based recommendations when descriptive attributes are available. Unfortunately in the real world, this is often...

1-) A Gentle Introduction Recommend Engines

While studying this recommend you to playlist below.

Product tag extraction from customer revie

In the world of e-commerce, customers leave thousands of reviews for the products they bou

NLP: Gaining insights from text reviews

Every time we express ourselves, either verbally or in written text, these expressions carry a lot of information. What subjects we talk

How To Create Simple Keyword-based Movie Recommender Models From Scratch

Content Based Recommender System in Python

In the previous article, we learned about the most general form of recommender system called Non-Personalized Recommender System. Although...

low carb

20% carbs, 40% protein, 40% fat

low fat

75% carbs, 15% protein, 10% fat

high protein

25% carbs, 40% protein, 35% fat.

Keto

5% carbs, 25% protein, 70% fat

Add tolerance of 5%

Lactose Free

Vegan

Gluten Free

Veg

Vegan

Ingredients