



THE TRAVELING ADVISOR

Finding similar locations in a new city that resemble your
favorite places the most for visitors

Introduction

- Find the closest cluster of the place provided by the user in Toronto and recommend five most similar places in the city based on the proposed location.

Data

- First, it is important to find a reference point of the user-proposed place in order to calculate relevant venues around the point and then generate a vector for cluster assignment and comparison.

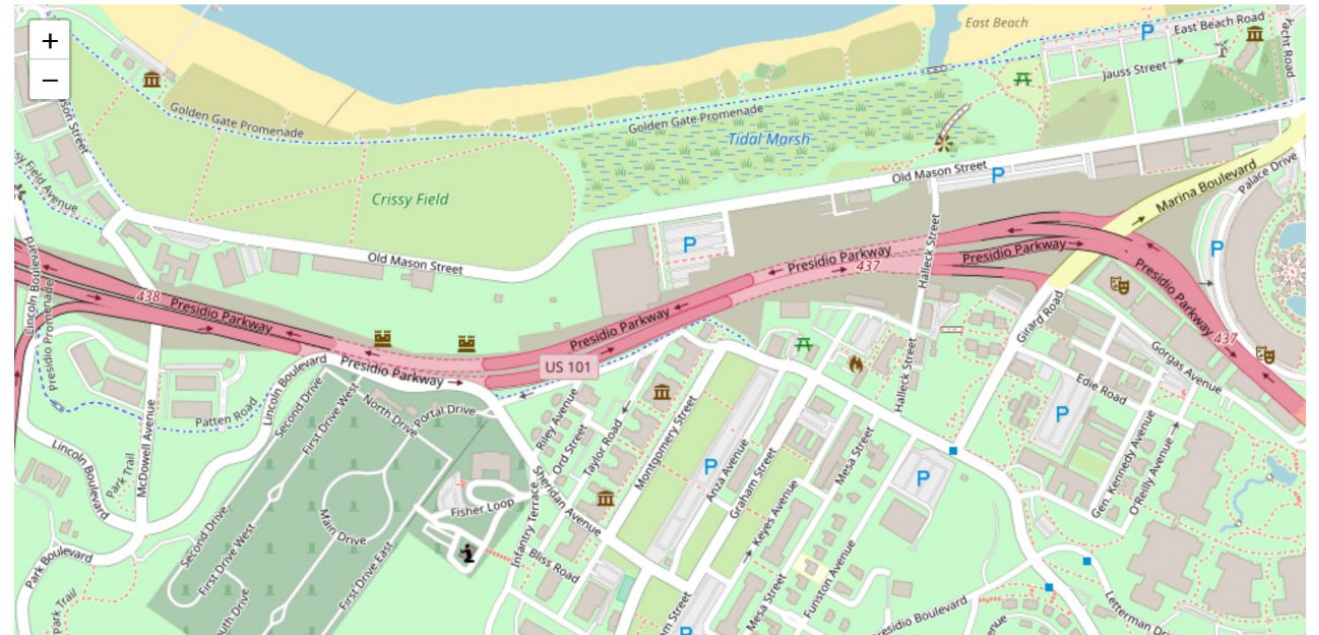
```
address='104 Montgomery St, San Francisco, CA 94129'
```

```
geolocator = Nominatim(user_agent="foursquare_agent")  
location = geolocator.geocode(address)  
latitude = location.latitude  
longitude = location.longitude  
print(latitude, longitude)
```

```
37.80136265 -122.458720604517
```

```
map_query = folium.Map(location=[latitude, longitude], zoom_start=16)
```

```
map_query
```



Data

- Second, since this report uses Toronto as the target city to perform the task, data regarding its neighborhoods is necessary in order to run clustering algorithm.

[illegible]

Data

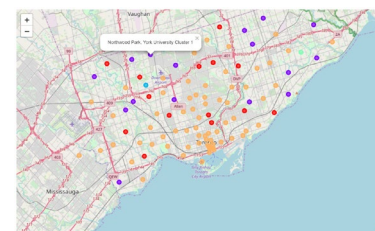
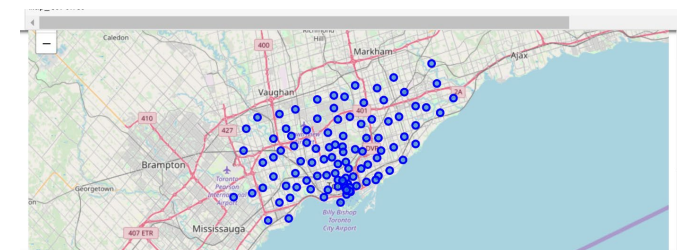
- Third, in order to find the venues and their respective categories of the favorite place proposed by the user and neighborhoods in the target city (Toronto), Foursquare API is applied.

```
search_query = 'French'
radius = 1000
url = 'https://api.foursquare.com/v2/venues/search?client_id={}&client_secret={}&ll={},{&v={}&query={}&radius={}&limit={}'.format(CLIENT_ID, CLIENT_SECRET, LAT, LONG, SEARCH_QUERY, RADIUS, LIMIT)
results = requests.get(url).json()

{'meta': {'code': 200, 'requestId': '5c43b711dd57975fd5219e8c'},
 'response': {'venues': [{'id': '4e4e4a47bd4101d0d7a6f34b',
  'name': 'Le Croissant Shop French Bakery',
  'location': {'address': '10 Ave. of the Americas',
   'lat': 40.71799133506263,
   'lng': -74.00949587210722,
   'labeledLatLngs': [{'label': 'display',
    'lat': 40.71799133506263,
    'lng': -74.00949587210722}],
   'distance': 597,
   'postalCode': '10013',
   'cc': 'US',
   'city': 'New York',
   'state': 'NY',
   'country': 'United States',
   'formattedAddress': ['10 Ave. of the Americas',
    'New York, NY 10013',
    'United States']},
  'categories': [{'id': '4bf58dd8d48988d16a941735',
   'name': 'Bakery',
   'pluralName': 'Bakeries',
   'shortName': 'Bakery',
   'icon': {'prefix': 'https://ss3.4sqi.net/img/categories_v2/food/bakery_'}
```

Methodology

- Step 1
 - Find neighborhoods coordinates
 - Extract venue categories
 - K-means clustering of neighborhoods based on venue categories

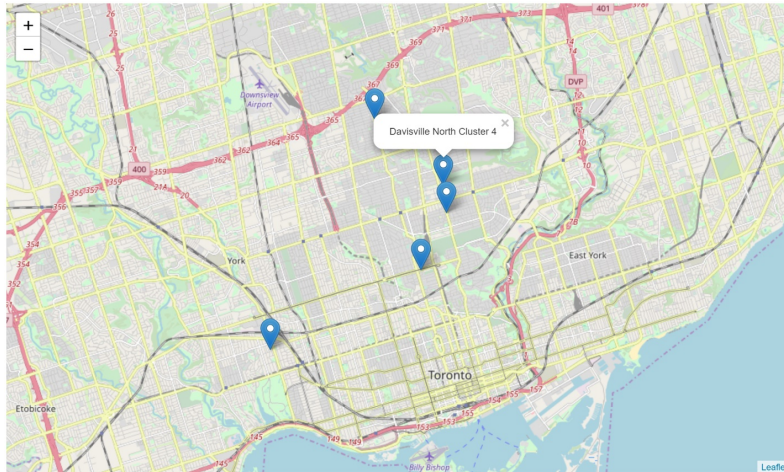


Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
0 Adelaide King Richmond	Cafe	Coffee Shop	Hotel	American Restaurant	Thai Restaurant	Theater	Bar	Concert Hall	Steakhouse	Gastropub
1 Agincourt	Chinese Restaurant	Shopping Mall	Shanghai Restaurant	Motorcycle Shop	Supermarket	Sandwich Place	Discount Store	American Restaurant	Lounge	Malay Restaurant
2 Agincourt North, L'Amoreaux East, Midland, Egl.	Fast Food Restaurant	Pizza Place	Park	Chinese Restaurant	BBQ Joint	Fried Chicken Joint	Coffee Shop	Pharmacy	Caribbean Restaurant	Knockout House
3 Allen Gardens, Burnhamthorpe, Humbergate, ...	Pizza Place	Grocery Store	Pharmacy	Sandwich Place	Liquor Store	Beer Store	Fried Chicken Joint	Coffee Shop	Fast Food Restaurant	Hardware Store
4 Alderwood, Long Branch	Pizza Place	Coffee Shop	Gas Station	Pub	Pharmacy	Park	Convenience Store	Sandwich Place	Dance Studio	Skating Rink

PostCode	Borough	Neighborhood	Latitude	Longitude	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue
82	WSP	West High Park, The Junction South	43.61608	-79.664763	4	Cafe	Bar	Italian Restaurant	Bakery	Artique Shop	Coffee Shop	Cell / Bodega	Pharmacy
47	M45	Central Toronto	43.704324	-79.388790	4	Coffee Shop	Italian Restaurant	Bakery	Sandwich Place	Cafe	Dessert Shop	Restaurant	Pharmacy
62	M5M	North York	43.73283	-79.419750	4	Italian Restaurant	Coffee Shop	Bakery	Juice Bar	Fast Food Restaurant	Skating Rink	Baby Store	Bag Shop
45	M4P	Central Toronto	43.712751	-79.392197	4	Pizza Place	Cafe	Coffee Shop	Italian Restaurant	Park	Food & Drink Shop	Sporting Goods Shop	Fast Food Restaurant
49	M5V	Central Toronto	43.686412	-79.400049	4	Coffee Shop	Sushi Restaurant	Italian Restaurant	Thai Restaurant	Cafe	Gym	Spa	Sandwich Place

Methodology

- Step 2
 - User input a place to query
 - Extract venue information of the place
 - Compare with Toronto data to find candidate neighborhoods



Results

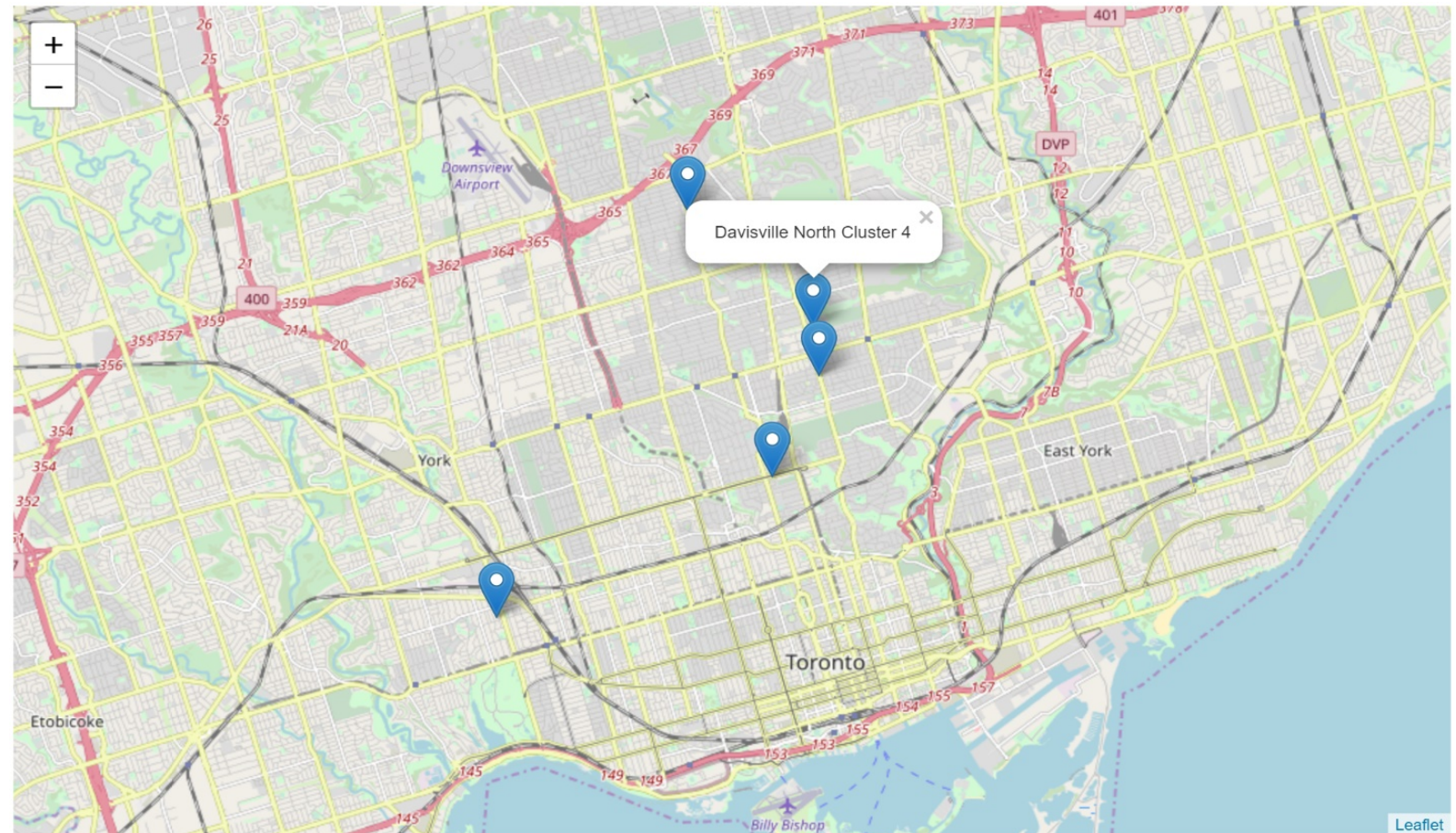
- Five most similar places and the user input place comparison

	PostCode	Borough	Neighborhood	Latitude	Longitude	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue
82	M6P	West Toronto	High Park, The Junction South	43.661608	-79.464763	4	Café	Bar	Italian Restaurant	Bakery	Antique Shop	Coffee Shop	Deli / Bodega	Pa
47	M4S	Central Toronto	Davisville	43.704324	-79.388790	4	Coffee Shop	Italian Restaurant	Sushi Restaurant	Sandwich Place	Café	Dessert Shop	Restaurant	Pizz
62	M5M	North York	Bedford Park, Lawrence Manor East	43.733283	-79.419750	4	Italian Restaurant	Coffee Shop	Sushi Restaurant	Juice Bar	Fast Food Restaurant	Skating Rink	Baby Store	Bag Shc
45	M4P	Central Toronto	Davisville North	43.712751	-79.390197	4	Pizza Place	Café	Coffee Shop	Italian Restaurant	Park	Food & Drink Shop	Sporting Goods Shop	Fast Food Restaura
49	M4V	Central Toronto	Deer Park, Forest Hill SE, Rathnelly, South Hi...	43.686412	-79.400049	4	Coffee Shop	Sushi Restaurant	Italian Restaurant	Thai Restaurant	Café	Gym	Spa	Sandwich Plac

	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
0	0.0	Italian Restaurant	Bakery	Pizza Place	Seafood Restaurant	Park	Café	Market	Sandwich Place	Wine Shop	Historic Site

Results

- Five most similar places on the map, enjoy your exploration!



Thanks!