Tourism Enhancer App: User-Friendliness of a Map with Relevant Features

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Abstract. There is many things to extract over a map that is dynamically available to the users. There are varieties of areas over a region in a map and are in traditional representation. To customize certain areas with own symbols from a pallet by providing prior guide, an environment that supports in user-friendly manner as well as rich built in libraries and simple graphical user interface is the python. With lot of built in libraries for this complex task, python takes less amount of code to bring the real time application compared with many other traditional programming environments. The guide to be intimated before using customized symbols for varieties of things in a particular location. This guide will easily help out how many are there according to category in that particular location. The end user might be aware of which country will be having highest number of that particular asset compared to other countries over a map. The information is worthy and is dynamic so, anybody will have accurate number of specific asset that required further analysis for their works. This information is similar to few apps like taking cursor over a region in a map, there playing radio or showing number of corona cases that are active. Information is wealth is the motto to make this paper as possible that demands the user to know anything over a region. So that, that region will be tagged with that specific asset which makes that location is popular and makes more tourism.

1. Introduction
Nowadays, tourism may make any country popular in the global context. The economic view of a country may depend on one of the factor called tourism. Any country growth may flourish is not only with culture, reforms, employment, industrialization, media and advertisements, sports, political strength, border free issues, tourism, and so many. Here, one of the factor considered is tourism. But knowing the place by the google search may leads to see the place that you would like to visit. It may view with few characteristics but the user expects characteristics beyond the normal characteristics. Any search may be considered fruitful when the desire theme is met. In a map naturally, there is no displaying of processed data about the place or spot that might looking for. To add the desired functionality, searching for something is taken as input, then processing it through certain ideology, and then display the results with fulfilled details. In a normal map, there
is no clear information about the best places and rankings. To search the place in available search engines, and again search the characteristics in the search engines may consume time. Here, the technology lagging users may not prefer this kind of approach. Traditionally, to know the best places in a country needs to depend on a guide and needs to stay and feed the guide until our tour is finished. Moreover, only a few places will get highlighted by people, and those places only are visited by other people who are interested to travel. In such scenarios, the people may miss true places and their beauties. A mouth talk is the only option and will carry a reputation through traditional approaches. Moreover, there are no options given to the user to choose the specific locations of a country over a map. In a map, location names and important things such as petrol bunks, school names, hotels, bus stands, railway stations, airports, temples, convention halls, and few other spots only going to be shown when browsing. This information could be available for all the people about all locations on a map. Here, the demanding scenario is raised which is to show the rankings of the spots and also visualize them through color pallet icons over a map. This scenario is also called customization of ranked places using colored pallets and also listing ranked places of a country whenever the user selects a country on a map. From this knowledge, any user will use the map and will know the highlights of spots in that country. In addition to this, there will be also rankings of those spots when compared to the similar feature of other countries. Here, the rankings are taken automatically from the knowledge of the map and are listed in both ways such as local country ranking and global ranking for that spot. Now, the user who wishes to visit the country might cause an eagerness to visit that spot also. Along with rankings based on characteristics of the spot, the summary of reviews also is shown for more information. This will be more helpful because of moral information is wealth. In this, the necessity of the proposed methodology is discussed, and the drawback of existing methodologies is time-taking processes, lack of certain information about the location, spending of money for external conditions such as bearing the guide, and odd experience after the visit and etc. Hence, the proposed scenario will look like in such as way that map to be loaded, but the user may ask for choosing the location, the selected location will display the spots matching with the search criteria. The spots are displayed with reviews statistics as well as local and global rankings compared to similar kind. In this aspect, the next chapters such as related work and proposed works will discuss the scope of this concept in a demonstrative manner.

2. Literature Survey
In this, the traditional approach and many other existing methods are discussed along with their scope inability. Hence, the studies on this concept are listed. There were many studies on google map and its concepts. In studies [1] and [2], first one describes about APIs that attract users through the build-in libraries to use the map in a better view, spending time over the map and in many exciting ways, where as second is on build-in libraries that might helpful for academics where answers are given for the questions raised with add on facility google earth. In studies [3] and [4], first is on various information guides on the google map that will help how to use the map effectively, and second is on searching SMEs over specific location, indonesia and designing a web based application for geographical view by using the existing features. In studies [5] and [6], first is focused on designing online application that shows right direction or route when search for specific location using integration of certain technologies for achieving the intended task, where as second is focused on discussion of three tasks over a google map such as storing in the server, then downloading that, and do pre-programmed data over that in order to get analysis or display the data. In [7] and [8] studies, first study deals with information about terms and policies in the google map and their purposes, representation of services and regulations and etc, whereas second study is focused on applications based on two kinds of facilities such as maps and street view, will impose new questionnaire for doing research in criminological aspects. In [9] and [10] studies, first
is focused on location services with the trust, using Knn queries through IoT where privacy of locations is maintained for authorized users when they impose queries using IoT, and second is on communication strategy to be followed at sender end or receiver end by keeping the series and shunt converter's location and the scenarios that would be affect by these are noted. In [11] and [12] studies, first is focused on cobal free managing steel suing processing of maps and demonstration given on monitoring and controlling of it, and second is on description of factors that affect the wireless indicator network and evaluation of wormhole attack in a heterogeneous environment. In [13] and [14] studies, first study is on finding a set of co-location patterns on a spatial dataset and is implemented in a GUI based framework and parallel approach called map reduce mechanism, and second is on health where body and heart details are sensed and output is displayed on LCD, more over this prediction will helpful to save lives of especially drivers who indirectly will save many passengers respectively. In [15] and [16] studies, first study is focused on core zone area is analyzed through satellite and processed data patterns are digitized and external conditions are noted, and second study is on privacy preservation using IoT which enables data mining, data preservation, and anonymization are applied over a variety of applications with data restoration properties respectively. In [17] and [18] studies, first one is discussing on H-CRAN where end to end optimization, granularity of augmentation, and quality of service guaranteed in 5G environment for resource allocation, and second study is on multi-objective constraints and colony optimization in MANETs leads to proposed MCER-ACO model for optimal energetic routing over a radio access networks and wireless sensor networks when compared to existing routing approaches respectively. In [19] and [20] studies, first study is on various spectra in 5G communications especially Cognitive radio networks where active nodes are predicted for future purpose and supply power only to such nodes that will help out secondary users to consume the power, and second is focused on AIRAVAT system that monitors inospheric space using satellite navigation system and communication systems respectively, it uses kalman filter that efficiently showcase the proposed model. In [21] and [22] systems, first method describes about resources are allocated using social network optimization algorithm and the scheduling of tasks using shortest job scheduling algorithm in order to minimize span time and maximize the throughput and second method describes about transmission of hybrid overlay / underlay protocols that will maximize secondary users throughput, maximize the primary user capacity, and avoid switching between these protocols. Any study that is discussed so far in this survey are the concepts somehow related partly to the proposed model, and there is guideline options provided to learn and how to apply when using the map. Moreover, the methodologies discussed are not dealing about processing of reviews and finding the local and global ranking for that spot, hence the proposed approach demands the future requirements and user-friendliness of the system. In the proposed system, identification of modules is done to simplify the complexity, and elaboration of modules through defined activities produces collective behavior as well as navigate the information to another module in order to process its intended objective. The goal of proposed system is to highlight the spot with reviews and rankings. This factor will attract the user because it is providing the information about the spot in terms of statistics. Once the user will experiences positive hopes and wishes, it will be circulated among the members of several societies.

3. Proposed Approach:
In this, a simulator app is designed titled tourism enhance app. It aims for showing the spots of a country in a map along with review statistics as well as local and global rankings. In a proposed system, the activities are specified through use cases and actors are specified through entities or modules. In this, architecture of proposed ideology is demonstrated, then pseudo procedure is also described, and then flow of modules of this proposed method is demonstrated through a flow
The following describes the tourism enhancer app in the processing aspect:

![Architecture of Tourism app from processing perspective](image)

In this, two modules are used such as processing and displaying where first module is processing module takes the items from search criteria, search those elements in the selected country as well as search it globally in the similar category, then compare that item of a specific country with respect to other countries for global ranking, and compare that item with other items in the similar category in that country only for local rankings. The second module extracts that item with other items in that country as well as with other countries in the similar category from processing module, and will display the statistics after analysis report obtained from processing module. This displaying module outputs the items of that category is limited to 5 and is also user oriented. The statistics is to be displayed that covers review counts as well as local rankings in that country in similar kind and global rankings w.r.t other countries. This information will be useful as a guide to change the idea to visit other country and their spots to visit. If it is an official trip, then
the user will compromise the spot to visit in that country. In either ways, objective is to provide information to the irrespective of the user.

The pseudo procedure is defined for above module is as follows:

Pseudo_Procedure Tourism_Enhancer_UserView(search_criteria[], map):
Input: elements to be searched
Output: evaluated ranks

Step1: User has to register, asks for login for each visit, and asks also for main item to be searched by selecting the country.

Step2: Call for Processing (search_criteria, country):
   2.1 Search for areas matching the main item within the given country
   2.2 for each similar_item:
      If main_item_type == other_items_type:
         add to local popup box
   2.3 for each similar_item:
      if main_item_country == other_items_type_other_countries:
         add to global popup box
   2.4 compare reviews within the country, for local ranking
   2.5 compare reviews against reviews of same kind in other countries, for global ranking

Step3: Call for Displaying(searchable_item, similar_feature, Country):
   3.1 Consolidate reviews within the country, display the items according to highest votes
   3.2 Consolidate reviews of that type in other countries, display the items according to highest votes
   3.3 display the highest votes given according to the local and global aspects

The following architecture of tourism enhancer app is from operational view where the modules defined such as module1 is reviews and module2 is rankings.

![Architecture of Tourism app from operational view](image-url)
In the above, the reviews module is keeping track of users who visit the spot and automatic raising of the survey sheet to the user mobile as well as to the email. It consolidates the user reviews, and highlights the characteristic for which more users rated highest star. It is considered as local rating to that spot within the country. Similarly, other countries in which likely spot is considered and its reviews are analyzed. This analysis leads to defining of global ranking. Finally, the statistics, rankings for that spot are displayed.

The pseudo procedure for operational module is defined as follows:

Pseudo Procedure Tourism_Enhancer_Operationalview(visited_users, voting_stars):

Step1: automatic keeping track of count of visited persons, daywise revenue, monthly revenue and surveying sheets updated for highest votes in a specific feature.

Step2: Call for reviews (survey_sheet[],spot):

2.1 Automatic sending of survey sheet to each visited user, and expects feedback of votes filled.
2.2 extract only most rated votes feature, and highlight the spot
2.3 According to that highlighted feature, extract the spots
2.4 according to the different feature but high rated, extract the spots.
2.5 prepare a statistical report based on these points

Step3: Call for Rankings(reviews[],oc_reviews[]):

3.1 Based on votes given within the country, prioritize the spot compare to other spots of the similar kind.
3.2 Based on votes against other countries, prioritize and display output whether it is in the list or not
3.3 Consolidate and display statistics in terms of local vs global rankings for that spot.

In this proposed system, the flow of modules interaction is defined in the following flow charts for the users view and operational views of tourism enhancer app:

![Flow chart for user view aspect](image1)

![Flow chart for user operational aspect](image2)

From the user view and operational view perspective, the proposed app will be tuned in such a way that evaluation of statistics and displaying of the statistics in terms of reviews as well as rankings.

4. Results:

In this, inputs and expected output is demonstrated through the sequence of screen shots. The ideology is specified in terms of review statistics as well as local vs global rankings. In this, the simulated app is demonstrated from first screen till desired results are to be produced. This will become as information to the end user. Generally, searching for something in a search engine, will display the information in the formats available whereas here, the map with searching for something, will display statistics of that against overall map. It is demonstrated first through a screen. Later, the user expects to visit the certain area, asked to enter searching
details along with a country, later the statistics of the place with respect to country selected and statistics against overall scope are evaluated and are displayed. This kind of information is really a guide to the user who wishes to make international tour. Once the user is getting what places to be visited of a country that is selected in the map, it is easy for the user to schedule the number of days to stay in the trip. The first theme is against overall scope, and the second theme is against the scope within the country. Both the ways will help to choose the spot of selected country or similar spot of other country. This online information and real connected view of the spot over map will definitely enhance the revenue for that spot, also enhance more popularity for that spot, and highest votes in a specific feature will highlight that spot globally as well as locally.

**Scenario #1:**

![Figure 5. Various views and options over a google map](image)

In the map, when the user choose Vijayawada, the places to visit also to be listed as a pop up of locations. In order to attract the visitor and to provide the information about the nearby places of a selected location, the pop up of places are shown.
Figure 6. Recommendation of nearby places when a location is selected in map

| Search Criteria: |
|------------------|
| Location Name:  |
| Name: Sri Durga Malleswara Swami Varla Sametha Temple |
| Timeline for reviews: 2020 January |

| Output: |
|------------------|
| Sri Durga Malleswara Swami Varla Sametha Temple |
| 2020 January report: |
| Customers Visited: 3 Million |
| Reviews attempted: 10 Million |
| Rate of temples (on a scale 7-10) in Vijayawada: 9.80 Million |
| Customers visited as a family: 1 Million |
| Desires fulfillment: 9.50 Million |
| Ranking in Vijayawada: 1 |
| Ranking in Andhra Pradesh: 5 |
| Ranking in India: 12 |

| Review Form: |
|------------------|
| Points (1-10 scale) to be evaluated for feedback: |
| 1. Facilities: 8 |
| 2. Desires fulfillment: 10 |
| 3. You visited as a part of trip: yes |
| 4. Rate of temples in Vijayawada: 10 |
| 5. Visiting the place as a family for yes or individual for no: yes |
| 6. Have you purchased special Darshan Ticket: Yes |
| 7. Have you purchased Prasadams: Yes |

Figure 7. The Windows such as search the location and criteria, Popup of review form to each visited user, and output of that place with highest star rated review points as well as local and global rankings.

According to place selected in the map, the review form to be prepared dynamically and diverted to each visited user.
Scenario #2:

Figure 8. Views of a location (Krishnapatnam Port) selected by the user

Figure 9. Suggested nearby places when Krishnapatnam port, Nellore
Figure 10. Search the location and criteria, Review form to each visited user, and result of highest star rated review points as well as local and global rankings.

The review form is generated according to location to be selected the user, and that will be raised to each visited user. The statistics are evaluated and points are high rated are only to be highlighted and are displayed as a report. There were scenarios taken and review forms and their generated reports are displayed instantly to the user. The benefit of this information is user has a guide in making decisions about their trip and may suggest to friends or relatives.

5. Conclusion
In this, the ideology is working in a fashion such that the place is selected by the user over map will be displayed with many characteristics. The characteristics included for the selected place of a country are geographical features, review statistics, and local vs global rankings. This ideology is demonstrated through an tourism enhancer app where all these features are incorporated as service features. It is user-friendly application where user provides certain features as input, the defined process adapted for processing the inputs taken, and produces the output with specific characteristics. This information may helpful to the user whenever to engage certain things of a country. This app may be demanding need for the modern societies and people may be benefited through genuine and true facts after further advanced input analysis.
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