

Chef's Special find the restaurant you want to eat at



Overview

- Problem
- Data
- Approach
- Results



Over 50k restaurants

1,300,000+ users

Where should one go?



Solution: Recommender Systems



Data

- Yelp Challenge
- Restaurants with more than 20 reviews
- Users that left over 15 restaurant reviews



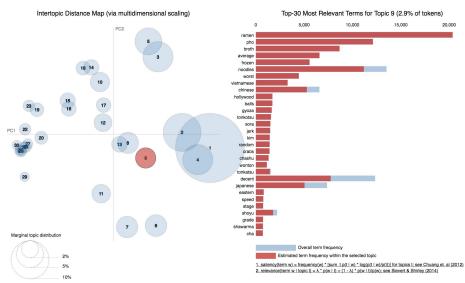
Model selection

- Baseline
- SVD
- KNN
- Random forest
- KNN with restaurant category



Enhancing the model

 Topic modeling with LDA to increase performance of the Singular Value Decomposition model







 Picking up on explicit items

ex. LDA Topic 14: Sushi



- Roll
- Salmon
- Fish
- Tuna
- Special
- Sashimi

Inferential observations
 ex. LDA Topic 6: "Ambiance"



- Nice
- Best
- Great
- Service
- Amazing
- Cozy





Chef's Special

Because you liked <u>Fraticelli's Authentic</u> <u>Italian Grill</u>, here are some places we think you might also enjoy:

Napoli Pizzeria

Italian

Predicted rating:



Hey Meatball

Casual, Italian Predicted rating:



Don't see what you like? Discover more! $\,+\,$

Collaborative



Chef's Special

0 ___

"I want some rustic Italian food."

Mia Za's Italian Cafe

Restaurant
Predicted rating:

*





Oregano's Pizza Bistro

Pizza, Italian, Nice

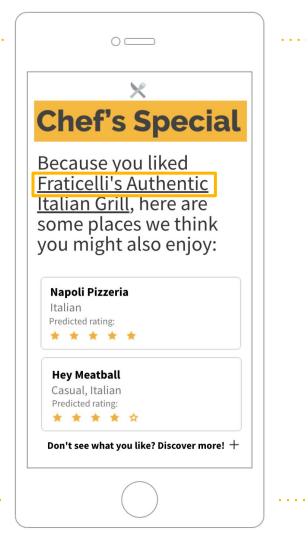
Predicted rating:

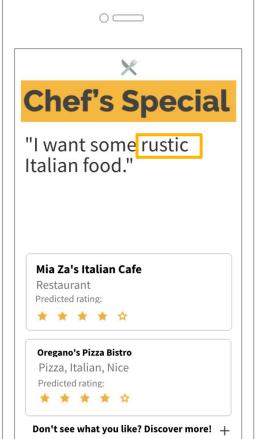




Don't see what you like? Discover more! +

Collaborative + Topic Modeling









Next Steps

- Cold start problem: metadata + new user survey
- Interface for using the model



Thank you!





Iris Borkovsky





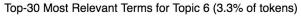


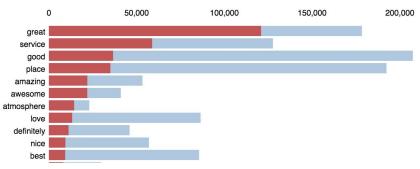
Appendix

Baseline

 $B = \mu + bu + ru$

 μ is the average rating of all restaurants by all users, bu is the difference between μ and the user u's average star ratings, and br is the difference between μ and the restaurant r's average star ratings, and bur is the predicted star rating from user u to restaurant r





Top-30 Most Relevant Terms for Topic 14 (1.7% of tokens)

