

Opinions Matter - InfoLab@UD at 2014 Contextual Suggestion Track

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Presented by Kuang Lu

The Roadmap

Candidate Suggestion
Crawling



Profile Modeling



Candidate Suggestion
Ranking



Description
Generation

Delicious
Spicy Sour Fruity
Hot Sweet Tasty
Zesty Bitter Juicy
Salty Flavorful Sugary
Savory Yummy
Scrumptious

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Opinions matter!



Profile Modeling



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The Roadmap

Compare with last year
Candidate Suggestion
Crawling



- **Linear Interpolation**
 - last year's top
- **Learning to Rank**
 - worthy to try



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Profile Modeling

Similar with last year's method

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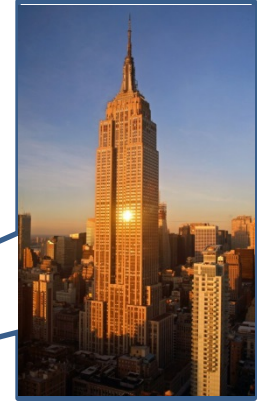


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Candidate Suggestion Crawling

Source : Yelp




16 Categories:

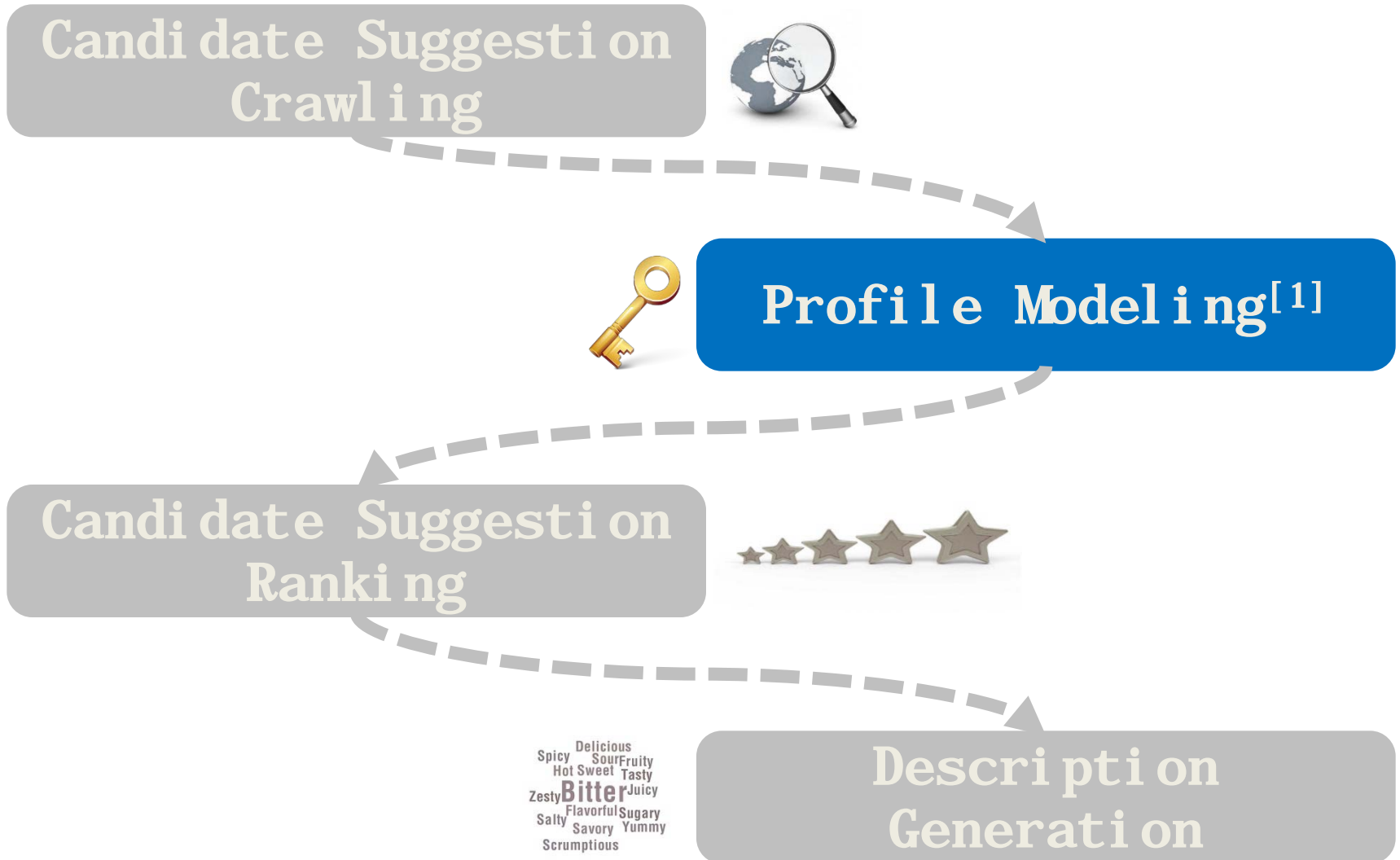


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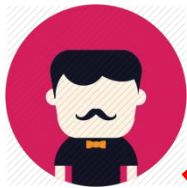
Candidate Suggestion Crawling

- Name
 - Yelp url
 - URL
 - overall Rating
 - total_review_number
 - Categories
 - pics_count
 - Reviews
 - user_id
 - user_friends_count
 - user_reviews_count
 - rating
 - comment
 - useful_count
 - funny_count
 - cool_count
- 
- JSON**
- **Source :Yelp**
 - **Total : 60,442**
 - **Average: 1,208**

The Roadmap



Inspiration



Category

- Type (Ancient, Modern)
- SuitableFor (Family, Adult)
- ...
- Doma Mall
- Statue of Liberty
- Type of American, Mexican
- Ipondo Japanese Cuisine
- Ambiance (quiet, hot)
- Price (low, middle, high)
- Museum of Modern Art
- Uncle Sam Steak

Features

- Others like it?
- ...

Miscellaneous

↑ Statue of Liberty

↑ Ipondo Japanese Cuisine

↑ Museum of Modern Art

↑ Uncle Sam Steak

↓ Doma Mall

➔ Statue of Liberty

↑ Uncle Sam Steak

➔ Museum of Modern Art

↓ Ipondo Japanese Cuisine

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↑ Uncle Sam Steak

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↓ Statue of Liberty

➔ Ipondo Japanese Cuisine

➔ Doma Mall

Inspiration

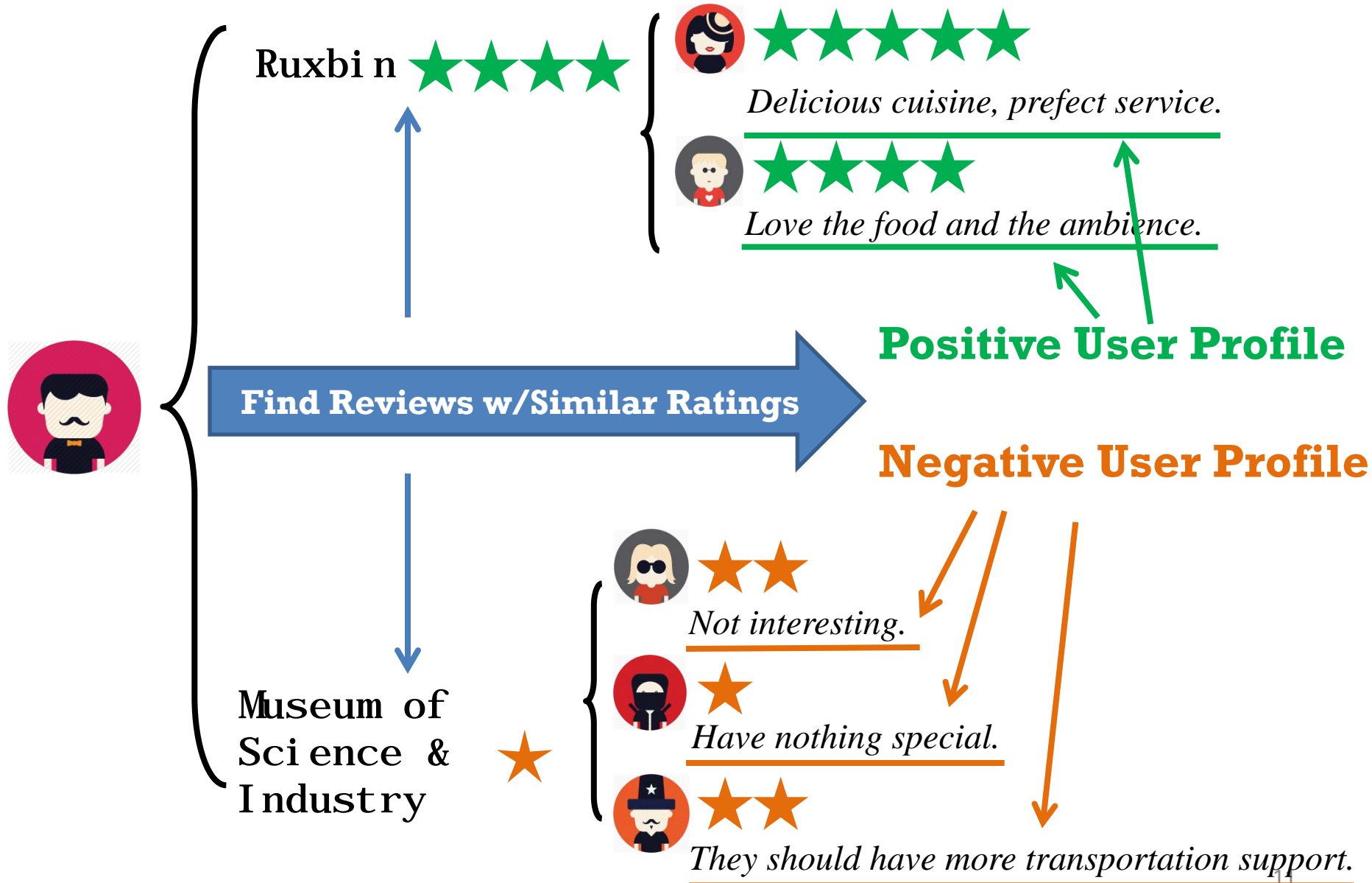
No single factor can capture the real reason...

Enrich!

Explore the opinions

Leverage the wisdom of crowds

Profile Modeling - User



Profile Modeling - User

Representations of Reviews when building user profile

- Full Reviews (**FR**): use full text in the review.
- Unique terms from Full Reviews (**UFR**): only the unique terms in the review.
- Selective Reviews (**SR**): most frequent terms in the review.
- Unique terms from Selective Reviews (**USR**): only consider the unique terms in SR.
- Nouns in Reviews (**NR**): nouns in the review.
- Review Summaries (**RS**): summary of the review. RS are the terms extracted from the reviews using Opinosis Algorithm^[2].

[2] K. Ganesan, C. Zhai, and J. Han. Opinosis: a graph-based approach to abstractive summarization of highly redundant opinions. In *Proceedings of the 23rd International Conference on Computational Linguistics, COLING '10*.

Profile Modeling – Candidate Suggestions



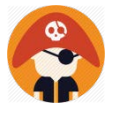
Absolutely amazing food and the most friendly and inviting atmosphere that I've ever experienced.



The food was very reasonably priced. No soggy dough and just the right amount of sweetness.

Positive Candidate Profile

Negative Candidate Profile



Rice ball for a dollar. I guess so? But nothing special.



I've done some pretty disgusting things in my life... trust me, but I've always been considerate of other people and their boundaries.



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Profile Modeling



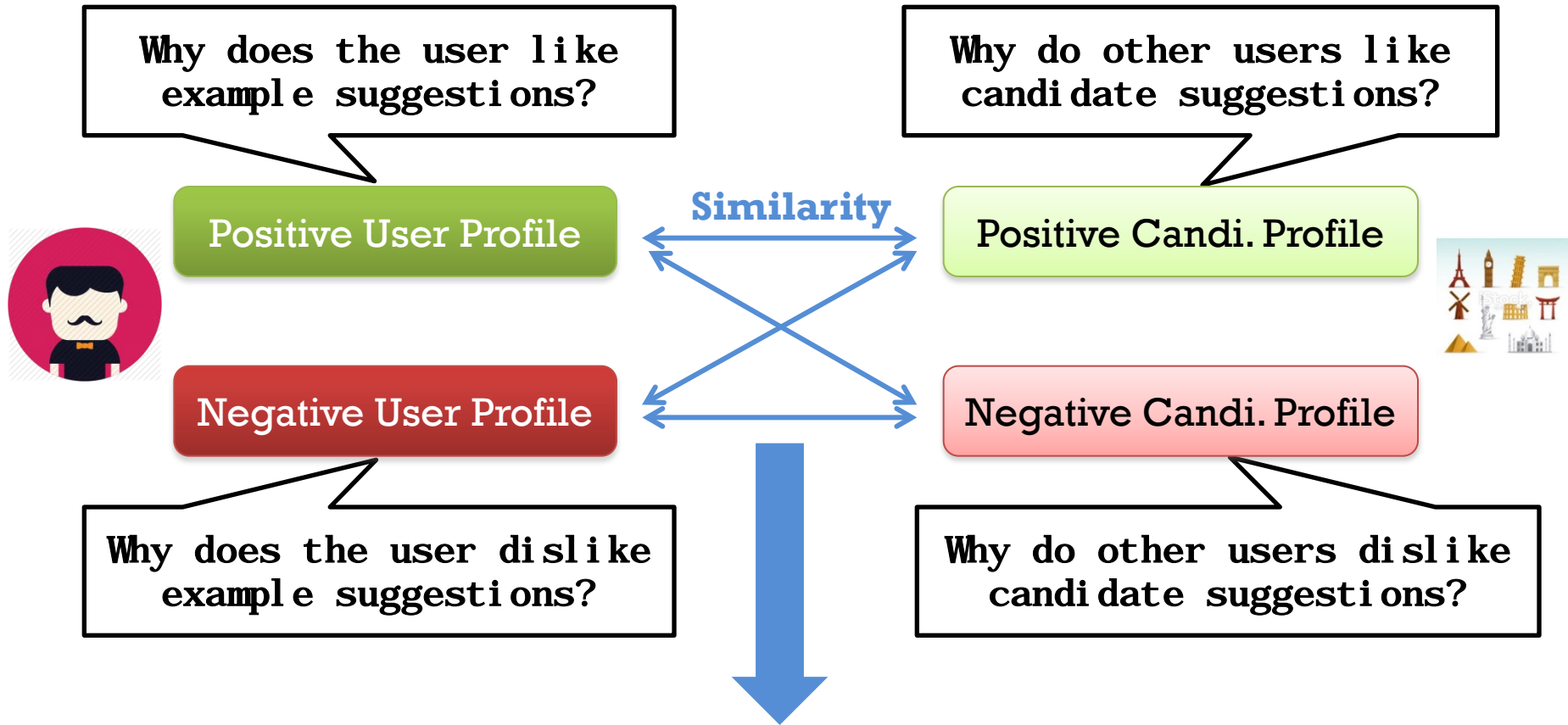
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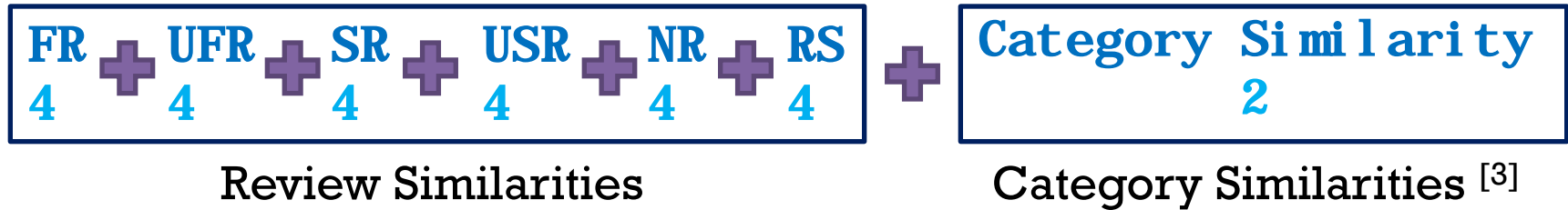
Candidate Suggestion Ranking



- **Learning to Rank**
- **Linear Interpolation**

Ranking – Learning to Rank

1. Features: Similarities Scores



2. Method:

- ☐ MART
- ☒ LambdaMART
- ☐ SVM
- ☐ ...

[3] P. Yang and H. Fang. An exploration of ranking-based strategy for contextual suggestion. In *Proceedings of 21st Text REtrieval Conference (TREC 2012)*.

Ranking – Linear Interpolation

$$S(\mathcal{U}, \mathcal{CS}) = \alpha \cdot SIM(\mathcal{U}_{pos}, \mathcal{CS}_{pos}) - \beta \cdot SIM(\mathcal{U}_{pos}, \mathcal{CS}_{neg}) \\ - \gamma \cdot SIM(\mathcal{U}_{neg}, \mathcal{CS}_{pos}) + \eta \cdot SIM(\mathcal{U}_{neg}, \mathcal{CS}_{neg})$$

☐ FR ☐ UFR ☐ SR ☐ USR ☐ NR ☒ RS

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Personalized Description Generation

- Opening Sentence → What kind of this place is?

Finer category

- “Official” Introduction → What is this place? (see below)

- Highlighted Reviews → Why do other people like it?

Sentences containing frequent nouns in positive reviews and more positive adjectives

- Concluding Sentence → Why is this recommended for YOU?

Positive example suggestion with the same finer category

Description Example

The “Olive Room” is a bar. Here at the olive room, you will receive the finest cuisine. “If you are looking for a unique dining experience, with excellent food, service, location, and outstanding ambiance, look no further!” This place is similar to another place you liked: Tria Wine Room.

What kind of this place is?

What is this place?

Why do other people like it?

Why is this recommended for YOU?

Results

Runs	P@5	MRR	TBG
UDInfoCS2014_1	0.4074	0.5482	1.6271
UDInfoCS2014_2	0.5572	0.7439	2.7043
TREC Median	0.3492	0.5350	1.3685

- UDInfoCS2014_1: Learning to Rank.
- UDInfoCS2014_2: Linear Interpolation

Thank you!

Questions?