KALIL CASTELO BRANCO TELLES

CAPSTONE PROJECT

BEST RESTAURANT TO WORK IN FORTALEZA
LOCATION DATA APPROACH

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1.INTRODUCTION/ PROBLEM DESCRIPTION

- Kalil is a Master student in Technical Logistics in Germany. After the corona crisis, the Brazilian currency had a strong fluctuation and Kalil has to go back to his parents' house due to the financial crisis.

- Kalil did not finished his master and he must work to survive. He has professional skills in the cuisine and he had the idea to work in restaurants for a short period until the situation become better and he goes back to Germany and finish his master.

The question is, in which restaurant should he look for a work? The core of the problem is that Kalil does not have money. In order to saving money, kalil muss avoid spend money with transportation and other expenses. Then, he needs to work nearby and in a good restaurant with the idea to get bigger tips (Mostly the tips are an obligation in Brazil and normally is included in the payment).

MAIN PREMISSES

- Restaurants nearby
- Restaurants with good reputation
- Restaurants can be visited by foot (without bus, car, bike)
- Kalil does not remember the locations in Fortaleza, so he needs the locations plot in a Map for orientation

	name	categories	lat	lng	distance	cc	country
0	Restaurante Dona Malu	Brazilian Restaurant	-3.759449	-38.487703	567	BR	Brasil
1	Restaurante Alecrim Verde	Brazilian Restaurant	-3.747926	-38.491744	1713	BR	Brasil
2	Restaurante Da Fa7	Comfort Food Restaurant	-3.766256	-38.494383	495	BR	Brasil
3	restaurante 4 rodas	Restaurant	-3.758847	-38.487305	647	BR	Brasil
4	restaurante churrascaria serrana	BBQ Joint	-3.764546	-38.496025	570	BR	Brasil
5	Restaurante e marmitaria salve Jorge, Rua cmt José de Oliveira, 170	Brazilian Restaurant	-3.758360	-38.489662	571	BR	Brasil
6	Restaurante Recanto dos Amigos	Restaurant	-3.747300	-38.499797	2029	BR	Brasil
7	Restaurante Tomate Cereja	Buffet	-3.776188	-38.482428	1724	BR	Brasil

Figure 1:Example of the data

2.DATA DESCRIPTION

- Data description: the data used to solve this problem is geocode, and it is obtained from FourSquare.
- Explanation and the steps, with examples, of the data is the following. Data is a single dataframe containing locations nearby the parent's house of Kalil. Primarly data is based on the lat,lng and radius(2km).
- Some other metadata like name, categories, area, post code, distances and so on is also collected, but let us discuss that some of them are not necessary for the analysis.

3.METHODOLOGY

1. Searching for a specific parameter – Since it is necessary to solve the problematic of this project, it is required to specify the parameter that will guide us. It was defined a query to search for restaurant within 2km of radius.

[56]:

categories	referralId	hasPerk	location.lat	location.lng	location.labeledLatLngs	location.distance	location.cc	location.country	location.formattedAddress	location.address	location.postalCode	location.city	location.
': 'Brazilian estaurants', n': {'prefix': gentinian_', ıary': True}]	v-1591287151	False	-3.759449	-38.487703	[{'label': 'display', 'lat': -3.7594491890431607, 'lng': -38.487703193511834}]	567	BR	Brasil	[Brasil]	NaN	NaN	NaN	
': 'Brazilian estaurants', n': {'prefix': gentinian_', ıary': True}]	v-1591287151	False	-3.747926	-38.491744	[{'label': 'display', 'lat': -3.7479258834779627, 'lng': -38.49174431913736}]	1713	BR	Brasil	[Rua henriqueta galeno 920, Fortaleza, CE, 60135-420, Brasil]	Rua henriqueta galeno 920	60135-420	Fortaleza	
': 'Comfort mfort Food n': {'prefix': d/default_', ıary': True}]	v-1591287151	False	-3.766256	-38.494383	[{'label': 'display', 'lat': -3.766255879406433, 'lng': -38.4943828993284}]	495	BR	Brasil	[Brasil]	NaN	NaN	NaN	
estaurant', estaurant', n': {'prefix': d/default_', ıary': True}]	v-1591287151	False	-3.758847	-38.487305	[{'label': 'display', 'lat': -3.7588474750518 8, 'lng': -38.4873046875}]	647	BR	Brasil	[Brasil]	NaN	NaN	NaN	
BBQ Joint', BQ', 'icon': {'prefix': d/bbqalt_', ıary': True}]	v-1591287151	False	-3.764546	-38.496025	[{'label': 'display', 'lat': -3.764546196986964, 'lng': -38.49602528421452 5}]	570	BR	Brasil	[Brasil]	NaN	NaN	NaN	

Figure 2:Data before cleaning

2. Cleaning, predefining the data and transform it in data frame

	name	categories	lat	lng	distance	cc	country	
2	Restaurante Da Fa7	Comfort Food Restaurant	-3.766256	-38.494383	495	BR	Brasil	
0	Restaurante Dona Malu	Brazilian Restaurant	-3.759449	-38.487703	567	BR	Brasil	4
4	restaurante churrascaria serrana	BBQ Joint	-3.764546	-38.496025	570	BR	Brasil	
5	Restaurante e marmitaria salve Jorge, Rua cmt José de Oliveira, 170	Brazilian Restaurant	-3.758360	-38.489662	571	BR	Brasil	
3	restaurante 4 rodas	Restaurant	-3.758847	-38.487305	647	BR	Brasil	
8	Restaurante Republica	BBQ Joint	-3.767888	-38.494655	648	BR	Brasil	
15	Restaurante Recanto	Restaurant	-3.769754	-38.484266	1040	BR	Brasil	5
21	Restaurante Barcelona	Brazilian Restaurant	-3.754247	-38.483712	1296	BR	Brasil	5
14	Restaurante e Lanchonete Petit Bom	Brazilian Restaurant	-3.771442	-38.482640	1301	BR	Brasil	4

Figure 3: Data after cleaning and filtering

3. Defining the information of interest and filter dataframe – in this case (name, category and distance are the most relevant information for the first analysis)

4. Visualizing the restaurants that are nearby parents' house of kalil

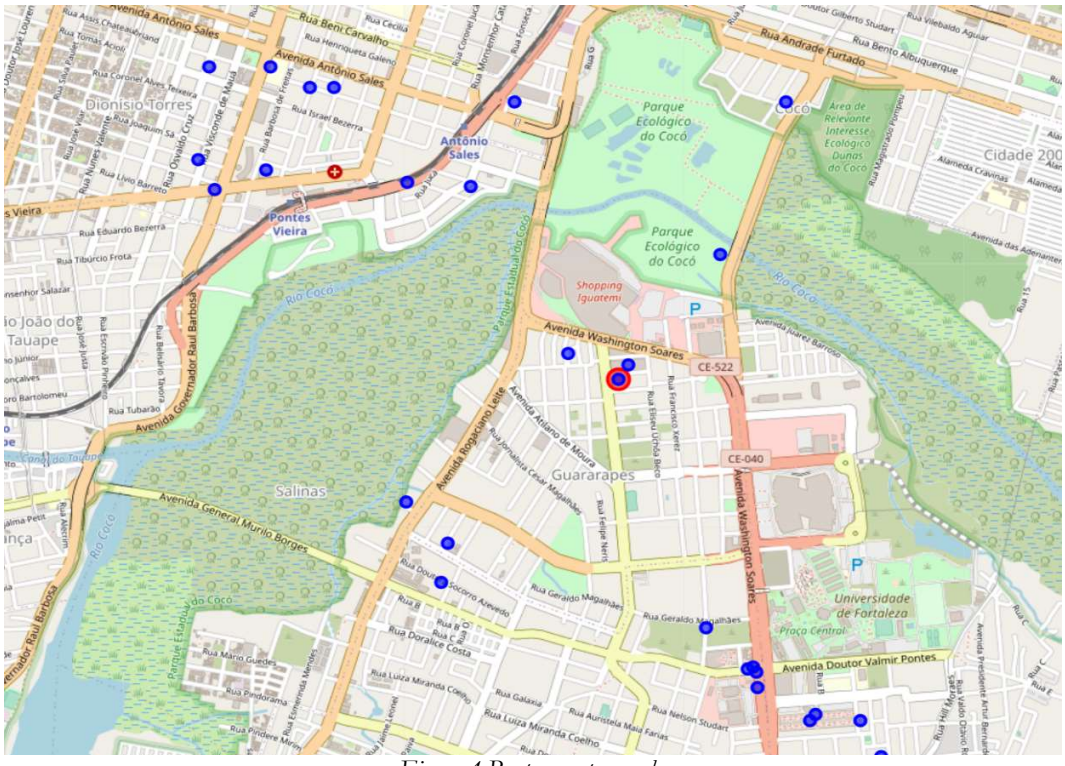

Figure 4:Restaurants nearby

5. Checking the rates of the restaurants – Where is the best restaurant nearby. (Overall Rating)

6. Now it is possible to check the best rating, and the closest distance.

7. At the end explore the location of the desired restaurant to work. It is important to check the access, and how easier is to get there.

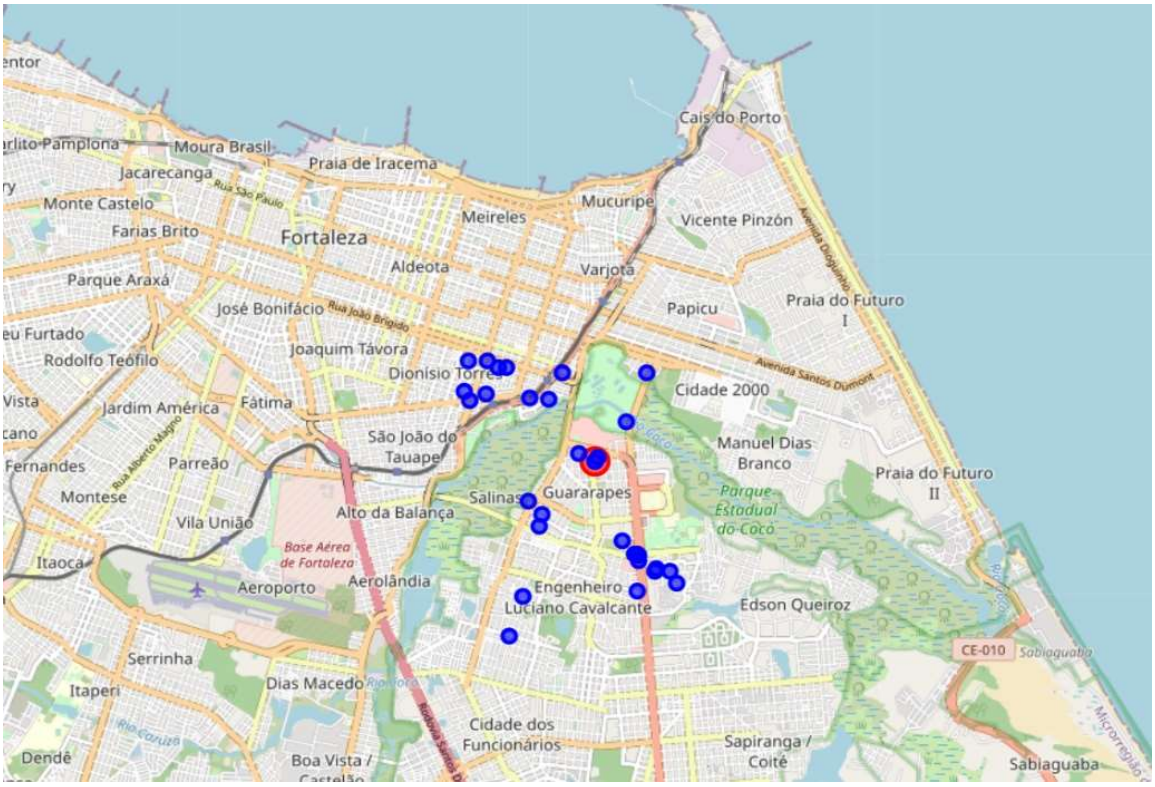

Figure 5:Exploring restaurants location

4.RESULTS/CONCLUSIONS

Through this analysis, it is possible to draw a clear conclusion. Within a radius of 2km, we can define the best restaurant associated to the overall rating. Depending on the distance that kalil wants to travel, this analysis can be adapted. If he wants to walk only 500 meters or 5 kilometers, this will decrease or increase the sample respectively. And with that the restaurant option will become wider or more specific.

Moreover, it would also be possible to classify restaurants by categories. For example, kalil has an Italian chef's certificate, it could be filtered only by Italian restaurants and so on. The possibilities are many, but the purpose of this work is more to show the simplicity and effectiveness of data analysis applied in real life. This could be more detailed, or the focus of the research could be another completely different one, such as martial arts academies. Depending on the professional function in which the kalil wanted to perform, this analysis can be fully adapted.

5.DISCUSSION

In the capstone project, I really wanted to present an example of my hometown. And I faced some problems.

The first, the difficulty of finding similar data and examples on the internet. Fortaleza is a big city for Brazil, but it still has a lot to develop in technological terms. For example, I wanted to associate tips, I wanted to automate the rating part, but the foursquare database in fortress is not very extensive. In Fortaleza few people evaluate establishments through a digital platform. Many people actually don't even have a smartphone.

It is an even more interesting way to think about techniques to be developed in cities and countries that do not have a relevant of technological scenario.