

Coursera capstone

Battle of neighbourhoods -Week 1

DATA:

This section describes the data we need to solve the problem, sources of data and techniques used.

Types of data:

1. We need all the names and locations of neighbourhoods in the city of Chennai.
2. We need the venues like shops, shopping malls, restaurants, schools, colleges and other venues nearby each neighbourhood to identify the type of neighbourhood.

Sources of data:

1. List of neighbourhoods are derived from Wikipedia page given below.
https://en.wikipedia.org/wiki/Template:Neighbourhoods_of_Chennai
2. All the data regarding neighbourhood venues in each neighbourhood is derived from FOURSQUARE API using sandbox developer account.
3. List of latitude and longitude of neighbourhoods are derived from [OpenStreetMap Nominatim](#) API for academic purpose.

Techniques used:

1. First step is to scrape data from Wikipedia page for the names of neighbourhoods. I have used pandas, request and beautiful soup module to do this.
2. Then I've called OpenStreetMap Nominatim API to get the locations coordinates in latitude and longitude.
3. Then I have merged data into one data frame. We get a total of 142 neighbourhoods and locations

	Neighbourhood	Latitude	Longitude
0	Adyar	13.006450	80.257779
1	Adambakkam	12.982221	80.209121
2	Alapakkam	13.049901	80.165435
3	Alandur	12.994373	80.194284
4	Alwarpet	13.033860	80.254549
5	Alwarthirunagar	13.047486	80.183669
6	Ambattur	13.119375	80.150765
7	Aminjikarai	13.072140	80.220545

Fig 1: List of neighbourhoods and locations

4. Then I've mapped all the neighbourhoods onto the map

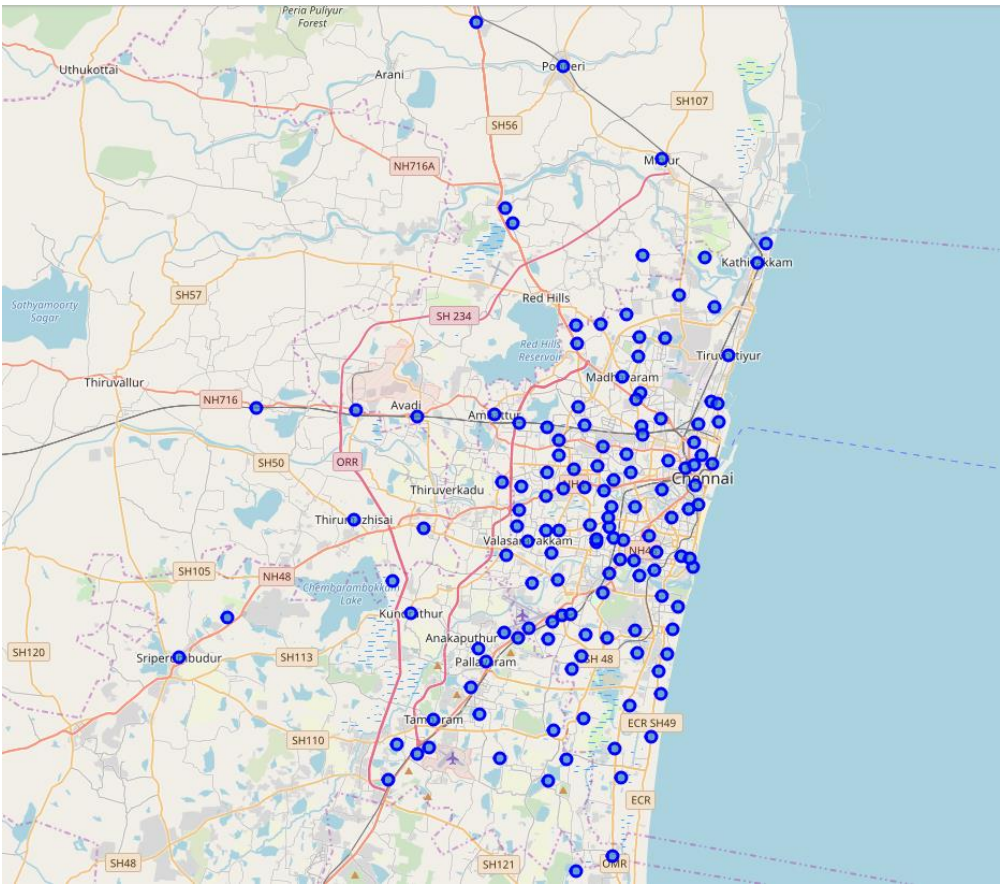


Fig 2: Neighbourhoods of Chennai

5. Next step is to make calls to FOURSQUARE API to retrieve additional information about the nearby venues of neighbourhood and grouped them

	Neighbourhood Latitude	Neighbourhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
Neighbourhood						
Adambakkam	4	4	4	4	4	4
Adyar	32	32	32	32	32	32
Alandur	3	3	3	3	3	3
Alapakkam	4	4	4	4	4	4
Alwarpet	24	24	24	24	24	24
Alwarthirunagar	8	8	8	8	8	8
Ambattur	5	5	5	5	5	5
Aminjikarai	16	16	16	16	16	16
Anna Nagar	23	23	23	23	23	23
Anna Nagar West	4	4	4	4	4	4
Arumbakkam	4	4	4	4	4	4

Fig 3: Neighbourhoods and venues

6. Doing some one hot coding and clustering the neighbourhood using K-Means clustering and then finally visualize it on map. So following figure shows neighbourhoods which are similar.

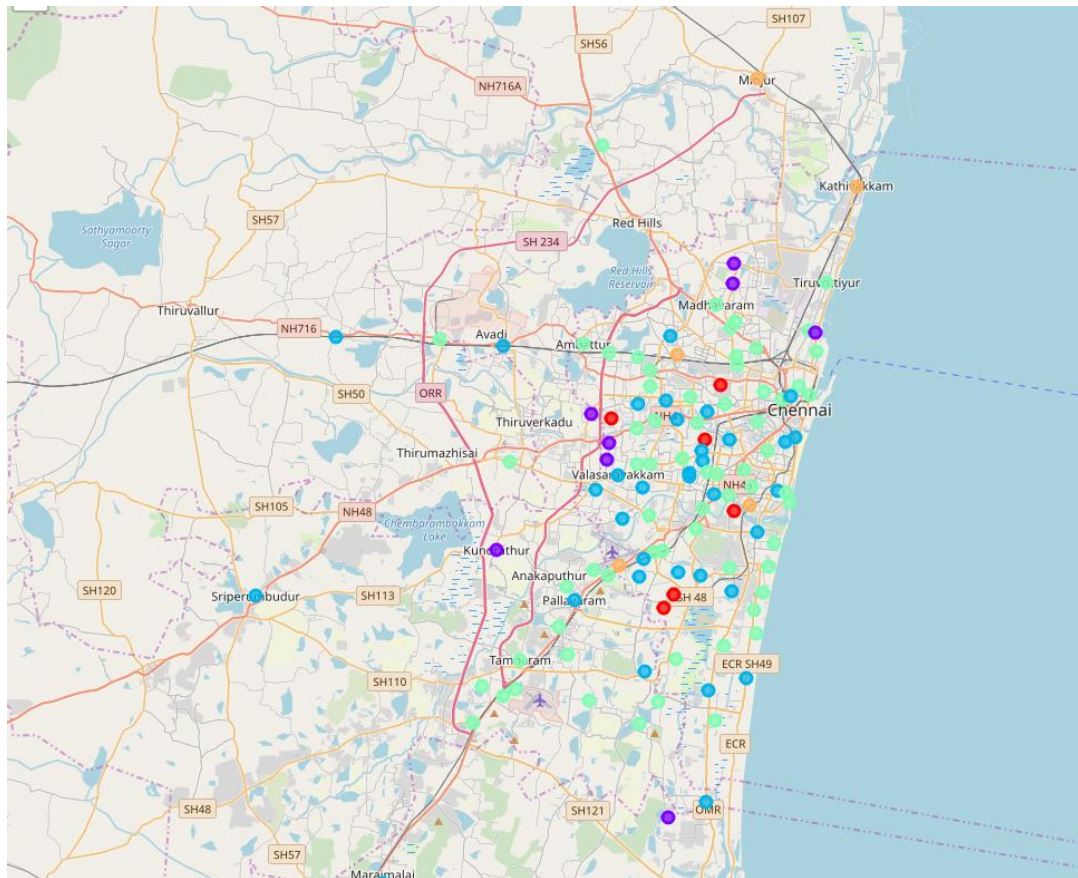


Fig 4: Neighbourhood segmentation and clustering

- Then I've selected the neighbourhood which are coloured sky blue, which are posh neighbourhoods and people really come out to spend money for gaming and it has all the necessary amenities close by for the Gaming Café.as discussed earlier.

	Neighbourhood	Latitude	Longitude
0	Adyar	13.006450	80.257779
1	Adambakkam	12.982221	80.209121
2	Arumbakkam	13.074371	80.208131
3	Ashok Nagar	13.040073	80.215925
4	Avadi	13.118274	80.101543
5	Chepauk	13.063630	80.281278
6	Injambakkam	12.918937	80.251295
7	Karapakkam	12.911707	80.227720

Fig 5: Potential areas for opening Gaming cafe

8. Now after selecting these neighbourhoods I found out the number of schools and colleges nearby these neighbourhoods

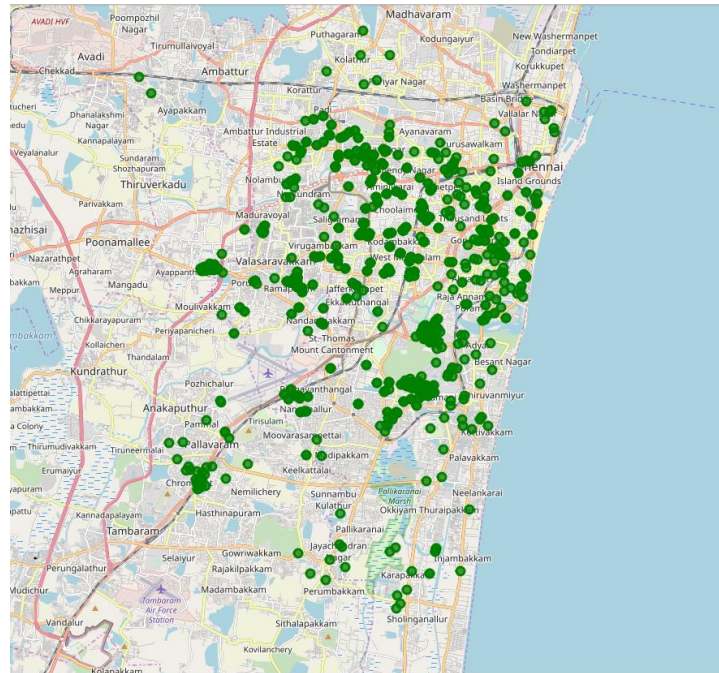


Fig 6: Schools and Colleges near the potential areas for opening Gaming Café

9. Identifying already existing Gaming Café in the potential areas

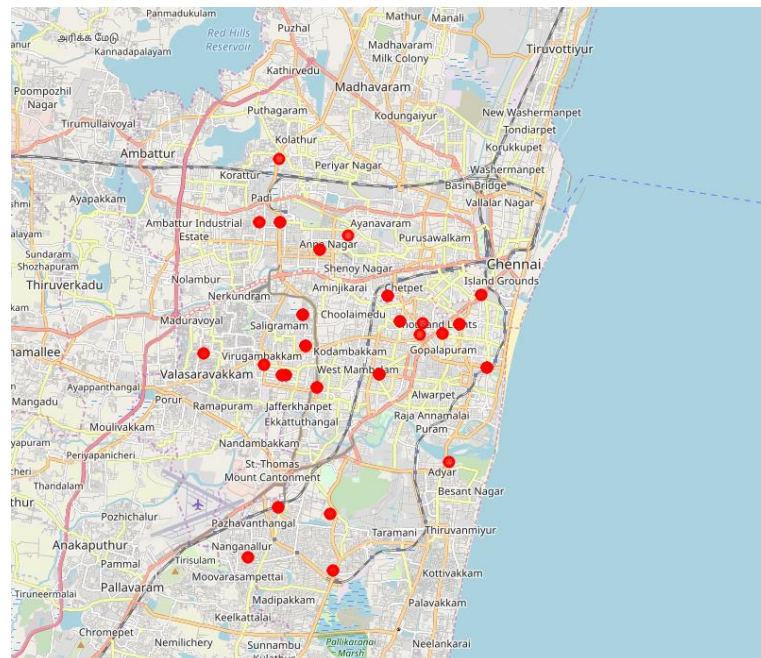


Fig 7: Gaming café in potential areas

10. Then we normalize the data and assign some weight and decide on which is the better place to open the gaming café. The location has maximum number of schools and colleges along with minimum competition. The list is given below.

	Neighbourhood	Score
15	Mylapore	2.407837
28	T. Nagar	2.134150
22	Perungudi	2.119606
0	Adyar	1.440166
23	Porur	1.195423
34	Velachery	0.474279
21	Pallavaram	-0.185772
2	Arumbakkam	-0.320260
9	Kodambakkam	-0.483052

Fig 8: Locations for opening Gaming Café

Result:

Mylapore is the best place to open a Gaming Café.