Comparing the Neighborhood of South-Mumbai to Electronic City Bangalore

Ranjeeth P P

28/JULY/2020

1. Introduction

1.1 Problem

As my client has transferred from Infosys Limited located at Electronic city Bangalore to Infosys Limited located at South-Mumbai, he needs my help to predict a neighborhood in South-Mumbai which is similar to Electronic city (present neighborhood), so that he would get similar experience in that neighborhood and also he can make pre-plan about his moving to new location.

1.2 Interest

My client is interested to know about South-Mumbai neighborhood, like how much will be the accommodation cost in each neighborhood of south Mumbai and also how similar it is when compared to Electronic city. He also wanted to know whether the neighborhood which he is moving into has Gym and Veg Restaurants.

2. Data acquisition and cleaning

2.1 Data Source

For my analysis of above said problem I will be using data table of Mumbai Neighborhood from Wikipedia, link to the data is
https://en.wikipedia.org/wiki/List_of_neighbourhoods_in_Mumbai

Using above said data I will obtain neighborhood's different venue, its category and also its latitude and longitude using Foursquare API.

https://api.foursquare.com/v2/venues/explore?

And also, I will be using Foursquare API to search specific location in a given neighborhood using,

https://api.foursquare.com/v2/venues/search?

2.2 Data Cleaning

Wikipedia Data :-In the table it consists of 4 columns which are Area (Neighborhood), Location (Borough), Latitude and Longitude. In this table I needed only the data of South-Mumbai location and its neighborhood along with its latitude and longitude for my analysis.

Foursquare API Explore Data:- It returns JSON file which consists of several feature regarding a specific place. In that I will be using features like venue, venue's latitude, venue's longitude and venue's category for my analysis.

2.3 Feature Selection

After data cleaning there were 534 rows and 107 columns left for my data analysis. As I need to compare the neighborhood its similarity, I have chosen to do that using neighborhood venues category like whether that neighborhood contains Gym, Restaurant, Park etc. and coded it in the form of 0 and 1, 0 for that category does not include in that neighborhood and 1 for that category include in that neighborhood. I have done this using One-Hot Coding.

3. Machine Learning Model

I will be using "K-NEAREAST-NEIGHBOR CLUSTER" algorithm with parameter such as number of clusters is set to 3 and random state is set 0 and rest of the parameter set to default condition. This algorithm will cluster the

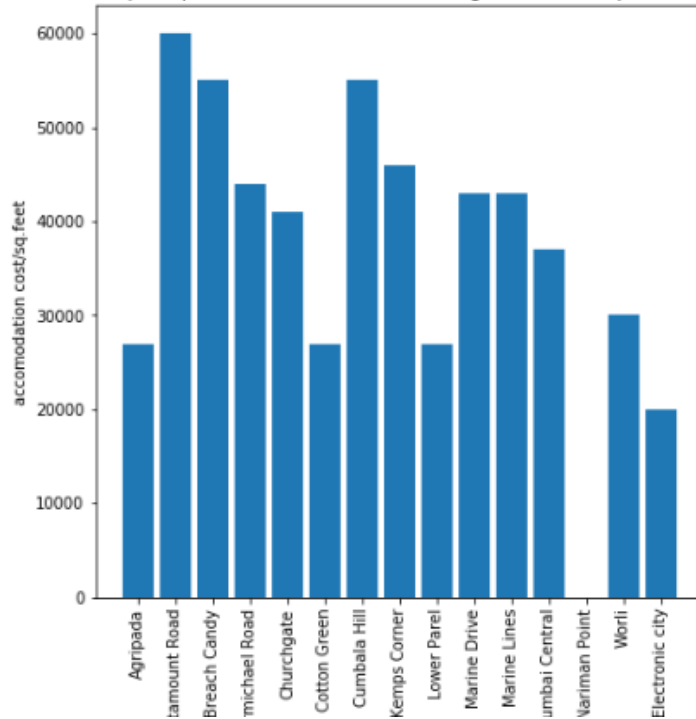Neighborhood based on its venue category.

4. Result

With the help of KNN I came to know that following are the neighborhoods of south Mumbai which are similar to Bangalore's Electronic city based on venue category,

South- Mumbai Neighborhood similar to Electronic City Bangalore
1. AGRIPADA
2.   Nariman Point
3. Marine Drive
4. Kemps Corner
5. Cumbala Hill
6. Breach Candy
7. Altamount Road
8. Mumbai Central
9. Cotton Green
10. Lower Parel
11. Worli
12. Carmicheal Road
13. Chruchgate

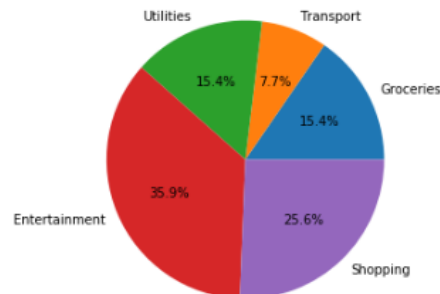Following are the graphic view of data based on client's interest.

(1) **Accomodation cost :-**   The following bar graph shows the average accommodation cost of each neighborhood which are similar to Electronic city. In this neighborhood like Agripada, Cotton Green and Lower Parel has somewhat similar accommodation cost compared to Electronic city. So, I have chosen Agripada, Cotton Green and Lower Parel neighborhood as best to my client.

Accomodation cost per sqaure feet for 1BHK in each neighborhood compared with electronic city

(2) **Average Expenditure cost:-**

Average Expenditure cost expressed in percentage at AGRIPADA or COTTON GREEN or LOWER PAREL

(3) **Client Interest in neighborhood :-** Here I have considered Lower Parel as neighborhood to check whether this neighborhood has following client's interest.

A) GYM

B) VEG-RESTAURANT

Following table show Gym in lower Parel and its address

	location.address	location.lat	location.lng	name
0	Lower Parel	18.997355	72.831034	Powerhouse Gym

Following are the veg restaurant in lower Parel area

location.address	location.lat	location.lng	name
delai road	18.990774	72.831553	aajra veg restaurant
NaN	18.990868	72.831596	Sarvoday pure veg
NaN	18.993713	72.831645	Janta Restaurant
Opposite Mathulya Centre, S. B. Road	18.998391	72.827788	Ambience Restaurant & Bar
NaN	18.996172	72.828085	Pachu Bar & Restaurant
NaN	18.995671	72.827831	Shri Ram
Lower Parel	18.997546	72.827000	Red Wok Oriental Restaurant
N.M. Joshi Marg	18.993197	72.832205	Ankur Restaurant & Bar
215, B-184 Jodha Mansion,Ganpathrao Kadam Marg	18.998449	72.831472	Modern Family Restaurant
NaN	18.991507	72.831511	Atmashanti restaurant

5. Conclusion

In this study, I have analyzed the relationship between each south Mumbai neighborhood with Electronic city and came to the conclusion that Agripada, Cotton Green and Lower Parel best suits my client wish like it's should have comparatively lower cost for 1BHK flat and other wishes like it should include Gym and veg- Restaurant.