

Recommended restaurant in N.Y

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1. Introduction

My client who operates some restaurants in New York often mailed to customers who ever visited there in order to drive sales. But his sales volume has not increased more than he expected.

Now he thinks that any strategy is needed to invite new customer. So, I propose finding prospective new customer on Forsquare users and advertise them by any means.

2. Data

Forsquare provides venues and users who liked or listed it, so that we can assume what kind of people is interested in what kind of venue in a certain extent. These data can be utilized to recommend venues which he has not yet visited.

(Unfortunately, venues which has been visited by users actually are not requested by other than themselves.)

2.1. Categories of restaurants

On Forsquare, there are many kind of restaurant categorized, American, Japanese, Chinese, etc. To get venues categorized restaurants afterword, use API and get categories list. API response is dictionary format, and category records (id, name) are hierarchized.

According to the spec of category data(<https://developer.foursquare.com/docs/build-with-foursquare/categories/>), 3 categories are enough for food category.

	category1_id	category1_name	category2_id	category2_name	category3_id	category3_name
0	503288ae91d4c4b30a586d67	Afghan Restaurant	NaN	NaN	NaN	NaN
1	4bf58dd8d48988d1c8941735	African Restaurant	4bf58dd8d48988d10a941735	Ethiopian Restaurant	NaN	NaN
2	4bf58dd8d48988d14e941735	American Restaurant	4bf58dd8d48988d157941735	New American Restaurant	NaN	NaN
3	4bf58dd8d48988d142941735	Asian Restaurant	56aa371be4b08b9a8d573568	Burmese Restaurant	NaN	NaN
4	4bf58dd8d48988d142941735	Asian Restaurant	52e81612bcb57f1066b7a03	Cambodian Restaurant	NaN	NaN

<df_cat>

2.2. Restaurants in NY

Get venue API is used. Responded venue' property has only category class, so merge previously created df_cat.

2.3. Tips and Lists

Get venue's detail API is used. Assumption is that tips or lists is created because he liked there. So users who posted tips or created lists are corrected in venue's detail and df_tips and df_lists can be created.

Get Venues Details API is premium call (500 calls per day) so executed daily batch on IBM Watson Studio.

Venues on Tips and Lists will be scored 5, and 4.

2.4. Liked

Using users, which extracted from tips and lists, Venues with flag 'liked' them can be called.

The number of calls are very large. Because API call is limited 500 calls per hour, so so executed hourly batch on IBM Watson Studio.

Venues on Tips and Lists will be scored 3.

2.5. Venues with same category as his existing favored venues

Of all venues, venues with same category or same super-category as ones on his tips, lists, and liked will be also populated.

Venues on same category and same super-category will be scored 2 and 1.

Now these data are merged and scored data will be created.

(15218507, 3)

	user_id		venue_id	score
0	1265687	582a1b095f78034bcfb69186		5
1	192962359	582a1b095f78034bcfb69186		5
2	2868030	57b8f763cd10f71921e464b5		5
3	59130915	51ec708d498e58679aa83bca		5
5	35551887	541f4507498e3a898af35a90		5