

# Where to Open a New Commercial Center in Shanghai

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## Introduction

Shanghai is now rising up as one of the largest cities in East Asia. The population is growing and peoples' purchasing power keeps increasing as well. Peoples need somewhere to release themselves from daily work, to release their purchasing power and eventually to entertain themselves. Commercial center is such a perfect choice because it fulfills all kinds of need including restaurants, shops, cinemas, and so on.

This report of capstone project of IBM Data Science aims at analyzing and selecting the best location in Shanghai to open a new commercial center. With the help of data science techniques, good places with less business units but larger resident amount, which means larger business potential, will be located in the city of Shanghai.

This project will definitely interest property investors and different corporations.

## Data source

Data sources below will be used for approaching this project:

- List of neighbourhoods of Shanghai:  
[https://en.wikipedia.org/wiki/Category:Neighbourhoods\\_of\\_Shanghai](https://en.wikipedia.org/wiki/Category:Neighbourhoods_of_Shanghai)
- List of districts of Shanghai:  
[https://en.wikipedia.org/wiki/Category:Districts\\_of\\_Shanghai](https://en.wikipedia.org/wiki/Category:Districts_of_Shanghai)
- Latitude and longitude coordinates of the neighbourhoods in different neighbourhoods of Shanghai from GeoPy:  
<https://geopy.readthedocs.io/en/stable/>
- Venue data from Foursquare  
<https://fr.foursquare.com/city-guide>

## Methodology

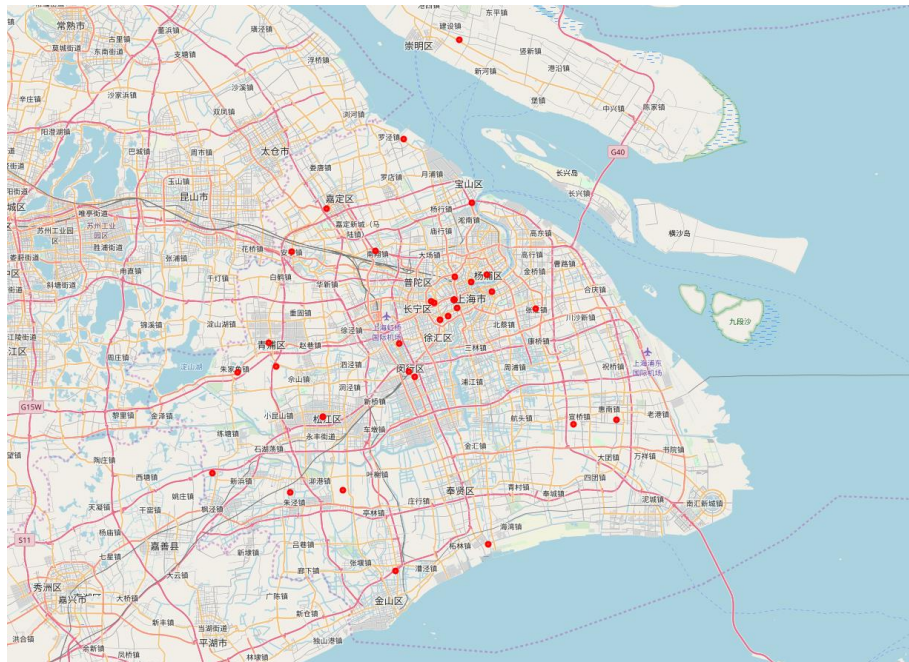
Data science techniques will be applied for building datasets from the webpage of Shanghai neighbourhoods, which contains data preprocessing skills like web scraping, data cleaning and data forming.

Then the geographical coordinates of the neighbourhoods could be generated from neighbourhood names by GeoPy. Using the API of Foursquare application, venue data could be reached.

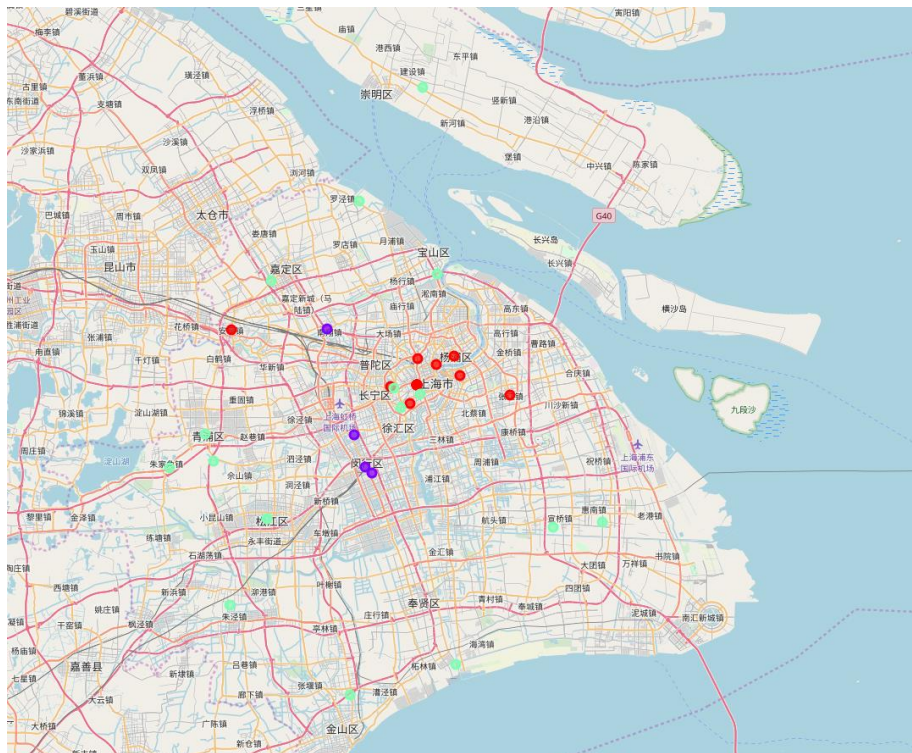
After that, the neighbourhoods information could be explored and visualized. Clustering neighbourhoods helps to clarify the characteristics of different locations in Shanghai. In this way, the most appropriate cluster for a new commercial center's address could be recommended to the readers.

## Results

Here are all the neighbourhoods of Shanghai including urban districts superposed on top of the map.



Here are all the 3 neighbourhood clusters generated by machine learning method – Kmeans.



## Cluster 0

	Neighbourhood	Shopping Mall	Cluster Labels	Latitude	Longitude
0	Anting	0.052632	0	31.29890	121.15760
24	Qiantan International Business Zone (Shanghai)	0.040000	0	31.22222	121.45806
23	Putuo District, Shanghai	0.040000	0	31.22222	121.45806
22	Pudong	0.055556	0	31.23513	121.52759
20	Nanshi District, Shanghai	0.040000	0	31.22222	121.45806
37	Zhangjiang Town	0.060606	0	31.20861	121.60889
16	Luodian, Shanghai	0.040000	0	31.22222	121.45806
14	Koreatown, Shanghai	0.040000	0	31.22222	121.45806
30	Tianzifang	0.040000	0	31.22222	121.45806
11	Huangpu District, Shanghai	0.040000	0	31.22222	121.45806
13	Jing'an District	0.040000	0	31.22000	121.41583
9	Gubei, Shanghai	0.040000	0	31.22222	121.45806
8	Gaoqiao, Shanghai	0.040000	0	31.22222	121.45806
33	Xuhui District	0.030000	0	31.19594	121.44709
35	Yangpu District	0.030303	0	31.26193	121.51904
36	Zhabei	0.031746	0	31.25861	121.45972
1	Baoshan District, Shanghai	0.040000	0	31.22222	121.45806
10	Hongkou District	0.030000	0	31.25000	121.48917

## Cluster 1

	Neighbourhood	Shopping Mall	Cluster Labels	Latitude	Longitude
25	Qibao	0.136364	1	31.15267	121.35688
18	Minhang District	0.105263	1	31.10880	121.37472
21	Nanxiang	0.230769	1	31.29979	121.31180
27	Shanghai County	0.125000	1	31.10027	121.38565

## Cluster 2

	Neighbourhood	Shopping Mall	Cluster Labels	Latitude	Longitude
31	Wusong	0.00	2	31.37566	121.49041
29	Songjiang Town	0.00	2	31.03595	121.21460
32	Xintiandi	0.00	2	31.02474	121.67880
28	Songjiang District	0.00	2	31.03595	121.21460
34	Xujiahui	0.02	2	31.19000	121.43194
19	Nanhui District	0.00	2	31.03188	121.75906
17	Luwan District	0.01	2	31.20908	121.46335
15	Lujiazui	0.00	2	30.79141	121.34888
12	Jiading District	0.00	2	31.36637	121.22153
7	Fengxian District	0.00	2	30.83381	121.52128
6	Fengjing	0.00	2	31.11670	121.12902
5	Chuansha County	0.00	2	31.47713	121.36461
4	Chongming District	0.00	2	31.63318	121.46795
3	Changshou Road Subdistrict	0.00	2	30.91604	121.15409
2	Changning District	0.01	2	31.21739	121.42105
26	Qingpu District	0.00	2	31.15394	121.11408
38	Zhujiajiao	0.00	2	31.10757	121.05696

## Discussion

It is obvious that **most of the commercial centers are located in the city center, with the cluster 0.**

However, **shopping malls in cluster 1 have intense competition** due to too many commercial units and high concentration of shopping malls.

On the other hand, **cluster 2 has no shopping mall in the neighborhoods**, which means a good opportunity and high business potential to open new commercial centers because there is little competition from existing markets.

From another perspective, this also shows that the oversupply of shopping malls mostly happened in the city center, while the suburban area still have very few shopping malls.

Therefore, this project would recommend property investors to capitalize on these findings to open new shopping malls in neighborhoods of cluster 2 with rare competition, **especially the 3 locations of cluster 2 which are also in the city center: Luwan District, Changning District and Xujiahui.**

Furthermore, property investors with unique selling propositions to stand out from the competition can also open new shopping malls in neighborhoods in cluster 0 with moderate competition.

In the end, property investors are advised to avoid neighborhoods in cluster 1 which already have high concentration of shopping malls and suffering from intense competition.

## Conclusion

Seeing that the great business potential and few competitors in the ongoing market, opening a new commercial center in suburban areas of Shanghai is a very good, and safe as well, choice for property investors.

Investing in the 3 locations of rare competitors in city center, Luwan, Changning and Xujiahui, would need more study with more data and profounder data exploration. After all, it could be suspicious that in such place that there is no shopping mall. More business feasibility researches would be necessary in order to decrease the risks if any property investor is interested.