

# **FINAL REPORT**

## **Capstone Project – A Program for Photographers Event**

### **Introduction:**

XYZ is a company based in Toronto for organizing events. Currently, they are working on a project which will organize an event for seven days for a group of photographers from all over the world.

The company has to determine a good program, including a hotel for the residence, a hall for meetings, places to visit, places of shopping, restaurants and cafes to eat and drink.

The company has to make a list of places in Toronto, including the nearest restaurants, cafes and shopping stores for each place. And it has to provide a map in case the photographer don't use digital applications for some reason.

### **Objective:**

- 1) List and visualize all hotels near Toronto and choose the hotel which has the same Postal code with the event space
- 2) List all the parks near Toronto
- 3) List all the Restaurants near Toronto
- 4) List all the Cafeteria near Toronto
- 5) List all the Shopping stores near Toronto
- 6) Generate maps to visualize venues and know how they cluster together

### **Data Section:**

Toronto City's demographics show that it is a large and ethnically diverse metropolis. With its diverse culture, comes diverse restaurants, shopping malls, hotels. There are many hotels in Toronto City.

For this project we need the following data:

- Toronto City data that contains list Boroughs, Neighbourhoods along with their latitude and longitude.

- Data source : Foursquare API
  - Description: This data set contains the required information. And we will use this data set to explore various neighbourhoods of Toronto City
- Hotels in each neighbourhood of Toronto City.
  - Data source : Foursquare API
  - URL:  
[https://api.foursquare.com/v2/venues/search?client\\_id={}&client\\_secret={}&ll={},{}&v={}&query={}&radius={}&limit={}](https://api.foursquare.com/v2/venues/search?client_id={}&client_secret={}&ll={},{}&v={}&query={}&radius={}&limit={})
  - Query = Hotels
  - Description: By using this API we will get all the hotels in each neighbourhood.
- Parks in each neighbourhood of Toronto City.
  - Data source : Foursquare API
  - URL:  
[https://api.foursquare.com/v2/venues/search?client\\_id={}&client\\_secret={}&ll={},{}&v={}&query={}&radius={}&limit={}](https://api.foursquare.com/v2/venues/search?client_id={}&client_secret={}&ll={},{}&v={}&query={}&radius={}&limit={})
  - Query = Parks
  - Description: By using this API we will get all the Parks in each neighbourhood.
- Restaurants in each neighbourhood of Toronto City.
  - Data source : Foursquare API
  - URL:  
[https://api.foursquare.com/v2/venues/search?client\\_id={}&client\\_secret={}&ll={},{}&v={}&query={}&radius={}&limit={}](https://api.foursquare.com/v2/venues/search?client_id={}&client_secret={}&ll={},{}&v={}&query={}&radius={}&limit={})
  - Query = Restaurants
  - Description: By using this API we will get all the Restaurants in each neighbourhood.
- Shopping stores in each neighbourhood of Toronto City.
  - Data source : Foursquare API
  - URL:  
[https://api.foursquare.com/v2/venues/search?client\\_id={}&client\\_secret={}&ll={},{}&v={}&query={}&radius={}&limit={}](https://api.foursquare.com/v2/venues/search?client_id={}&client_secret={}&ll={},{}&v={}&query={}&radius={}&limit={})
  - Query = Shopping stores
  - Description: By using this API we will get all the Shopping stores in each neighbourhood.

## Methodology:

1. We begin by importing required libraries like Pandas, NumPy etc, and also by collecting the Toronto city data.
2. After that, we define foursquare credentials and also define the city and get its latitude and longitude.
3. Hotels
  - Search for the hotels and get them transformed into a data frame
  - Clean hotel data frame by unnecessary columns, rows with none values, and choose the hotel which has same postal code with the event space.

	name	categories	address	lat	long	postalCode	state
0	Sheraton Centre Toronto Hotel	Hotel	123 Queen Street West	43.650594	-79.384530	M5H 2M9	ON
1	Chelsea Hotel	Hotel	33 Gerrard Street West	43.658498	-79.383097	M5G 1Z4	ON
2	One King West Hotel & Residence	Hotel	1 King St W	43.649139	-79.377876	M5H 1A1	ON
6	VFM Test Hotel	Hotel	123 Test Drive	43.658434	-79.387894	M2M 2M2	ON
7	Cosmopolitan Toronto Centre Hotel & Spa	Hotel	8 Colborne St	43.649064	-79.377598	M5E 1E1	ON
9	St Regis Hotel	Hotel	325 Bay St	43.649770	-79.380701	M5H 4G3	ON
22	The Adelaide Hotel Toronto	Hotel	325 Bay St	43.649831	-79.380164	M5H 4G3	ON
25	DoubleTree by Hilton	Hotel	108 Chestnut Street	43.654608	-79.385942	M5G 1R3	ON
26	Marriott Downtown at CF Toronto Eaton Centre	Hotel	525 Bay Street	43.654728	-79.382422	M5G 2L2	ON
29	Shangri-La Toronto	Hotel	188 University Ave.	43.649129	-79.386557	M5H 0A3	ON

## 4. Parks

- Search for the parks and get them transformed into a data frame
- Clean parks data frame by unnecessary columns, rows with none values, and rows where the category is not park.

	name	categories	address	lat	long	postalCode	state
6	Queen's Park	Park	University Ave.	43.663946	-79.392180	M5R 2E8	ON
14	Riverdale Park West	Park	500 Gerrard St.	43.666048	-79.360941	M5A 2H3	ON
17	Bellevue Square Park	Park	btwn Bellevue & Augusta Ave.	43.653610	-79.402199	M5T 2N4	ON
20	Trinity Bellwoods Park	Park	1053 Dundas St. W.	43.647072	-79.413756	M5H 2N2	ON
22	Riverdale Park East	Park	550 Broadview Ave	43.669951	-79.355493	M4K 2P1	ON
24	Barbara Hall Park	Park	519 Church St	43.666879	-79.381068	M4Y 2K9	ON
25	High Park	Park	1873 Bloor St. W	43.646479	-79.463425	M6R 2Z3	ON
26	Canoe Landing Park	Park	50 Fort York Blvd	43.638762	-79.397067	M5V 3Z1	ON

## 5. Restaurants

- Search for the restaurants and get them transformed into a data frame
- Clean restaurants data frame by unnecessary columns, rows with none values, and rows where the category is not restaurants.

	name	categories	address	lat	long	postalCode	state
0	Hemispheres Restaurant & Bistro	American Restaurant	110 Chestnut Street	43.654884	-79.385931	M5G 1R3	ON
1	Victoria's Restaurant	Restaurant	37 King Street East	43.649298	-79.376431	M5C 1E9	ON
2	The Hot House Restaurant & Bar	American Restaurant	35 Church St	43.648824	-79.373702	M5E 1T3	ON
3	Swatow Restaurant 汕頭小食家	Chinese Restaurant	309 Spadina Ave.	43.653866	-79.398334	M5T 2E6	ON
4	Goldstone Noodle Restaurant 金石	Noodle House	266 Spadina Ave	43.652278	-79.398039	M5T 2E4	ON
5	New Sky Restaurant 小沙田食家	Chinese Restaurant	353 Spadina Ave.	43.655337	-79.398897	M5T 2G3	ON
7	360 Restaurant	Wine Bar	301 Front St W	43.642537	-79.387042	M5V 2T6	ON
8	Rol San Restaurant 龍笙樓	Dim Sum Restaurant	323 Spadina Ave.	43.654318	-79.398650	M5T 2E9	ON

## 6. Cafeteria

- Search for the Cafeteria and get them transformed into a data frame
- Clean parks data frame by unnecessary columns, rows with none values, and rows where the category is not Cafeteria.

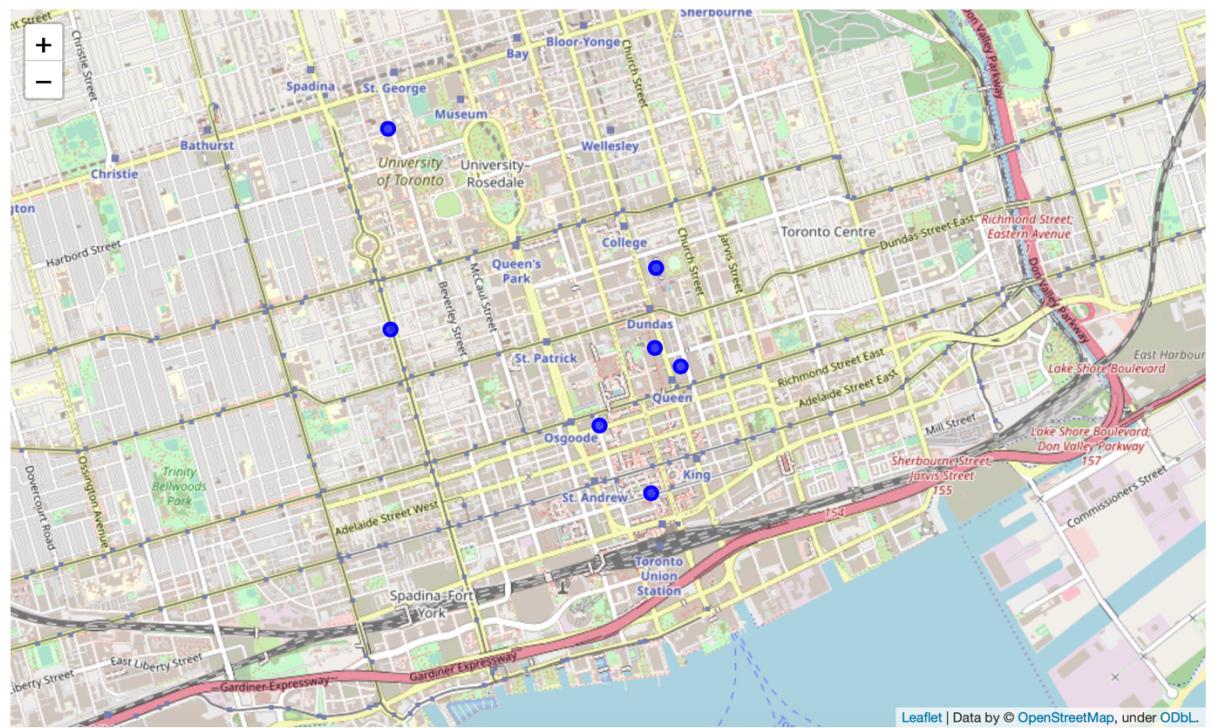
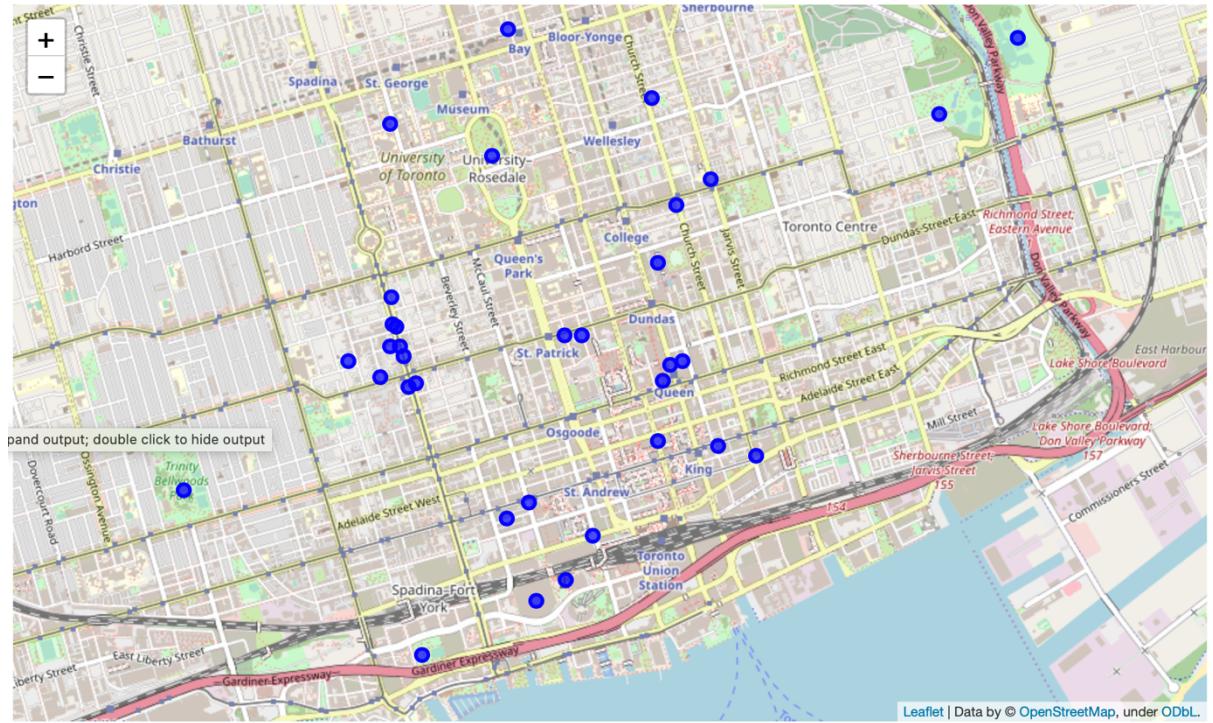
	name	categories	address	lat	long	postalCode	state
1	Stay Cafeteria 慢走	Asian Restaurant	388 Spadina Ave	43.655454	-79.399163	M5T 2G5	ON
9	De La Salle College Cafeteria	College Cafeteria	131 Farnham Avenue	43.683003	-79.397815	M4V 1H7	ON
17	Marketeria	Restaurant	30 Bond St.	43.653585	-79.378843	M5B 1W8	ON
18	The Hub	College Cafeteria	350 Victoria St.	43.658585	-79.380622	M5B 2K3	ON
24	Innis College	Student Center	2 Sussex Ave	43.665556	-79.399298	M5S 1J5	ON
29	6th Floor Cafeteria 12 Concorde Place	Café	12 Concorde Place	43.721861	-79.329339	m3c 3k7	ON

## 7. Shopping stores

- Search for the shopping stores and get them transformed into a data frame
- Clean parks data frame by unnecessary columns, rows with none values, and rows where the category is not shopping stores.

	name	categories	address	lat	long	postalCode	state
0	TD Centre Shopping Concourse	Shopping Mall	66 Wellington St W	43.647184	-79.380932	M5K 1A1	ON
2	CF Toronto Eaton Centre	Shopping Mall	220 Yonge St	43.654540	-79.380677	M5B 2H1	ON

## 8. Generate maps to visualize venues and how they cluster together.



First map helps us to visualize hotel neighbourhood including shopping stores and cafeteria. Second map helps us to visualize park neighbourhood including restaurant and cafeteria.

## **Result:**

	name	categories	address	lat	long	postalCode	state
0	Sheraton Centre Toronto Hotel	Hotel	123 Queen Street West	43.650594	-79.38453	M5H 2M9	ON

Sheraton Centre Toronto Hotel is the hotel which is near postal code of event space and it is selected, and parks, restaurants, cafeteria, shopping stores around this hotel are shown in the Jupyter Notebook.

## **Conclusion:**

There is always room for improvement and hence the above solution I have provided can also be improved for best results depending upon the data we have.