**The Battle of the Neighbourhoods – Business Proposal**

**Introduction:**

**Toronto** is the capital city of the [Canadian province](https://en.wikipedia.org/wiki/Provinces_and_territories_of_Canada) of [Ontario](https://en.wikipedia.org/wiki/Ontario). With a recorded population of 2,731,571 in 2016, it is the [most populous city in Canada](https://en.wikipedia.org/wiki/List_of_the_100_largest_municipalities_in_Canada_by_population) and the [fourth most populous city in North America](https://en.wikipedia.org/wiki/List_of_North_American_cities_by_population). The city is the anchor of the [Golden Horseshoe](https://en.wikipedia.org/wiki/Golden_Horseshoe), an urban agglomeration of 9,245,438 people (as of 2016) surrounding the western end of [Lake Ontario](https://en.wikipedia.org/wiki/Lake_Ontario), while the [Greater Toronto Area](https://en.wikipedia.org/wiki/Greater_Toronto_Area) (GTA) proper had a 2016 population of 6,417,516. Toronto is an international centre of business, finance, arts, and culture, and is recognized as one of the most [multicultural](https://en.wikipedia.org/wiki/Multicultural) and [cosmopolitan](https://en.wikipedia.org/wiki/Cosmopolitanism) cities in the world.

Source: https://en.wikipedia.org/wiki/Toronto

Toronto is a major Canadian city along Lake Ontario’s northwestern shore. It's a dynamic metropolis with a core of soaring skyscrapers, all dwarfed by the iconic, free-standing CN Tower. Toronto also has many green spaces, from the orderly oval of Queen’s Park to 400-acre High Park and its trails, sports facilities and zoo.

This means there is a huge opportunity to do business here and the market it highly competitive because it is highly developed and densely populated area. Any new person or a company who are interested in doing business there should understand and analyse the market carefully before venturing.

The insights derived from the project will provide a good understanding of the market there which helps make strategic decision.

**Problem Description:**

A restaurant is a business which prepares and serves food and drink to customers in return for money, either paid before the meal, after the meal, or with an open account. The City of Toronto is famous for its excellent cuisine and India is one of them. In this project, I am assuming a hypothetical scenario where there might not be enough India restaurants around the Toronto Area. This project will provide good insights to business stake holders who might want to open a new Indian restaurant there.

**Target Audience:**

This would interest anyone who wants to open a new Indian restaurant in Toronto.

**Success Criteria:**

The success criteria of the project will be a good recommendation of borough/Neighbourhood choice to the target audience on lack of such restaurants in that location.

## Foursquare API:

This project would use Four-square API as its prime data gathering source as it has a database of millions of places, especially their places API which provides the ability to perform location search, location sharing and details about a business.

## Work Flow:

Using credentials of Foursquare API features of near-by places of the neighbourhoods would be mined. Due to http request limitations the number of places per neighbourhood parameter would reasonably be set to 100 and the radius parameter would be set to 500.

## Clustering Approach:

To compare the similarities of two cities, we decided to explore neighbourhoods, segment them, and group them into clusters to find similar neighbourhoods in a big city like Toronto. To be able to do that, we need to cluster data which is a form of unsupervised machine learning: k-means clustering algorithm.

## Libraries used in this project:

Pandas: For creating and manipulating dataframes.

Folium: Python visualization library would be used to visualize the neighborhoods cluster distribution of using interactive leaflet map.

Scikit Learn: For importing k-means clustering.

JSON: Library to handle JSON files.

XML: To separate data from presentation and XML stores data in plain text format.

Geocoder: To retrieve Location Data.

Beautiful Soup and Requests: To scrap and library to handle http requests.

Matplotlib: Python Plotting Module.