**Final Report**

**Introduction/Business Problem:**

The crux of the problem that I am solving lies in the fact that we travel due to social or official reasons all the time throughout the world in different cities in different countries. While we do that, we usually reserve the hotels for our temporary stay. Over the years many systems have been developed to bring the cornucopia of hotels to our grip where we can choose from a uncountable options. But what about the **loan rangers** or the adventure seeking **solo travellers** or the **group of backpackers** who travel just for fun or in a whim. There is no instant solution for those. We can also imagine a scenario where there are some troubles with your hotel reservations or you missed the reservation and you need a place to stay. All these problem can be solved by this application. ***It tracks your current location and gives you a list of available hotels in close proximity and gives you the direction(of course, we don't want you get lost).*** What if we could leave the responsibility to our machine and algorithm. That could save us a lot of time. The user that we can approach through this system is immeasurable. The hospitality industry is multi-billion dollar industry and one of the biggest in the world and by implementing our platform we can simplify a humungous task that will surely be appreciated by a huge number of users.

**Data:**

Our data has 2 main components.

1. New York location data in JSON format. The dataset contains all the information about the boroughs and the neighbourhoods present in New York. Apart from the names, the co-ordinates of the neighbourhoods are the primary data that we shall use from this dataset.
2. The other part of the data comes from the foursquare API. We use two types of queries for fetching the data from the foursquare API.
   * First type of query is ‘explore’ that is used to fetch the venues present in a 1.5 km radius of the neighbourhood of our target.
   * Second type of query that I am using is “venues”. This query is used to check the details about the venues that are hotels and get those details about them since we are interested in only those venues that are hotels. We check those venues by using their venue id.

In the ultimate stage of execution of the idea there will be an app that will track your location and tell you the list of hotels near you. The app will show the rating of the hotels and the distance of the hotel from your current location. The idea is inspired by the mobile app called Mr. Jitters. The app looks for your current location and when it finds you an icon appears on the screen and when you tap the icon it tells you the location of the cafés near you in a walking distance with their ratings and the distances. The app is also open sourced on GitHub.

**User Interface :**

So we shall not take the headache of developing an app, as it is out of the scope of the course. Instead we shall establish that the backend of the idea works perfectly. So we shall feed fixed location through queries in Foursquare API and then explore the location for venues and then we shall look for venues that has category Hotel. We shall then look for the ratings of those hotels and the distance from our current co-ordinate and put it in a data-frame. This data will be available for the user.

**Our Data :**

We shall keep track of the searches by the users and since the topic of this capstone is **"Battle of Neighbourhoods"** we shall compare the hotels of one neighbourhood to other neighbourhoods.

**Machine Learning :**

For our own interest we shall use the ratings, number of tips, number of likes of the hotels to cluster the hotels in a certain neighbourhood. We shall then try to identify those clusters and after creating clusters in different neighbourhoods. We shall be able to compare hotels in different neighbourhoods.