THE BATTLE OF NEIGHBORHOODS FROM COURSERA CAPSTONE

**Introduction**

**The problem:**

This project is related to understanding the appropriate location for having a gas station in **South Africa.** The city of choice is **Johannesburg**. **Johannesburg** is the largest city of **South Africa** and is also one of the 50 largest urban areas of the world. Apart from being the largest city, Johannesburg is also most populous city with a population density of >2000 /sq km. The urban population is also very high. The passenger car sales for the past two months(Dec-19 and Jan-20) was averaging at ~40000 cars in the country with a major contribution from Johannesburg.

The purpose of this work is to locate an appropriate place for Gas station in Johannesburg. The existing Gas Stations locations and their proximity to each other will be analyzed as part of this work.

**Data**

Based on definition of our problem, factors that will influence our decission are:

* List of location and neighborhoods of Johannesburg
* Number of and distance other Gas stations in the neighborhood, if any

**Data Sources**

* Municipalities and neighborhoods of Johannesburg from Wikipedia (<https://en.wikipedia.org/wiki/City_of_Johannesburg_Metropolitan_Municipality>);
* Geocode information from Geopy;
* Gas stations in Johannesburg from Foursquare

Based on definition of our problem, factors that will influence our decision are:

* number of existing restaurants in the neighborhood (any type of restaurant)
* number of and distance to Italian restaurants in the neighborhood, if any
* distance of neighborhood from city center

We decided to use regularly spaced grid of locations, centered around city center, to define our neighborhoods.