

Faisal Alhusayni

Capstone Project - The Battle of the Neighborhoods

06 May 2021

## Visit Madinah City

<b>Visit Madinah City</b>	<b>1</b>
1.Introduction	<b>3</b>
1.1 Background	3
1.2 Problem	3
<b>2. Data</b>	<b>3</b>
2.1 Data sources	3
2.2 Data cleaning	4

# 1.Introduction

## 1.1 Background

AL madinah city is one of the holy city for muslims which have the prophet Mohammed mosque that a lot of muslims visit it every year, so this report is going to help visitors to choose the place that has the most venues nearby by clustering using the machine learning KMeans clustering method.

## 1.2 Problem

Choosing the right place like nearest (Hotels, Restaurants, Coffee shops and Stores ) is sometimes hard for visitors to choose. By using data analyses and machine learning will help the visitors to choose the right place.

# 2. Data

## 2.1 Data sources

Getting the PostalCode, Neighborhood, Latitude and Longitude from [Google Maps](#).

	PostalCode	Neighborhood	Lat	Long
0	42311	Bada'ah	24.472544	39.607427
1	42311	Al Manakhah	24.470527	39.602358
2	42311	Bani Khidrah	24.464277	39.608091
3	42313	Bani Abdul Ashhal	24.478975	39.616919
4	42316	Qurban	24.452750	39.612170
5	42315	Al Mughaisilah	24.456612	39.599381

Table 1. Google maps postal codes data

Getting this data give the ability to get (Venue, Venu Latitude, Venu Longitude, Venu Category) from [foursquare](#)

	Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	Bada'ah	24.472544	39.607427	Dar Al Iman InterContinental (دار الإيمان إنتر...	24.471807	39.608753	Hotel
1	Bada'ah	24.472544	39.607427	Saja Al-Madinah Hotel	24.473803	39.607655	Hotel
2	Bada'ah	24.472544	39.607427	Anwar Al Madinah Mövenpick (فندق أنوار المدينة)	24.471569	39.607839	Hotel
3	Bada'ah	24.472544	39.607427	I Love Madinah (أنا أحب المدينة)	24.471614	39.609199	Gift Shop
4	Bada'ah	24.472544	39.607427	The Beautiful Names of Allah Exhibition (معرض ...)	24.469822	39.607687	Museum

Table 2. Foursquare venus data

## 2.2 Data cleaning

Data downloaded or scraped from multiple sources must be cleaned and fill the missing values and combine the tables into one table.

First grouping the venue count data by the Neighborhoods to calculate how many venues in every Neighborhood.

	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
Neighborhood						
AI Anabis	10	10	10	10	10	10
AI Aridh	11	11	11	11	11	11
AI Fath	17	17	17	17	17	17
AI Iskan	15	15	15	15	15	15
AI Khatim	4	4	4	4	4	4
AI Manakhah	13	13	13	13	13	13

Table 3. Groupby Neighborhood

Then combine the two tables into one table with the maen values of all of the values.

	Neighborhood	Afghan Restaurant	African Restaurant	American Restaurant	Antique Shop	Arts & Crafts Store	BBQ Joint	Bakery	Big Box Store	Boarding House	...	Supermarket	Swiss Restaurant	Tech Startup	Tou Provide
0	AI Anabis	0.00	0.000000	0.000000	0.000000	0.00	0.0	0.000000	0.000000	0.000000	...	0.000000	0.000000	0.000000	0.000000
1	AI Aridh	0.00	0.090909	0.000000	0.000000	0.00	0.0	0.090909	0.000000	0.000000	...	0.000000	0.000000	0.000000	0.000000
2	AI Fath	0.00	0.000000	0.000000	0.000000	0.00	0.0	0.000000	0.000000	0.000000	...	0.000000	0.000000	0.000000	0.000000
3	AI Iskan	0.00	0.000000	0.000000	0.000000	0.00	0.0	0.000000	0.000000	0.000000	...	0.000000	0.000000	0.000000	0.000000
4	AI Khatim	0.00	0.000000	0.000000	0.000000	0.25	0.0	0.000000	0.000000	0.000000	...	0.000000	0.000000	0.000000	0.000000
5	AI Manakhah	0.00	0.000000	0.000000	0.000000	0.00	0.0	0.000000	0.000000	0.000000	...	0.000000	0.000000	0.000000	0.000000
6	AI Mughaisilah	0.25	0.000000	0.000000	0.000000	0.00	0.0	0.000000	0.000000	0.000000	...	0.000000	0.000000	0.000000	0.000000
7	AI Qiblatayn	0.00	0.000000	0.052632	0.000000	0.00	0.0	0.000000	0.000000	0.000000	...	0.000000	0.000000	0.000000	0.000000
8	AI Suqya	0.00	0.000000	0.000000	0.000000	0.00	0.0	0.000000	0.000000	0.000000	...	0.000000	0.000000	0.000000	0.000000
9	As Sih	0.00	0.000000	0.000000	0.333333	0.00	0.0	0.333333	0.000000	0.000000	...	0.000000	0.000000	0.000000	0.000000

Table 4. combine the two tables