# Toronto Neighborhood Recommender System

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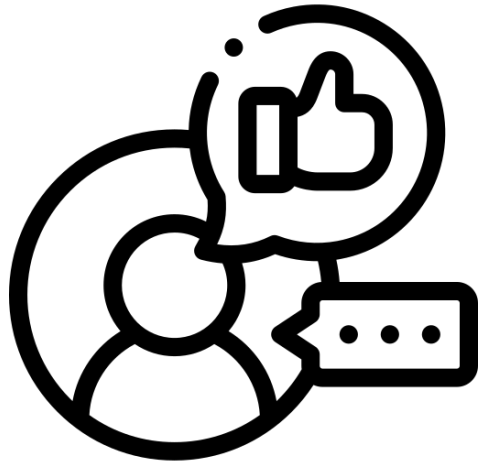
Coursera Capstone Project

# Introduction

- Imagine we want to create an app that is able to recommend neighborhoods based on specific requests: Population, employers, type of venues?
- For example, someone who wants to start a new business: A new italian restaurant?
  - High population,
  - Low number of restaurants so less competition and a decent number of parks to get customers when they go out for a walk

# Introduction

- We want to offer a different approach to the usual neighborhood recommendation forums, where you have to read each of the users opinions.
- Here, you will add a rating to each of the venues you would like in a neighborhood and we will show up a recommendation based on those ratings.



# Data

- Toronto neighborhoods from kaggle
- Foursquare API venue data
- Toronto crime data from open data toronto portal

# Changing neighborhood categories

- Foursquare API includes more than 200 different categories, we grouped them into 18 categories to give more records to each of them and exclude some outliers of venues being too specific (thai restaurant into restaurant). The final categories can be seen below:
- Arts, Bank , Bar , Beauty , Cafe , Community Center , Education , Fast Food , Gas Station , Groceries , Hotel , Park , Pharmacy , Public Transport , Restaurant , Road , Sports , Store.

# Methodology

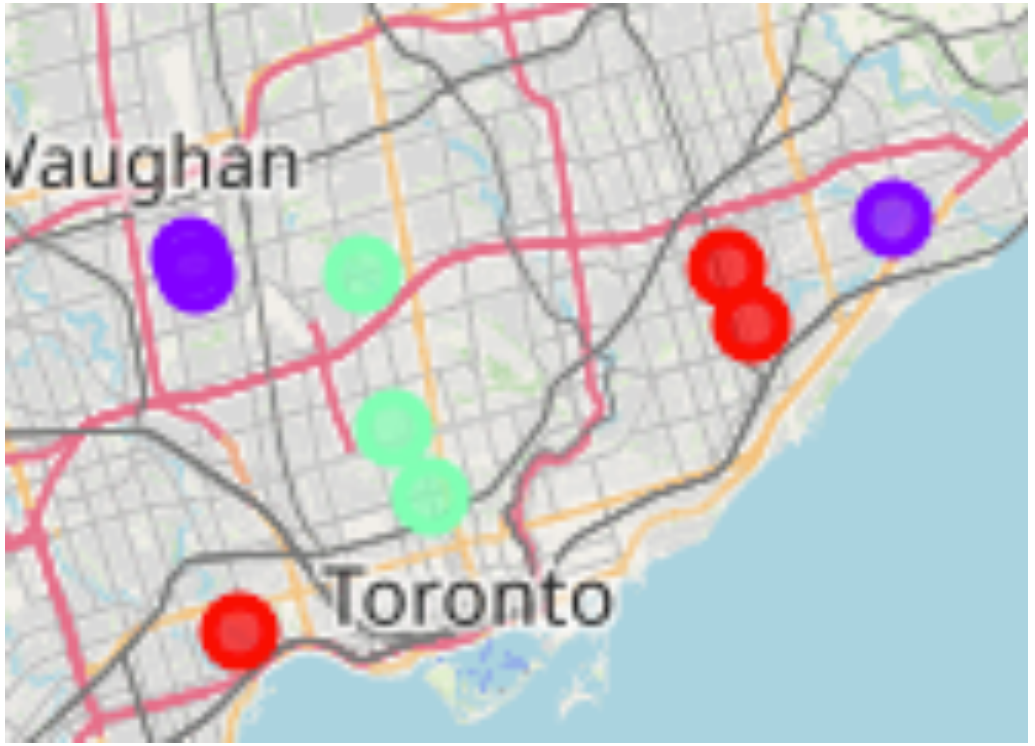
- We used a content based recommender system, using a matrix of the new venue categories with each neighborhood. Weighting it with the ratings (from 1 to 10) any user adds as input, for example:
- “I want a place with the following places”
  - Arts: 10 score
  - Sports: 5 score
  - Bank: 2 score

# Results

- We tested the algorithm with 3 different user types:
  - Arts tourist: Arts=10, Bank=1, Restaurant=6, Sports=8
  - Student: Public Transport=10, Education=10, Community Center=6, Groceries=6
  - Party tourist: Bar=10, Store=10, Restaurant=10

# Results

- Arts tourist: Purple
- Student: Cyan
- Party tourist: Red



# Conclusions

- The algorithm works but it has a lot of room to generate more accurate results, along with including more information of what a user may desire (house prices, real state liquidity, car insurance prices, and more).
- As future work I propose including a user interface , more cities and a web app.