

EXPLORATORY ANALYSIS OF GEOLOCATIONAL DATA

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Abstract: Geolocation and the use of geographic information systems (GIS) have become fundamental tools in many disciplines. Because they can link databases and display geographic data, geographic information systems (GIS) have become essential tools in many disciplines. This chapter tries to show the usefulness of geolocation through its application in the evaluation of the accommodation search in any location.

Keywords: Student accommodation, Geolocation, Geographic Information Systems, Evaluation, Geolocational, Locations.

INTRODUCTION

Technical improvements are boosting the creation of geolocated information, which offers up new opportunities, thanks to new sources of information like smartphones and social sites. Geolocation and Geographic Information Systems (GIS) are useful tools in this context for diving deep into the massive volumes of data now available in the "Big Data" era, whether viewed through the eyes of a researcher, a professional, or an individual daily. GIS is a powerful tool for integrating databases and geographic data, allowing for better data analysis and display via maps. When working with multisource databases in a complex process, one of the reasons for the GIS's effectiveness is the capacity to visualize data using maps.

Different uses of Geolocation and GIS

Marketing: The application of GIS in marketing research has encouraged the development of new fields such as geo-marketing, which uses GIS to meet customer needs and increase firm profitability, and geo-competition, which maps and locates a corporation's competition. As a result, GIS has become a valuable instrument for gaining a competitive advantage and enhancing the effectiveness of marketing campaigns.

Tourism: Tourism is one of the businesses that produces a lot of geospatial data and could use GIS the most. As a result, GIS has been utilized in tourist research to study tourism development, discover tourist hot locations, and appraise tourist sites, and it could be a useful tool for managing and promoting tourism destinations. In the tourism business, geo-marketing and geographic information systems (GIS) have been studied, and hospitality research has employed geolocation and GIS to explore room costs, hotel agglomeration, and competitive, as well as hotel location.

Accommodation: Various experts explain how GIS provide accommodation to students with a sense of belonging and security and it ensures that the location must be visible, accessible, convenient, and appealing to your target. For all forms of accommodation operations, the surrounding land uses are critical. The area's aesthetics, noise, safety, and other factors should all be considered.

II. PREVIOUS RESEARCH

From a methodology, location and GIS should stimulate the use of modernizing methodologies that accommodate for spatial variability and spatial autocorrelation. In the lodging industry, these modernization methodologies could provide a more realistic alternative to traditional competitive analysis (Nicholls, 2019). The geographic information on the Internet can be crawled using a section defines system which allows for continuous updating of each establishment's knowledge and, as a result, monitoring of the intensity of competition in a destination.

III. OBJECTIVE

This process involves the use of K-Means Clustering to find the best accommodation for the students in a city by classifying accommodation for incoming students on the basis of their preferences on amenities, budget and proximity to the location.

IV. PROPOSED METHODOLOGY

Fetch datasets from the relevant locations. (Data Collection)

Clean the datasets to prepare them for analysis. (Data Cleaning via Pandas)

Visualize the data using boxplots. (Using Matplotlib/Seaborn/Pandas)

Fetch geolocational data from the Foursquare API. (REST APIs)

Use K-Means clustering to cluster the locations. (Using ScikitLearn)

Present findings on a map. (Using Folium/Seaborn)

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Technologies and Algorithms

Python

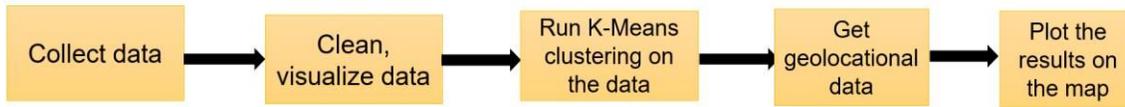
Data Cleaning

Data Preparation

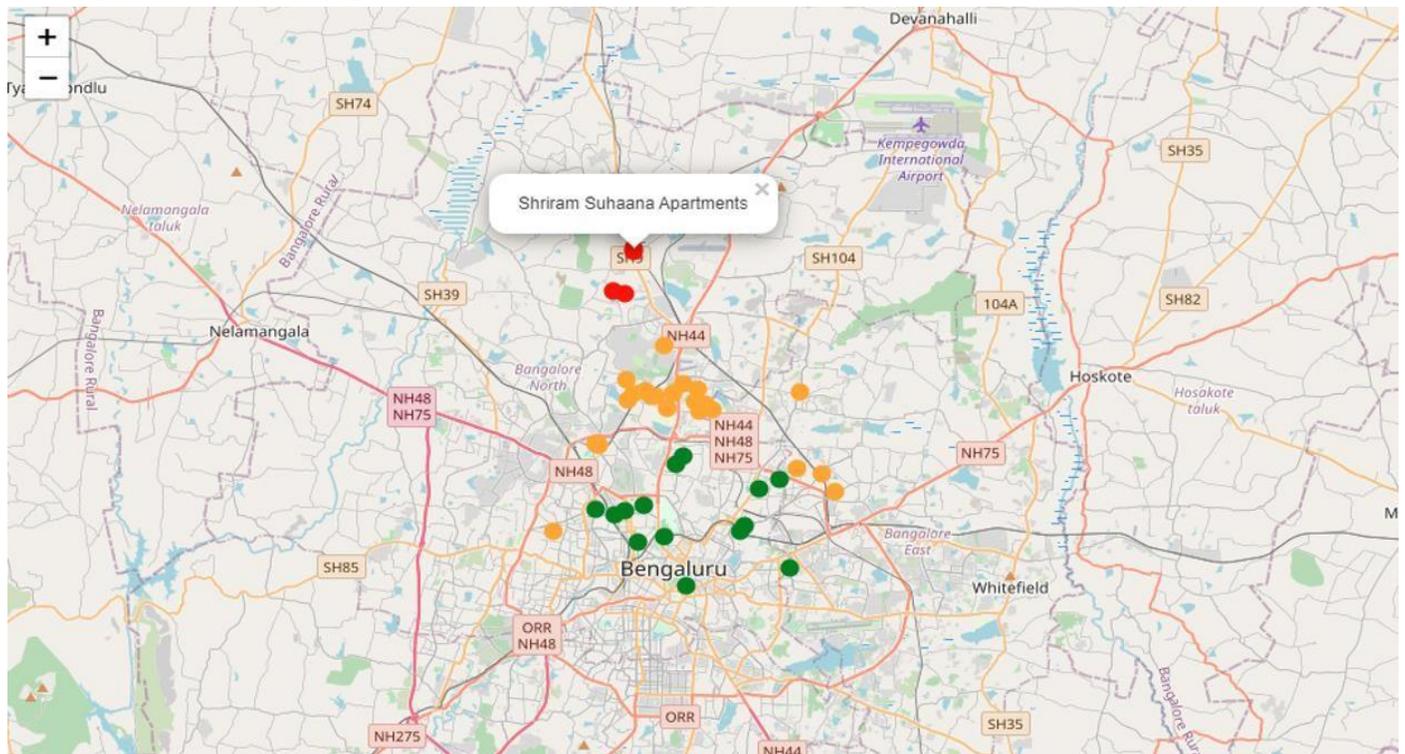
K-Means Clustering

Rest API

Data Visualization



V.RESULT AND ANALYSIS



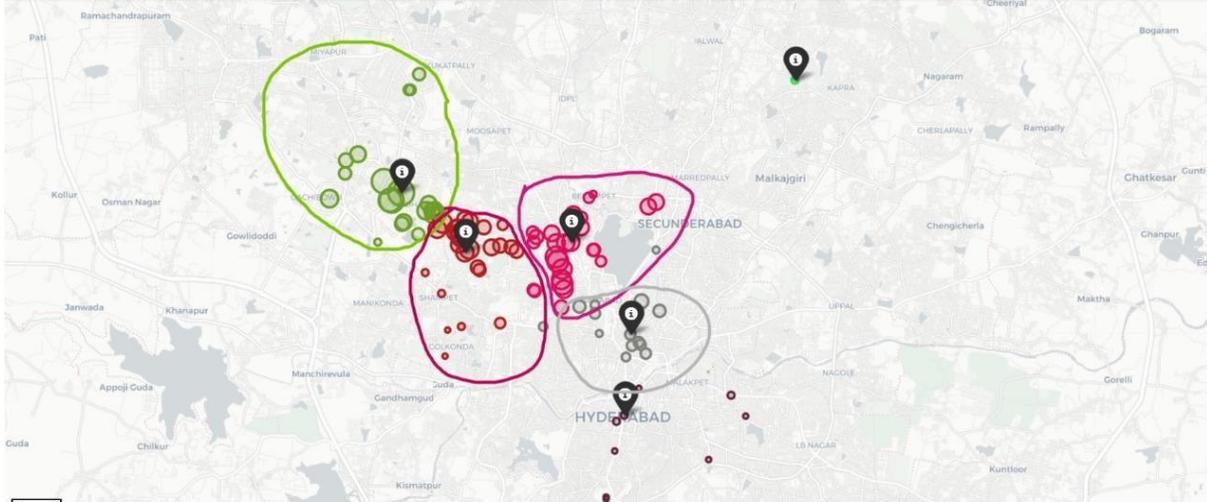
Here, we are dividing the population or data points into several groups such that data points in the same groups are more similar to other data points in the same group than those in other groups. In simple words, the aim is to segregate groups with similar traits and assign them into clusters.

Step 1: Specify the number of clusters. In the first step we need to specify the number of clusters.

Traditionally researchers will conduct analysis multiple times, exploring different numbers of clusters.

Step 2: Allocate objects to clusters. The simplest approach is to randomly assign objects to the cluster, but there are many other approaches (for example, using hierarchical clustering).

Step 3: Allocate each observation to the closest cluster center. After assigning the object to the cluster, we analyzed that some points were close to the location. Matching the observations to the closest cluster yields the following graph. When we reallocate the observations to the closest clusters, we get the plot below.



VI. CONCLUSION

This section will highlight how to use geolocation in the hospitality sector, specifically how to evaluate the strength of hotel competition in a tourist area using geolocation and GIS. Geolocation is implemented into hotel competition analysis to provide more complete and accurate information on each of the areas or zones within a single travel destination, allowing for a more accurate assessment of competitiveness between these areas, that is in line with the desire to assess competitiveness in the current tourism context (World Economic Forum, 2019). Finally, implementing geolocation into the hotel choosing system is crucial for consumers.

VII. REFERENCES

1. <https://www.google.com>
2. <https://doi.org/10.1016/j.ijhm.2019.102362>
3. <https://docs.python.org>
4. <https://doi.org/10.1509%2Fjmk.74.6.94>