

A Recommender System for Chinese Restaurants in Toronto

Paul Yonghao Li

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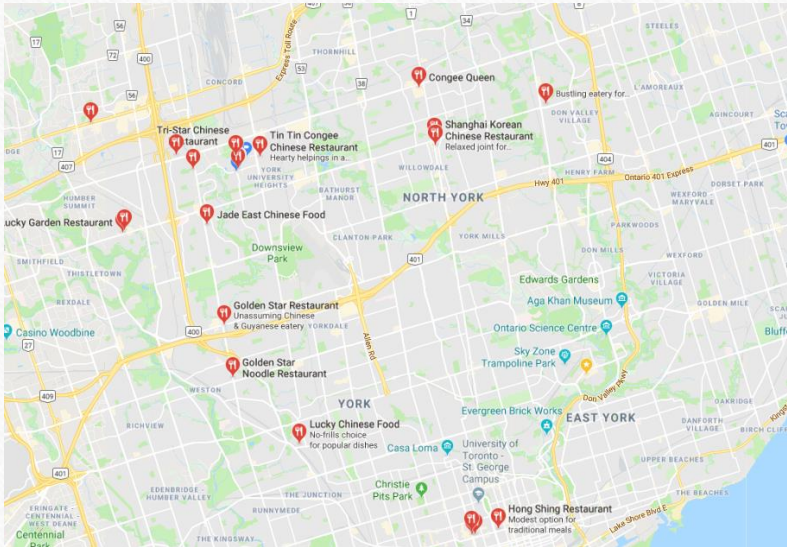
Introduction

- Toronto has the best Chinese restaurants in North America
- There is not a good platform that give recommendations of the Chinese restaurants based on data

I want to build a recommendation system that suggests your next place to eat based on the places your have been to.

Data Acquisition and Cleaning

- Use Foursquare free API to collect the restaurants data



	ctg0	id	lat	lng	name
0	Cantonese Restaurant	4b29222af964a520679924e3	43.812150	-79.357462	Congee Queen 皇后名粥
1	Dim Sum Restaurant	56ace162498e88c7171dd72e	43.844362	-79.387251	漁膳房 Yu Seafood
2	Chinese Restaurant	5c4a5f28acc5f5002c185358	43.851380	-79.408195	The One Fusion Cuisine 聚能軒
3	Chinese Restaurant	5b634b5f95a722002c977b3e	43.822392	-79.351106	Sam's Congee Delight 黃三記
4	Cantonese Restaurant	534089f4498e9792e622eead	43.843543	-79.377949	Congee Queen 皇后名粥

Use subcategories as labels to build the engine

Labels

```
['Bubble Tea Shop',  
'Asian Restaurant',  
'Cantonese Restaurant',  
'Event Space',  
'Cha Chaan Teng',  
'Halal Restaurant',  
'Dessert Shop',  
'Szechuan Restaurant',  
'Convention Center',  
'Dim Sum Restaurant',  
'Seafood Restaurant',  
'Chinese Restaurant',  
'Hong Kong Restaurant',  
'Noodle House',  
'BBQ Joint',  
'Buffet',  
'Bakery',  
'Taiwanese Restaurant',  
'Thai Restaurant',  
'Shanghai Restaurant']
```



The Table

	id	name	Bubble Tea Shop	Asian Restaurant	Cantonese Restaurant	Event Space	Cha Chaan Teng	Halal Restaurant	Dessert Shop	Szechuan Restaurant	...	Seafood Restaurant	Chinese Restaurant
0	4b29222af964a520679924e3	Congee Queen 皇后名 粥	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	...	0.0	0.0
1	56ace162498e88c7171dd72e	漁膳房 Yu Seafood	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	...	1.0	0.0
2	5c4a5f28acc5f5002c185358	The One Fusion Cuisine 聚龍軒	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	...	0.0	1.0
3	5b634b5f95a722002c977b3e	Sam's Congee Delight 黃三記	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	...	0.0	1.0
4	534089f4498e9792e622eead	Congee Queen 皇后名 粥	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	...	0.0	1.0

Create the user's profile based on his previous ratings

User's ratings

	id	rating
0	534089f4498e9792e622eead	5.0
1	4b2e5594f964a52069de24e3	4.5
2	4ae66ccbf964a520eba621e3	5.0
3	4b37b700f964a520e94425e3	3.5
4	543cb4f5498ee8034fab321	2.0



Labels table

	Bubble Tea Shop	Asian Restaurant	Cantonese Restaurant	Event Space	Cha Chaan Teng	Halal Restaurant	Dessert Shop	Szechuan Restaurant	Convention Center	F
0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
3	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	
4	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	



Profile

Bubble Tea Shop	2.0
Asian Restaurant	0.0
Cantonese Restaurant	8.5
Event Space	0.0
Cha Chaan Teng	0.0
Halal Restaurant	0.0
Dessert Shop	2.0
Szechuan Restaurant	0.0
Convention Center	0.0
Dim Sum Restaurant	8.0
Seafood Restaurant	0.0
Chinese Restaurant	13.5
Hong Kong Restaurant	0.0
Noodle House	0.0
BBQ Joint	0.0
Buffet	0.0
Bakery	0.0
Taiwanese Restaurant	2.0
Thai Restaurant	0.0
Shanghai Restaurant	0.0

Give the recommendations

Scores for all the restaurants

4b29222af964a520679924e3	0.236111
56ace162498e88c7171dd72e	0.222222
5c4a5f28acc5f5002c185358	0.597222
5b634b5f95a722002c977b3e	0.611111
534089f4498e9792e622eead	0.611111



Recommendation results

	ctg0		id	lat	lng		name
2	Chinese Restaurant	5c4a5f28acc5f5002c185358	43.851380	-79.408195			The One Fusion Cuisine 聚龍軒
3	Chinese Restaurant	5b634b5f95a722002c977b3e	43.822392	-79.351106			Sam's Congee Delight 黃三記
4	Cantonese Restaurant	534089f4498e9792e622eead	43.843543	-79.377949			Congee Queen 皇后名粥
36	Chinese Restaurant	4b37b700f964a520e94425e3	43.844003	-79.388244		Golden Court Abalone Restaurant 黃金閣鮑翅海鮮酒家	
40	Chinese Restaurant	4b7895d2f964a52082d82ee3	43.841508	-79.399478		John's Chinese BBQ Restaurant 敘香園	

Further thoughts

- This recommendations system is purely content based. In reality we should combine the content features with collaborative filtering to create better customer experience.

Thank You