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Final capstone
project – Coursera –
iBM – Data science -
Report

THE BATTLE OF NEIGHBOURHOODS – ASIAN RESTAURANTS IN TORONTO CANADA

Introduction

- The project is intended to submit to Coursera-IBM as a Final Capstone project.
- The problem take to analyse is to explore the neighbourhoods of Toronto Canada, cluster the neighbourhoods and short list the good Asian restaurants for the Indians or any traveller who visits Canada Toronto for a short time

Problem Statement

- Many Indian people go to Canada on business trips who usually search for Good Asian restaurants where they get good Asian food.
- Now-a-days Indian people prefer also the other Asian countries food than Indian food. Some of the Chinese, Japanese, Thai food items became regular in-takes whenever they visit hotels both within India or other countries
- And people check the ratings of the hotels before they choose to visit
- The project is to help the people who go on business trips to Canada - Toronto to find better staying place which has good Asian restaurants

Target Audience

- The Indian business people or anyone who is visiting Canada - Toronto for a short term stay
- The audience is not restricted to Indian people but all the visitors of Toronto who are interested in Asian food items
- The visitors who usually refer the ratings of the restaurants before they choose to visit them

Data Source

➤ Toronto Postal codes

- Wikipedia lists the postal codes of Toronto in the following link [https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada: M](https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M)
- The data source will be scraped to obtain the postal codes

➤ Geographical coordinates

- To get the geographical coordinates of the neighbourhoods using the Geocoder package, the following link is used to pull a csv file that has the geographical coordinates of each postal code: http://cocl.us/Geospatial_data

Methodology

Setup the environment with all the required libraries



Pull the data for **Canada Toronto neighborhoods** from Wikipedia and **data scrape** to postal codes



Clean up the data to pull only the neighborhoods with assigned Boroughs



Filter only the downtowns as most business visitors will be traveling to downtowns



Explore the Asian Restaurants available in downtowns using **Foursquare API**



Cluster the downtowns using **k-Means** by available Asian Restaurants



Find the cluster where maximum number of asian restaurants available



Find the **ratings** of the restaurants using **Foursquare API**



Sort and conclude the highly rated restaurant

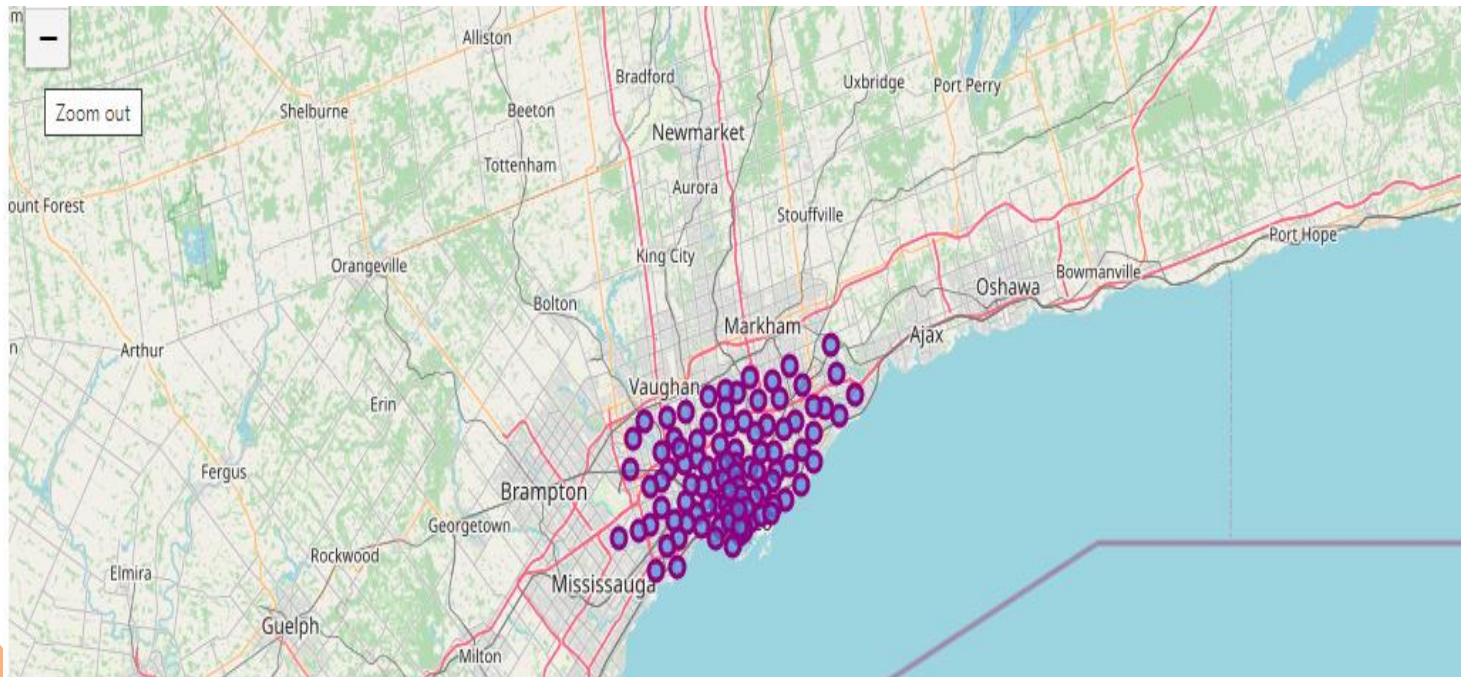
K-Means - Algorithm

➤ Why

- The **K-means clustering algorithm** is used to find groups which have not been explicitly labelled in the data. This can be used to confirm business assumptions about what types of groups exist or to identify unknown groups in complex data sets.
- As we are using data source which has to clustered using unlabelled data, k-means is a better algorithm as fit-to-purpose

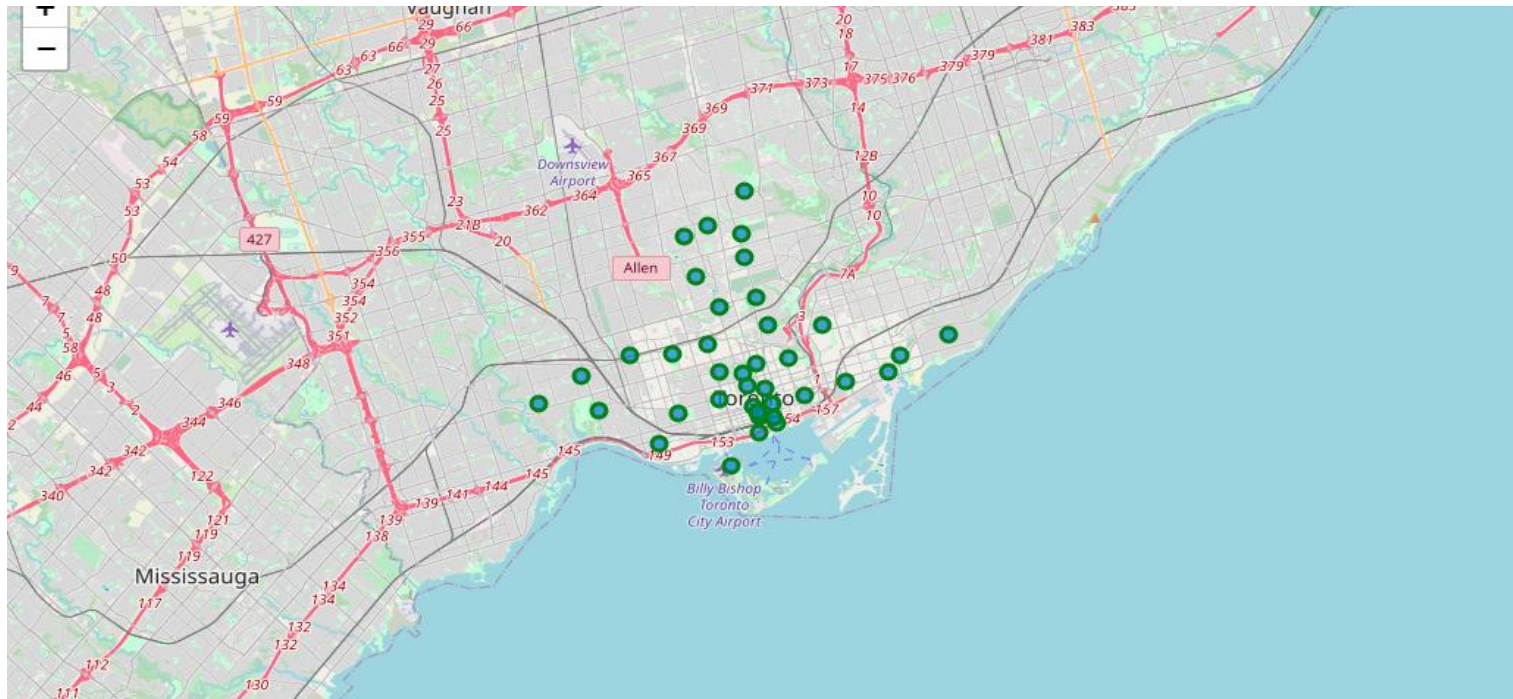
K-Means –How is it used

- The Neighborhoods of Toronto which have Boroughs assigned



K-Means – How is it used (2)

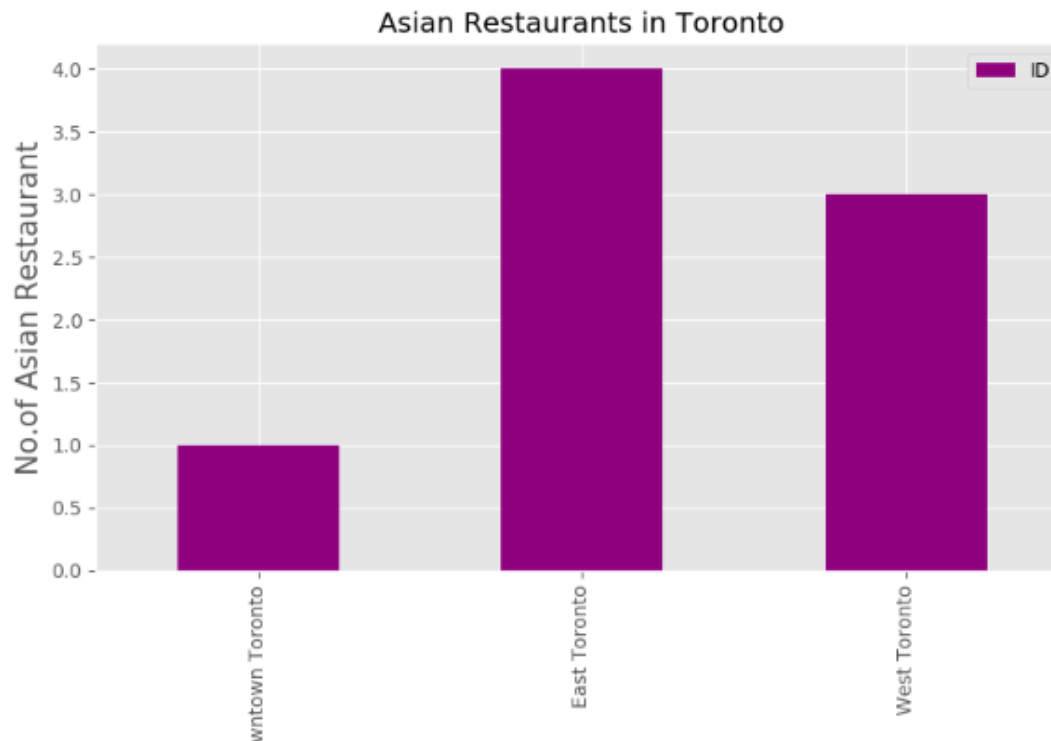
- The clustered downtowns which has Asian Restaurants



Neighborhood with more Asian Restaurants

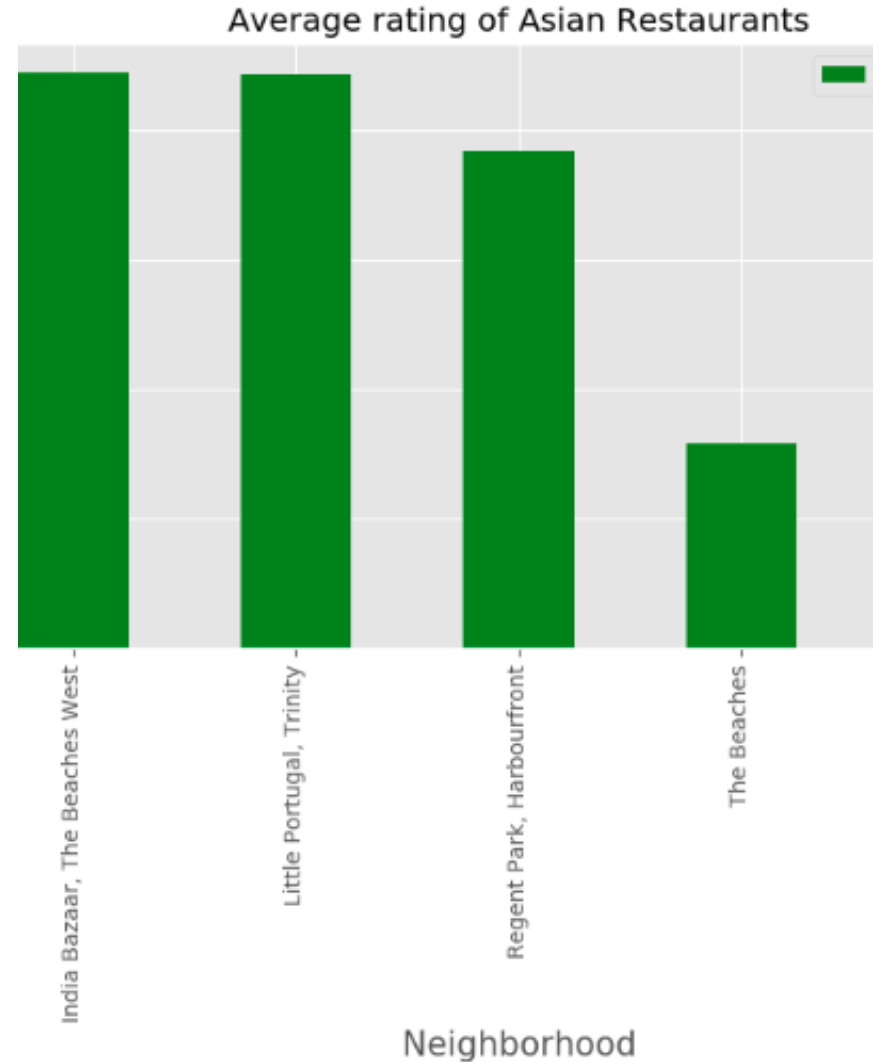
- Explored Asian Restaurants in Downtowns using Four Square places API
- East Toronto seems have more number of Asian Restaurants

```
plt.xlabel('Borough', fontsize=15)
#On y-axis
plt.ylabel('No. of Asian Restaurant', fontsize=15)
#giving a bar plot
asian_rest_to.groupby('Borough')['ID'].count().plot(kind='bar', color='purple')
#Legend
plt.legend()
#displays the plot
plt.show()
```



Best Rated Asian Restaurant in East Toronto

- Explored Asian Restaurant details in East Downtown using Four Square places API
- Sorted and picked the top rated Asian Restaurant



Conclusion

- **k-Means algorithm** has been used to cluster and explore the neighbourhoods. **Three clusters** are created and the cluster with higher dense of Asian Restaurants was explored to find the best rated Asian Restaurant. The chosen downtown was **East Downtown**.
- As per the statistics explained above and as per the graph show here, **India Bazaar, The Beaches West is the best rated in East Toronto and the East Toronto has the maximum number of Asian Restaurants**.