



THE BATTLE OF CITIES.

Prepared by: Huzaifa

Introduction

Hello, Welcome to my project report. Hang tight & make sure you scroll till the end to find out how similar the cities of India are with context to what's in their vicinity.

Source of data : “<https://www.latlong.net/category/cities-102-15.html>”

Business Problem that this data might solve: For a business owner, wanting to start his current business in a city similar to where his business already is.

Solution: A compiled report depicting which Indian cities are alike.

Method: I have clustered the Indian cities using K-Means(a machine learning, clustering technique) where a given set of data is broken up & clustered into a set of categories, based on how similar they are.

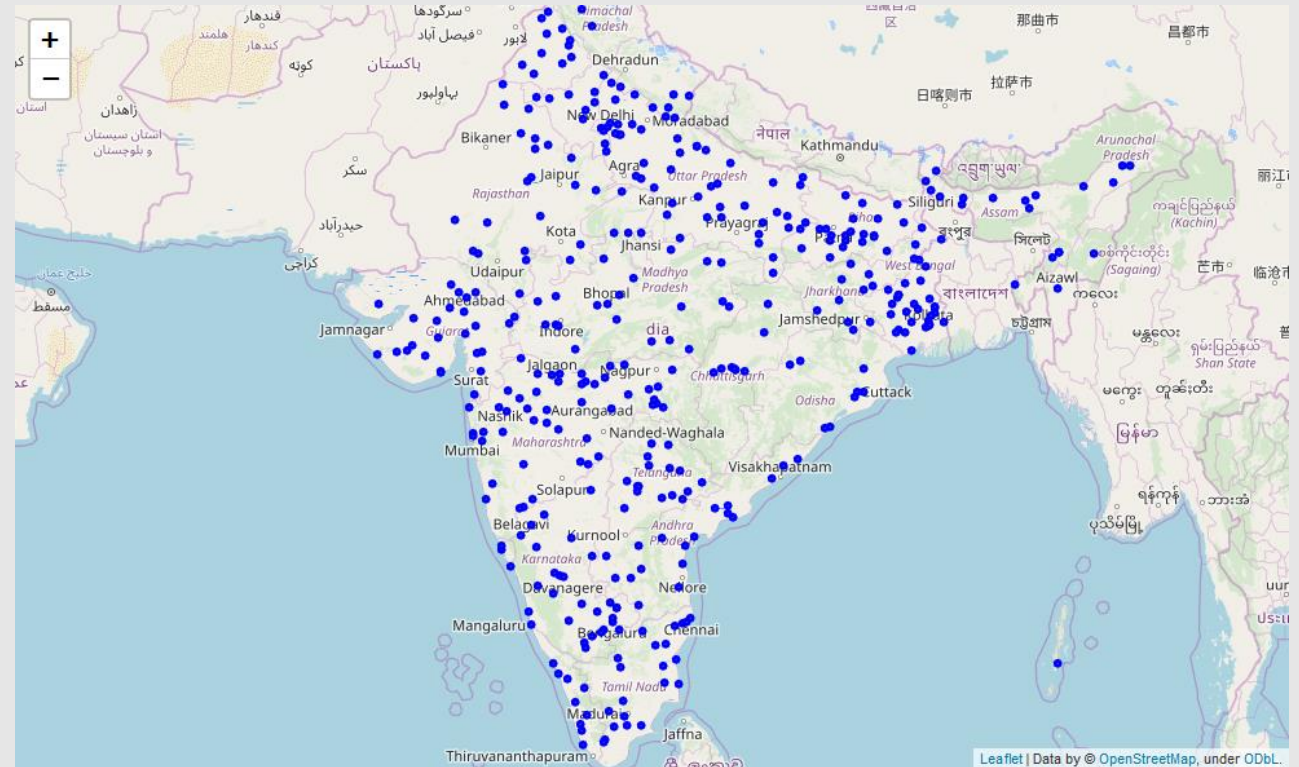
To get nearby Venues of each city, I have used the Foursquare api.

Read more about Foursquare [here](#).

Let's take a look into the data_set.

	Place Name	Latitude	Longitude
0	Nanjangud, Mysore, Karnataka, India	12.120000	76.680000
1	Chittorgarh, Rajasthan, India	24.879999	74.629997
2	Ratnagiri, Maharashtra, India	16.994444	73.300003
3	Goregaon, Mumbai, Maharashtra, India	19.155001	72.849998
4	Pindwara, Rajasthan, India	24.794500	73.055000
...
95	Hasanpur, Uttar Pradesh, India	28.719999	78.279999
96	Jabalpur, Madhya Pradesh, India	23.168770	79.931847
97	Shahada, Maharashtra, India	21.546185	74.470009
98	Mysuru, Karnataka, India	12.295810	76.639381
99	Tiruvannamalai, Tamil Nadu, India	12.228628	79.066544

400 rows × 3 columns



Each dot on the map represents a city as given on the table in the left.

Now, after applying K-Means, let's see what we got. Starting from each cluster.

1.

Cluster 1

```
In [167]: cities_merged.loc[cities_merged['Cluster Labels'] == 0, cities_merged.columns[[0] + list(range(4, cities_merged.shape[1]))]]
```

Out[167]:

	Place Name	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
0	Nanjangud, Mysore, Karnataka, India	ATM	Hotel	Bus Station	Yoga Studio	Embassy / Consulate	Food Court	Food & Drink Shop	Food	Flower Shop	Flea Market
11	Jalpaiguri, West Bengal, India	Health & Beauty Service	ATM	Electronics Store	Food Court	Food & Drink Shop	Food	Flower Shop	Flea Market	Fish Market	Fast Food Restaurant
14	Sirohi, Rajasthan, India	ATM	Yoga Studio	Electronics Store	Food Court	Food & Drink Shop	Food	Flower Shop	Flea Market	Fish Market	Fast Food Restaurant
25	Suri, West Bengal, India	ATM	Bookstore	Yoga Studio	Factory	Food Truck	Food Court	Food & Drink Shop	Food	Flower Shop	Flea Market
40	Kushtagi, Karnataka, India	ATM	Yoga Studio	Electronics Store	Food Court	Food & Drink Shop	Food	Flower Shop	Flea Market	Fish Market	Fast Food Restaurant
50	Hodal, Haryana,	ATM	Yoga Studio	Electronics	Food Court	Food & Drink	Food	Flower	Flea Market	Fish Market	Fast Food

2.

Cluster 2

```
In [168]: cities_merged.loc[cities_merged['Cluster Labels'] == 1, cities_merged.columns[[0] + list(range(4, cities_merged.shape[1]))]]
```

Out[168]:

	Place Name	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
2	Ratnagiri, Maharashtra, India	Hotel	Beach	Resort	Bus Station	Yoga Studio	Electronics Store	Food	Flower Shop	Flea Market	Fish Market
3	Goregaon, Mumbai, Maharashtra, India	Indian Restaurant	Train Station	Sandwich Place	Fast Food Restaurant	Gym / Fitness Center	Coffee Shop	Tea Room	Plaza	Dance Studio	Chinese Restaurant
7	Lucknow, Uttar Pradesh, India	Indian Restaurant	Café	Fast Food Restaurant	Shopping Mall	Clothing Store	Neighborhood	Food Truck	Multiplex	Sandwich Place	Bakery
8	Delhi, the National Capital Territory of Delhi...	Indian Restaurant	Restaurant	Chinese Restaurant	Sculpture Garden	Ice Cream Shop	Park	Hotel	Japanese Restaurant	Snack Place	Food & Drink Shop
9	Mumbai, Maharashtra, India	Indian Restaurant	Bar	Middle Eastern Restaurant	Coffee Shop	Burrito Place	Asian Restaurant	Mughlai Restaurant	Lounge	Pharmacy	Pizza Place

3.

Cluster 3

```
In [169]: cities_merged.loc[cities_merged['Cluster Labels'] == 2, cities_merged.columns[[0] + list(range(4, cities_merged.shape[1]))]]
```

Out[169]:

	Place Name	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
67	Jalgaon Jamod, Maharashtra, India	Mobile Phone Shop	Yoga Studio	Embassy / Consulate	Food Court	Food & Drink Shop	Food	Flower Shop	Flea Market	Fish Market	Fast Food Restaurant
70	Ausa, Maharashtra, India	Mobile Phone Shop	Yoga Studio	Embassy / Consulate	Food Court	Food & Drink Shop	Food	Flower Shop	Flea Market	Fish Market	Fast Food Restaurant
76	Sinnar, Maharashtra, India	Motel	Mobile Phone Shop	Embassy / Consulate	Food Court	Food & Drink Shop	Food	Flower Shop	Flea Market	Fish Market	Fast Food Restaurant
43	Morshi, Maharashtra, India	Mobile Phone Shop	Yoga Studio	Embassy / Consulate	Food Court	Food & Drink Shop	Food	Flower Shop	Flea Market	Fish Market	Fast Food Restaurant
82	Georai, Maharashtra	Mobile Phone	Shipping	Yoga Studio	Embassy /	Food &	Food	Flower	Flea Market	Fish Market	Fast Food

4.

Cluster 4

```
In [170]: cities_merged.loc[cities_merged['Cluster Labels'] == 3, cities_merged.columns[[0] + list(range(4, cities_merged.shape[1]))]]
```

Out[170]:

	Place Name	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
1	Chittorgarh, Rajasthan, India	Trail	ATM	Indian Restaurant	Hotel	Train Station	Fish Market	Factory	Farm	Farmers Market	Fast Food Restaurant
5	Raipur, Chhattisgarh, India	Vegetarian / Vegan Restaurant	Train Station	Clothing Store	Bakery	Yoga Studio	Electronics Store	Food & Drink Shop	Food	Flower Shop	Flea Market
12	Pakur, Jharkhand, India	Train Station	Yoga Studio	Dumpling Restaurant	Food & Drink Shop	Food	Flower Shop	Flea Market	Fish Market	Fast Food Restaurant	Farmers Market
16	Ramanagara, Karnataka, India	Mobile Phone Shop	Train Station	Dessert Shop	Bakery	Embassy / Consulate	Food Court	Food & Drink Shop	Food	Flower Shop	Flea Market
47	Vizianagaram, Andhra Pradesh, India	Indian Restaurant	Train Station	Pizza Place	Yoga Studio	Electronics Store	Food & Drink Shop	Food	Flower Shop	Flea Market	Fish Market
4	Contai, West	Train Station	Clothing	Pharmacy	Yoga Studio	Electronics	Food &	Food	Flower	Flea Market	Fish Market

5.

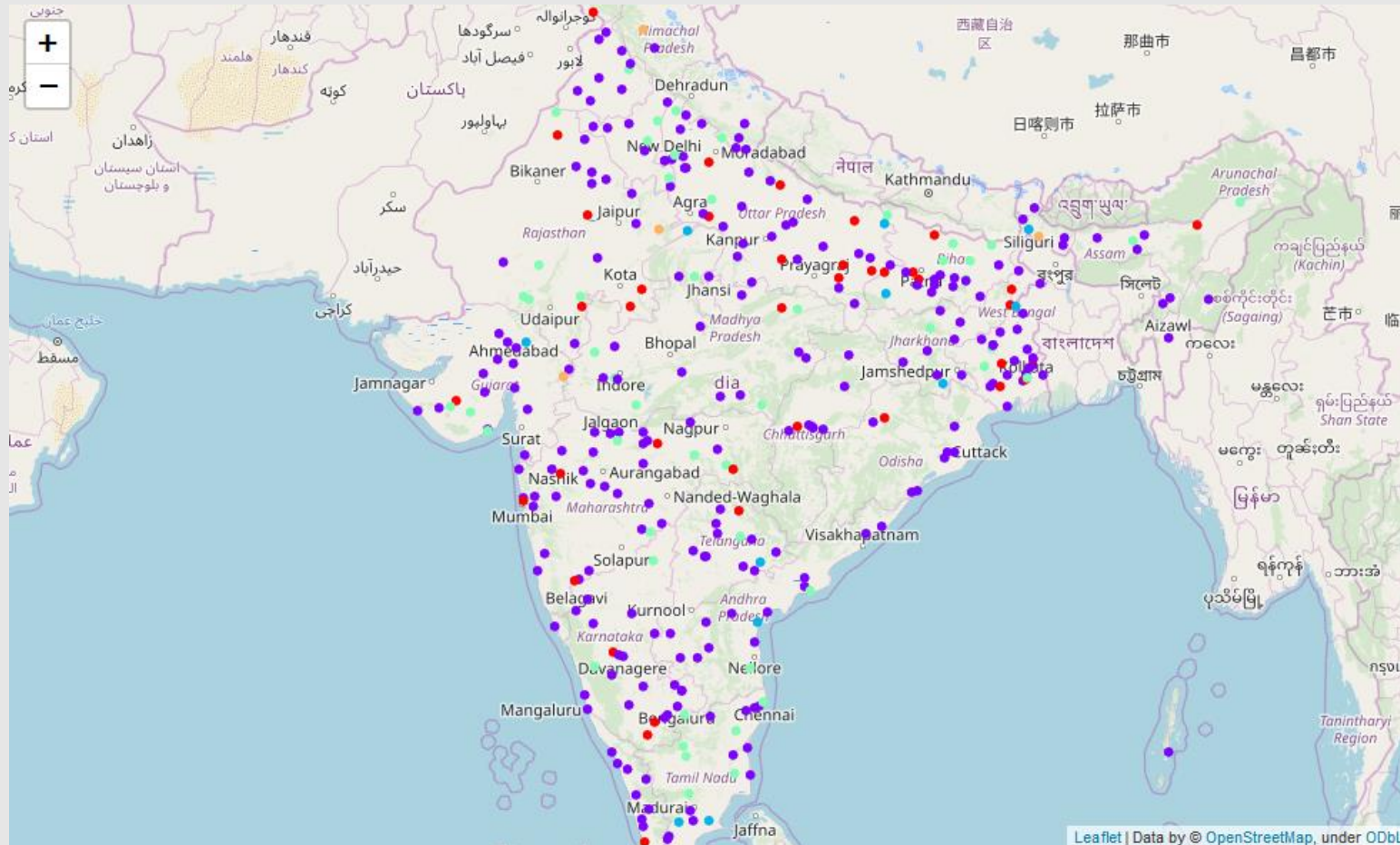
Cluster 5

```
In [171]: cities_merged.loc[cities_merged['Cluster Labels'] == 4, cities_merged.columns[[0] + list(range(4, cities_merged.shape[1]))]]
```

```
Out[171]:
```

	Place Name	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
13	Sardarshahar, Rajasthan, India	Bus Station	Yoga Studio	Embassy / Consulate	Food Court	Food & Drink Shop	Food	Flower Shop	Flea Market	Fish Market	Fast Food Restaurant
67	Khambhat, Gujarat, India	Bus Station	Yoga Studio	Embassy / Consulate	Food Court	Food & Drink Shop	Food	Flower Shop	Flea Market	Fish Market	Fast Food Restaurant
13	Thandalam, Tamil Nadu, India	Bus Station	Yoga Studio	Embassy / Consulate	Food Court	Food & Drink Shop	Food	Flower Shop	Flea Market	Fish Market	Fast Food Restaurant
29	Junnar, Maharashtra, India	Bus Station	Yoga Studio	Embassy / Consulate	Food Court	Food & Drink Shop	Food	Flower Shop	Flea Market	Fish Market	Fast Food Restaurant

& this, is what India would look like, after
it's clustering of cities.



Quite Cool,
isn't it?

Hope you found the findings informative.

Find the source-code of the project in my Github repository here :

[https://github.com/huzaifatausif0410/hufaiza/blob/master/Citiies-Alike\(1\).ipynb](https://github.com/huzaifatausif0410/hufaiza/blob/master/Citiies-Alike(1).ipynb)

Do Let me know how I can polish this report further or any other feedback that you might have.

Thank you.