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Exploratory Analysis of Geo-Locational Data - Accommodation Recommendation

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ABSTRACT

This project involves the use of K-Means Clustering to find the best accommodation for the migrants by classifying accommodation for migrants on the basis of their preferences on facility, budget and proximity to the location. To Fetch, Clean, Analyse and run K Means Clustering on Geo-locational data to recommend accommodations to immigrants to a city.

Keywords: Data, Dataset, Recommendation, Map

1. INTRODUCTION

This project involves recommending hotels, gyms and other needs for the user who has accommodated to a area newly.it is difficult for a user to find all the places in a newly accommodated area.so, it is easy if we recommend nearby places.one is too tired to fix oneself a home cooked meal frequently. Even if a person gets home cooked meal every day, it is not unusual to want to go outfor a good meal every once in a while for social purposes. Either way, the food one eats is an important aspect regardless of where one lives. If a person moves to a new place. They already have some preferences and taste. It would save both user and the food providers a lot of benefits if they liveclose to their preferred outlets. It is convenient for the owners and provide better sales and saves time for the user.

2. RELATED WORK

2.1 Collect Data And Set Up The Environment

If we want to do data analysis, we need to get the dataset and we need to setup the environment required for data analysis. It requires jupyter notebook to do analysis.

2.2 Data Cleaning And Visualization

After getting the data and understand what it says. A best way to do this is by visualising, the data via graphs. Graphs help us quickly get an easy understanding of the data, and are a much more User-friendly.

2.3 Pre-Processing Of Data

K Means Clustering will help us cluster the places based on the facilities located around them. A location with more facilities nearby will be said as “Amenity Rich" while a location with less facilities will be said as "Amenity Poor". Similar locations will be grouped .Run the K-Means Clustering Algorithm and find out the best value for K, which we will use on our website.

2.4 Get Geo-Locational Data From Foursquare API

After getting the best cluster values, we need to get geo-locational data from the Foursquare API to find these people some accommodation for our users.

2.5 Plot The Clusters On The Map

At last plot the results on the map that will the user to view the locations.

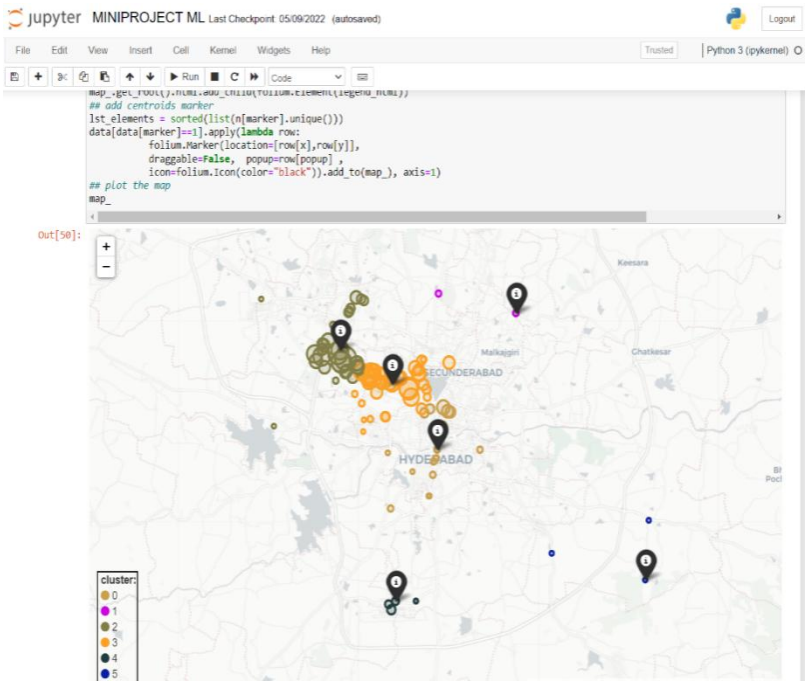

FIGURE 1: Clusters On The Map

3. EXISTING SYSTEM

The existing system contains hostels and apartments for rent and also it has buy and sell options. It doesn't recommend accommodation in our budget.it has rare cases of houses on ourbudget.It also doesn't recommend restaurants, gyms etc., based on users budget previous researches lack accuracy of true recommendations.

4. PROPOSED SYSTEM

The Proposed system recommends hostels ,apartments as well as houses and it also displays the details of those houses, apartments and hostels.(i.e., photos, contact details, chat options with the owner,360 degree view) It recommend accommodation in our budget. It has large cases of houses on our budget. It also recommend restaurants, gyms etc., based on users budget. It provides true recommendations without any lacking. We are using K-means algorithm in this project but it has a drawback of when two circular clusters centred at the same mean have different radii. K-Means uses median values to define the cluster centre and doesn't differentiate between the two clusters. It also fails when the sets are non-circular. To overcome this drawback we are using Expectation-Maximization (Em) Clustering Using Gaussian Mixture Models (GMM).

4.1 Way Of Approach

- Get Datasets from the pertinent locations (Data Collection)
- Clean the Datasets to prepare them for analysis. (Data Cleaning via Pandas)
- Visualise the data using boxplots. (Using Matplotlib /Seaborn /Pandas)
- Fetch Geo-locational Data ((Foursquare API)REST APIs)
- Use K-Means Clustering to cluster the locations (Using ScikitLearn)
- Discover the locations on the map. (Using Folium/Seaborn)

4.2 Project Stages

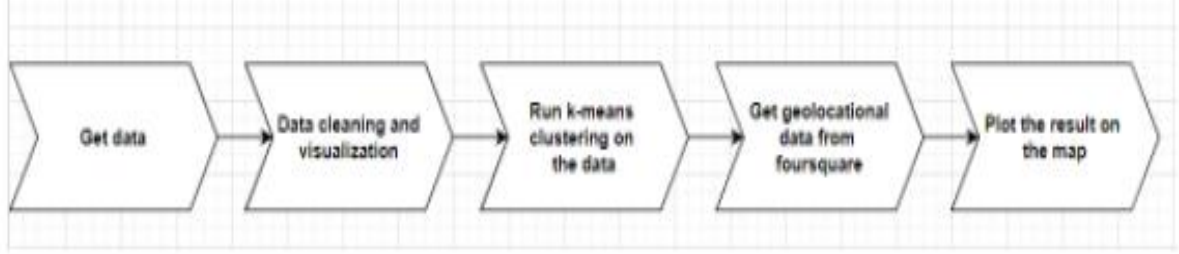

FIGURE 2: Data Flow Diagram

4.3 Modules

1. Data Collection Module
2. Searching Module
3. Suggestion Module
4. Communication Module

4.3.1 Data Collection Module

Collect the data from the users and store the data in the database for later use.

4.3.2 Searching Module

After giving the input the user search for the location comes under their budget with their required facilities.

4.3.3 Recommendation Module

After searching the required information on the search bar, it will show the recommendation. Based on budget and requirements.

4.3.4 Communication Module

From the shown recommendations, the user select the best accommodation and with the help of communication module it will redirect the user to the contact details of the owner.

5. CONCLUSION

This app/website is easy to use because it is user-friendly and budget-friendly. A common problem of the migrant people are solved through this app/website. This app/website is used to find accommodation easily and its fits in our budget and it will more useful students who are studying.

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