

Coursera Capstone

IBM Data Science Course Final Report

Opening A New Restaurant in Shanghai, China

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Background Introduction

As we all know, opening a restaurant of your own is one of the biggest dream for many entrepreneurs.

However, as with any business decision, it may require serious consideration and is much complicated than it seems.

Particularly, the location of the restaurant is one of the most important decisions that will determine whether it will be a success or not.



Business Problem

The aim of this capstone project is to analyse and choose the best location in the city of Shanghai, China to open a new restaurant.

Using data science methodology and machine learning techniques like clustering, the project's purpose is to provide a solution to answer the question:

In the city of Shanghai, China, if someone is looking to open a restaurant, where would you recommend that they open it?



Data Section

Data required

- List of administrative divisions of Shanghai
- Latitude and longitude coordinate through Python package
- Venue data, especially data related to restaurants

Source of Data

- https://en.wikipedia.org/wiki/List_of_administrative_divisions_of_Shanghai
- Geocode package for Latitude and longitude coordinates
- Foursquare API for Venue data



Methodology

- Scraping Data from Wikipedia page into a DataFrame
- Obtain latitude and longitude coordinates using Geocoder
- Using Foursquare API to get venue data
- Group data by neighborhood and taking the mean of frequency of occurrence of each venue category
- Choose the best location and give recommendations



Shanghai's Most Popular Venues by District											
Rank	District	1st Most Common Venue		2nd Most Common Venue		3rd Most Common Venue		4th Most Common Venue		5th Most Common Venue	
		Name	Type	Name	Type	Name	Type	Name	Type	Name	Type
0	Baoshan District	Park	Shopping Mall	Boat or Ferry	Fast Food Restaurant	Zhejiang Restaurant	Garden	Furniture / Home Store	French Restaurant	Food & Drink Shop	Flower Shop
1	Changning District	Chinese Restaurant	Coffee Shop	Japanese Restaurant	Bakery	Hotel	Italian Restaurant	French Restaurant	Lounge	Beer Bar	Café
2	Chongming District	Chinese Restaurant	Boat or Ferry	Hotel	Bar	Zhejiang Restaurant	General Entertainment	Garden	Furniture / Home Store	French Restaurant	Food & Drink Shop
3	Fengxian District	Korean Restaurant	Beach	Hotel	Café	Farmers Market	Fast Food Restaurant	Flea Market	Flower Shop	Gourmet Shop	Electronics Store
4	Hongkou District	Hotel	Lounge	Restaurant	Italian Restaurant	Hotel Bar	French Restaurant	Chinese Restaurant	Shopping Mall	Dumpling Restaurant	Department Store
5	Huangpu District	Hotel	Lounge	French Restaurant	Coffee Shop	Café	Italian Restaurant	Chinese Restaurant	Shopping Mall	Park	Shanghai Restaurant
6	Jiading District	Park	Asian Restaurant	Toll Plaza	Bus Station	Metro Station	Hotel	Zhejiang Restaurant	Food & Drink Shop	General Entertainment	Garden
7	Jing'an District	Bakery	Chinese Restaurant	Coffee Shop	Hotel	Japanese Restaurant	Shopping Mall	Café	French Restaurant	Lounge	Beer Bar
8	Minhang District	Coffee Shop	Fast Food Restaurant	Shopping Mall	Bakery	Café	Metro Station	Zhejiang Restaurant	Supermarket	Clothing Store	Park
9	Pudong New Area	Coffee Shop	Hotel	Shopping Mall	Fast Food Restaurant	Chinese Restaurant	Pizza Place	Sandwich Place	Café	Sushi Restaurant	Breakfast Spot
10	Putuo District	Fast Food Restaurant	Coffee Shop	Hotel	Metro Station	Flea Market	Grocery Store	Pizza Place	Soccer Field	Movie Theater	Bar
11	Qingpu District	Coffee Shop	Hotel	Department Store	Flower Shop	General Entertainment	Garden	Furniture / Home Store	French Restaurant	Food & Drink Shop	Flea Market
12	Songjiang District	Coffee Shop	Fast Food Restaurant	Hotel	Grocery Store	Supermarket	Metro Station	Toll Booth	Chinese Restaurant	Big Box Store	Hockey Arena
13	Xuhui District	Coffee Shop	Chinese Restaurant	Cocktail Bar	Bakery	Park	Café	Hotpot Restaurant	Japanese Restaurant	French Restaurant	Szechuan Restaurant
14	Yangpu District	Coffee Shop	Hotel	Chinese Restaurant	Supermarket	Fast Food Restaurant	Pier	Plaza	Hotel Bar	Flower Shop	Seafood Restaurant

Discussion and Observations

1. Qingpu District will be a best choice if you want to open a coffee shop because its frequency is as high as 0.50; Minhang, Yangpu and Pudong New area can also be considered since their frequency is more than 0.20
2. If you want to open a Chinese restaurant, then Changning and Chongming District should be your first consideration since it is the 1st most common venue in this area.
3. Fengxian District is a good choice for Korean style and Putuo District is suitable for Fast Food restaurant.
4. For westerners, Huangpu and Xuhui district can be considered first because they have the highest rate of frequency for western style restaurant, say, French, Italian, Cocktail Bar, etc.



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Conclusion and Suggestions for Further Research

Deeper and more specific sub-districts can be divided into more details, and there are other factors such as population and income of residents that could also influence the location decision of a new restaurant.

Further research could devise a methodology to estimate such data to be used in the clustering algorithm to determine the preferred locations to open a new restaurant.

In this project, we have gone through the process of identifying the business problem, specifying the data required, extracting the preparing the data, performing machine learning by analyzing the data and give some recommendations to the relevant stakeholders, say, property developers and investors regarding the best location to open a new restaurant in Shanghai.



THANK YOU