

Capstone Project - The Battle of Neighborhoods

Introduction / Business Problem:

I am an IT professional and I have been working in India for the past 15 years. Recently, I have been transferred to Pune City and I am in search of a location, which would be closer to my office but also should be well developed and having a lot of amenities. My office location is going to be Hinjawadi. Since the cost of the rented house was to be borne by my employer, the primary focus during search was on amenities around and the distance for transportation to the office.

After discussions with a few friends and a couple of searches on the web, it came to my understanding that there are two localities in Pune, which have been recently developed with modern amenities and the rate of development in these areas was fastest within the city. These areas were Aundh and Kothrud.

Therefore, I would primarily compare these two areas on two parameters.

- (1) Number of amenities around the locality and
- (2) Distance from my workplace

Data Section:

Datasets that would need to be referred to solve the above problem include ...

- (1) For understanding the amenities / venues in these two localities, we would be using **'Foursquare location data'** as a data source. Both these locations would be explored for various amenities or venues within a specified radial distance, say 5 kms through **API calls** placed on 'Foursquare'.
- (2) Location coordinates of office locality and proposed localities would be derived from **'Geopy'**.
- (3) For knowing the travel distance to my office, I would depend on 'Geopy'. Geopy can calculate **'Geodesic distance'** between two points using the function **'geopy.distance.distance'**. The geodesic distance is the shortest distance on the surface of an ellipsoidal model of the earth. Another method, **'Great-circle distance'** uses a spherical model of the earth, using the mean earth radius. However this method results in an error of up to about 0.5%.

Here is an example of `distance.distance` usage:

```
>>> from geopy import distance
>>> newport_ri = (41.49008, -71.312796)
>>> cleveland_oh = (41.499498, -81.695391)
>>> print(distance.distance(newport_ri, cleveland_oh).miles)
538.39044536
```