

IBM Data Science Professional Certificate: Capstone Project

Segmenting and Clustering selected Neighbourhoods of Hyderabad

Johny Ijaq

July 18, 2020

1. Introduction

1.1 Background

Hyderabad city is the capital city of the Indian state of Telangana. The city has an estimated population of around 8 million, making it 4th largest city in India, while the population of the metropolitan area was estimated above 9 million. Hyderabad city is known for its rich history, food and its multi-lingual culture, both geographically and culturally.

Hyderabad, since the time of the Nizams, has been the seat of art, culture, literature, music, science, and a variety of other academic activities. In modern times as well, the city has managed to hold on to its rich academic tradition, with some of the most premier educational institutions in the country making their home on the city's landscape. Incorporating a large number of universities, management colleges, research centres, and technical institutes, the capital of Telangana, is undoubtedly shaping itself rapidly to be the country's higher education hub.

The city has three central universities, including the top-ranked University of Hyderabad, The Maulana Abdul Kalam Azad National Urdu University and English and Foreign Languages University, along with the famous state university such as Osmania University. The city and surrounding areas are home to top engineering institutes such as Indian Institute of Technology - Hyderabad, International Institute of Information Technology, Hyderabad, Birla Institute of Technology & Sciences. Hyderabad also hosts big names in business schools such as Indian School of Business (ISB) and ICFAI Business School.

Hyderabad is also a major centre for research in pharma, biotech and defence-related science and technology. Apart from many defence research labs such as Defence Research and Development Organisation (DRDO) and space institutes, the city has prestigious research laboratories such as the Centre for Cellular and Molecular Biology (CCMB) and the Indian Institute of Chemical Technology.

Nalsar University of Law, Tata Institute of Social Science Research and Tata Institute of Fundamental Research are the other prestigious institutes in the city.

1.2 Problem

I selected few neighbourhoods from Hyderabad that are hosting famous educational and research institutes. Main objective of this project is to find out the most common businesses in these areas and to explore the best business idea which one can start in these neighbourhoods.

1.3 Interest

The results from this project can be useful to anyone who is planning to start a business in the studied neighbourhoods. Anyone who is looking to find the best neighbourhood to open a shop of interest also finds this study useful.

2. Data sources

Latitude and longitude data for each neighbourhood was obtained from <https://www.gps-latitude-longitude.com/address-to-longitude-latitude-gps-coordinates>.

Foursquare API

I used the Foursquare API to explore the nearby venues from the selected universities and research institutes in order to find out the common businesses. I searched for the venues up to 1 KM from the GPS coordinates (latitude and longitude) of the selected neighbourhoods.

Foursquare API helped me to search for a specific type of venues, explore a particular venue and to get trending venues around each neighbourhood. I retrieved the following information from the foursquare API for each neighbourhood.

1. Venue Name
2. Venue Category
3. Venue Latitude
4. Venue longitude

Reference:

1. Hyderabad: A vibrant hub for higher education.
(<https://www.thehindubusinessline.com/news/education/hyderabad-a-vibrant-hub-for-higher-education/article30360645.ece>)

