Recipe Recommender Assignment-EDA

Batch DSC 54 (EPGPDS)

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Problem statement

- The objective is to design a recommender system to recommend recipes to users based on their choice and the current recipe they are looking at.

- Here, we would be not designing a recommender engine from scratch. Instead, we are using the cleaned data provided by **UpGrad**

- The assignment is also about exploring the data and creating features that can be used to build a recommendation system.

Overview of the assignment submitted

◗ After completing the codes in the templates provided by UpGrad, we have submitted 3 Python files with this PPT

1. 01_FeatureExtractionPart01_final.ipynb

2. 02_EDA-CompleteSolution_Final.ipynb

3. 03_FeatureExtractionPart02-CompleteSolution_final.ipynb

Everywhere in the file we have URI related to our bucket where the data is loaded.

CASE STUDY INSIGHTS

Distribution of ratings for restaurants in Bangalore.
Very good quality restaurants in Bangalore, as most of the restaurants have been rated in the range of 3 to 4.5.

·How's online order availability?
Approximately 75% of the restaurants deliver online in Bangalore.

·How many restaurants have a table booking option?
Around 85% of restaurants don't have a table booking facility.

·Average Budget of restaurants in Bangalore.
The majority of restaurants are pocket-friendly and have an average cost below 1000 for 2 people. There is around 75 restaurants which have cost between 1500 and 4000.

·The most favorite food of Bangaloreans.
The most popular foods in Bangalore are pasta, pizza, cocktails, mocktails, burgers, and biryani.

Case Study Insights

Which are the most commonly served food items in Bangalore?
There are a variety of fried and other types of rice available at most restaurants, but the most popular food items among Bangaloreans are pasta, pizza, cocktails, mocktails, and burgers.
So including these favorite food items in their menu might increase their number of customers.

·**Most voted restaurants.**
Post Brew Pub, Church Street Social, Hoot and Meghana Foods, Hammered, Chutney Chang, Koramangala Social, Vidyarthi Bhavan, and Sotally Tober are the most visited restaurants.

·**Highly and least rated restaurants.**
Belgian Waffle Factory, Biergarten, Hammered, You Mee, Toast & Tonic, Koramangala Social, The Terrace At Gilly's Redefined, Caperberry, Apsara Ice Cream And Smoke House Deli are highly rated restaurants.
Navya's, Shaadi Ki Biryani, Ammi's Biryani, Mast Kalandar, Meghana Biryani, Mamma Mexicana, Bageecha, Decker's Lane, Bageecha, Alibi - Maya International Hotel are least rated restaurants.

Important Finding

- ´ *Considering only rating is not the right measure of popularity, as there may be a case where one restaurant is rated 5 by a few customers and another is rated 4.8 by many customers.*

- *So which one is better? The obvious choice is the second restaurant. Thus, we need to calculate the weighted rating using the rating and number of votes.*

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- To *calculate the weighted rating we will use the weight factor and penalize the rating with the formula*

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- Weighted_rating **= weight_factor * aggregate_rating**

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- Where,

- Weight_factor *is the total number of votes for any restaurant divided by the max number of votes in the whole dataset (i.e. votes/max_votes)*

- The restaurant's average rating is oaggregate_rating.

Case Study Insights

·**Type of cuisine available in Bangalore.**
There are many food varieties available in Bangalore, but the majority of the restaurants serve North Indian, South Indian, and Chinese.

·**Which area has the most number of restaurants?**
BTM and Koramangala mostly dominate in terms of the number of restaurants.

·**Explore area-wise food specialties.**
No particular area specializes in any one kind of food. We can get a variety in each locality and North Indian, and Chinese are most common in all localities.

·**For each category of restaurant, suggest the 'hottest' restaurant that received the most votes.**
Buffet - Vt Sindhur Veg, Cafes - Yomama!!, Delivery - Zengi Pub & Restaurant, Desserts - Waffle Co, Dine-Out - Zodiac Grills, Drinks & Nightlife - Xtreme Sports Bar, Pubs and Bars - White Horse.

- **Recommender system approach**

- Combining name, rest_type, dish_liked, menu_item, category, and reviews.

- ·Clean and normalize the combined text

- ·Filter restaurants are based on location, cost, and cuisine type provided by the user.

- ·Then calculate cosine similarity between User Feels like (text) and combined text and store as a similarity score.

- ·Sort and return the top three restaurants based on similarity score and popularity score

- **What can be done to improve the recommendation?**

- ·The count and percentage of positive and negative reviews can be used for better recommendation results.

- ·A more sophisticated formula like the Bayesian average can be used for calculating the popularity score, as the used formula is biased towards the number of votes.

- ·For better recommendations, more advanced methods like word embeddings or CountVectorizer can be used for encoding text to vector (or feature extraction).

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- **·Major restaurant group.**
- Apsara Ice Cream, McDonald's, Ramji Chaiwale, Brooks And Bonds Brewery, Lassi Shop, Pizza Hut, Petoo, Jigarthanda, Lakeview Milk bar, A2b - Adyar Ananda Bhavan are major chain restaurants available in Bangalore.
- **·Whether rating depends on cost or not**
- There is not much dependency, however, we don't have any lower ratings in a restaurant with an average cost of more than 1500. This means that most of the costly restaurants take good care of their food and service.
- **·Whether a table booking facility is dependent on average cost?**
- Sure, of course! The costly restaurants mostly have a table booking facility.

THANK YOU