A Restaurant recommendation system to the city of Curitiba, Brazil

Diego Carrillo

Restaurant recommendation system

A simple recommendation system that will return a list of neighborhoods in Curitiba (a city in south of Brazil) that better match an input list of restaurant categories

Why this recommendation system would be useful?

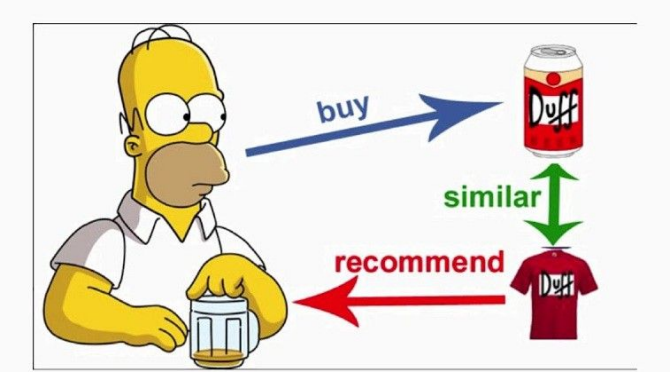
- Can be used by users wanting to find specific venues locations
- Can be used by entrepreneurs that what to join the food business and need to understand in what neighborhoods of the city they have a higher chance to succeed

Data

- Curitiba's neighborhood data: https://pt.wikipedia.org/wiki/Lista_de_bairros_de_Curitiba
- Cities venues, categories to each venues and price data: obtained from the Foursquare API

Methodology
What are recommendation systems?

Recommendation systems are a collection of algorithms used to recommend items to users based on information taken from the user. These systems have become ubiquitous, and can be commonly seen in online stores, movies databases and job finders. In our case, we will use some simple matrix algebra to grade each neighborhood based on a combination of venues categories.



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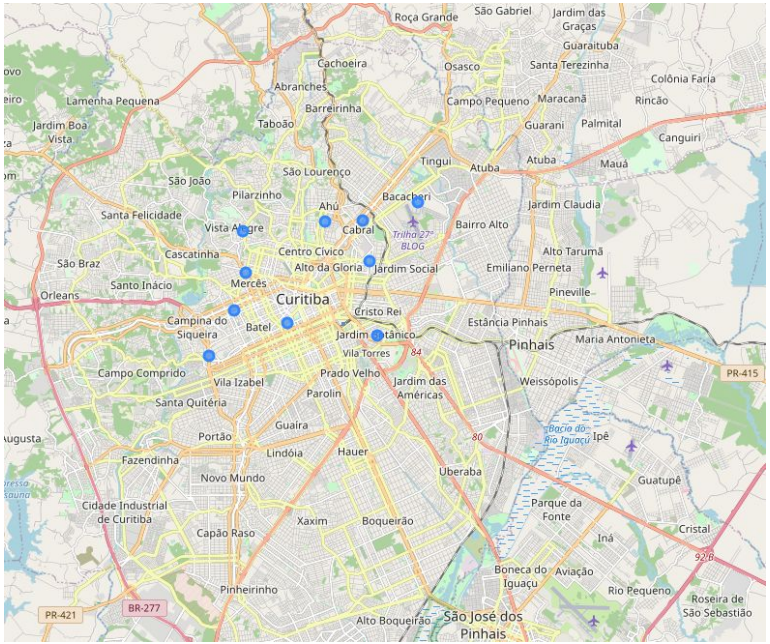
Results

- Test case: we want to know the top neighborhoods in the city where we can find **vegetarian and vegan buffets**
- This is what we get as a result of the recommender system:

Neighborhood	Recomendation grade	Price
Vista Alegre	0.07142857142857142	0.3809523809523808
Seminário	0.06521739130434782	0.4492753623188407
Jardim Botânico	0.04	0.3866666666666666
Bigorrilho	0.037037037037037035	0.6172839506172839
Hugo Lange	0.034482758620689655	0.5977011494252874
Bacacheri	0.03076923076923077	0.4307692307692307
Cabral	0.030303030303030304	0.4242424242424242
Mercês	0.029411764705882353	0.4607843137254902
Centro	0.022222222222222223	0.7111111111111111
Ahú	0.022222222222222223	0.5925925925925924

Results - Map visualization:



Discussion

- All top 10 neighborhoods for vegetarian/vegan buffets are in the same area of the ciity
- The mean price of the top neighborhoods is 0.505138, considerably higher than the city's mean 0.422507. That means that this profile of restaurant is usually more expensive at the city.

Conclusions

- We could obtain **valuable data** through a simple recommendation system!
- The same code could return results for any combination of restaurant category available at the foursquare API
- If anyone wants to make the same analysis to other cities, they would need only to create another dataset containing the name and locations of the neighborhoods, and apply the same functions that were used here