Recipe Recommender System

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Business Problem

- Can we provide users with **recipe recommendations** taking **dietary preferences** into account?
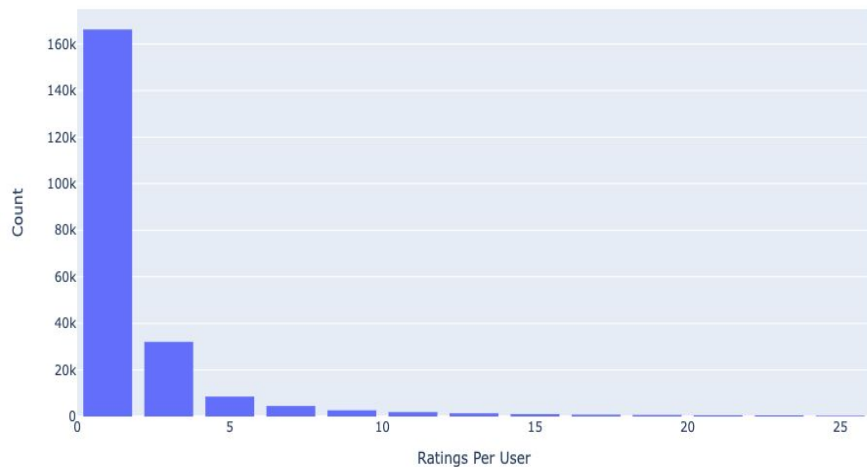

iStock
Credit: Mechelle Brooks

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Data Understanding

- User and Recipe data from Food.com
- Data collected from years 2000-2018
- Recipes rated 1-5 stars

Data Understanding - User Data

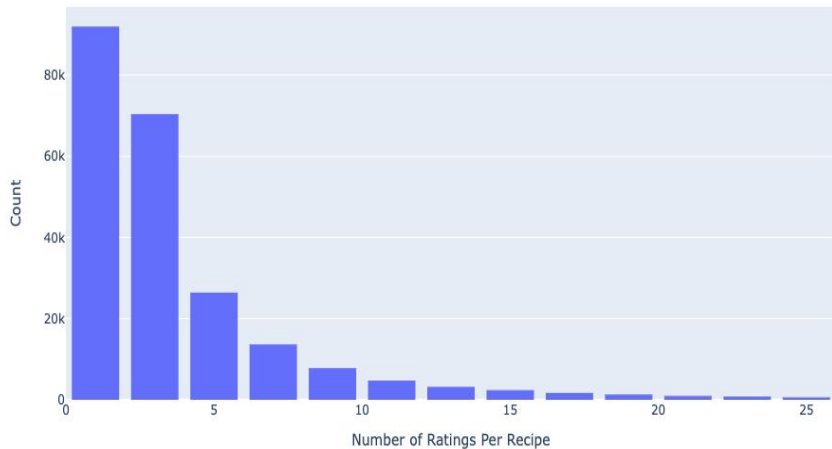
Distribution Of Number of Ratings Per User (Clipped at 25)

- 226,570 different **users**
- Users rated between 1 and 7,671 recipes

Data Understanding - Recipe Data

- 231,637 different **recipes**
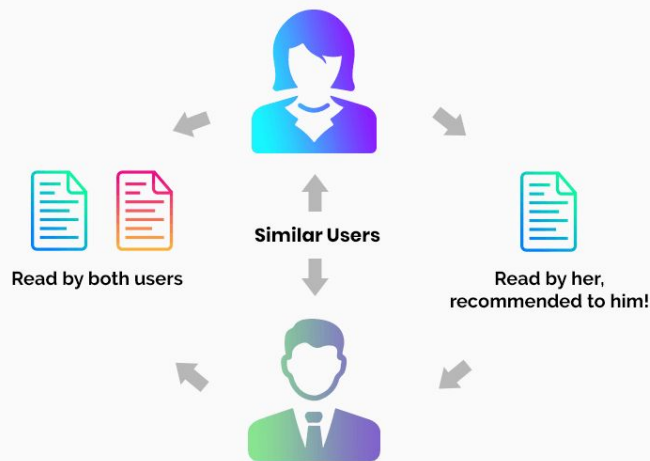- Recipes were rated between 1 and 1,613 times

Distribution Of Number of Ratings Per Recipe (Clipped at 25)

Methods - Modeling

- Recommendations based off of **user's similarity to other users:**
  - *"People who liked similar recipes as you, also liked these recipes."*

Collaborative filtering

Read by both users

Similar Users

Read by her, recommended to him!

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Methods - Evaluation

○ **Accuracy**: "How often are the model's predictions correct?"

High Accuracy

● **RMSE**: compares actual and predicted rating values

Results:

- **RMSE**: 1.396

- **Top-100 Retrieval Accuracy:** 0.06%

Example User Results:

- **Top Recommendations for User #38094:**
  - 'Cherry and blueberry trifle'
  - 'Chicken and basil meatballs'
  - 'Chicken and vegetable salad'

```
[110]  1  _, recs = scann({"user_id":tf.constant(["38094"])})
       2  print(f"Top recommendations: {np.unique(recs)[:3]}")

          Top recommendations: [b'cherry and blueberry trifle' b'chicken and basil meatballs'
           b'chicken and vegetable salad']
```

Recommendations

- Deploy model with diet-type embedding:
  - The more users try our recommendations, the better we can make them!

- Update model with new data
  - New users that have joined the site
  - New recipes that have been added

Next Steps

- Continue to improve model
  - Tune model further
  - Feature cross
  - Deeper neural network model

- Add more **diet types**

Thank You!

- Any questions?
- Contact:
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