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Smart Travel Scheduler: An Expert System for Tourists

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Abstract: ***The majority of people nowadays are facingthe time management issues with travellingdue to improper schedule. So there is need for a system which helps them to schedule their trip with proper time management.***
This paper gives the system which helps the user who wanted to schedule a trip. The application users only enter the place which they want to visit and it will display all the details about that particular place and their nearest visiting places. Hence this allows the user to easily know about that place instead of searching the whole internet for the trip he is going to make. After that system generates the schedule of the trip with the time constraint. Admin can also manually add the place details like their GPS locations, nearest visiting places, visiting time etc. Also, they manage the place information and user accounts.
Keywords: Travel Scheduler, Trip Location, Nearest Visiting Places, Place Recommendation.

I. INTRODUCTION

Tourism is one of the fastest growing Industries in India. If a person wants to make a trip to some new place which he is unaware about that place, then the user will search on internet about the places. Since he is unaware about the place there are possibilities of the user getting wrong information about the place. To overcome this problem the concept of smart traveler scheduler are implemented.The proposed system helps in scheduling the trip with time constraint for the users. The user can use the android application. The application users only enter the place which they want to visit and it will display all the details about that particular place and their nearest visiting places. Hence this allows the user to easily know about that place instead of searching the whole internet for the trip he is going to make. After that system generates the schedule of the trip with the time constraint. Admin can also manually add the place details like their GPS locations,nearest visiting places, visiting time etc. Also, they manage the place information and user accounts. The collaborative filtering is used for recommend near places and new places to the user.
The Dijkstra's algorithm calculates the time and distance for the entered place. The sytem reduces the time consumed for any journey related search.

II. LITERATURE REVIEW

Yu-Ting Wen et al.[2] suggest an proficient Keyword-aware Representative Travel Route framework that bring into play knowledge extraction from users' historical records and social interactions. The keyword extraction module classifies the POI-related tags, for effective matching with query keywords. A route reconstruction algorithm is also implemented to route candidates. The extensive experiments are conducted on real location-based social network datasets, which give good performance compared to state-of-the-art works.
Xiaoyan Zhu et al.[3] suggest Fine Route, a personalized and time-sensitive route recommendation system to mine users' first choice and convenient timeto provide routes information. Three factors that user' first choice, suitable visiting era, and moving time are taken concerning for the route planning. Kullback-Leiblerdivergence is used to measure the eminence of a direction for appropriate visiting month and the suitable visiting time. A route generation algorithm is used by lengthen the classic longest path algorithm.
Wan-Ting Hsu et al.[4] reflected on some parameter related to the travelling like , such as the visiting time information of POIs and the set of query points, in retrieving travel routes. The system can fulfill two requirements i. e.: 1.) Travel direction should contain all those query points specified, and 2.) travel routes should be within the spatial range Q. Skyline travel routes are returned as the query result. Skyline travel routes could give more multiplicity in the query result of trip route recommendations.
K. Palaniammal et al.[7] proposed an approach for semantic search in e-tourism which gives a sorted order of tourism domain which makes the search and retrieval time for the user to retrieve the data easier. This system also has a planning feature which plans the trip according to the user's requirement.
Ali Akbar Niknafs et al.[10] proposed a method on case-based reasoning approach where the best suggestion for a new tour is constructed based on an old tour and also the specifications that are given by the user and also on their similarity and the suggestions that are provided from the previous tour.

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III. PROPOSED METHOD

We are developing an application for solving the problem of user where user is not aware of the place and want to visit in single meeting. The proposed system provides the reliable information to the user at one application.

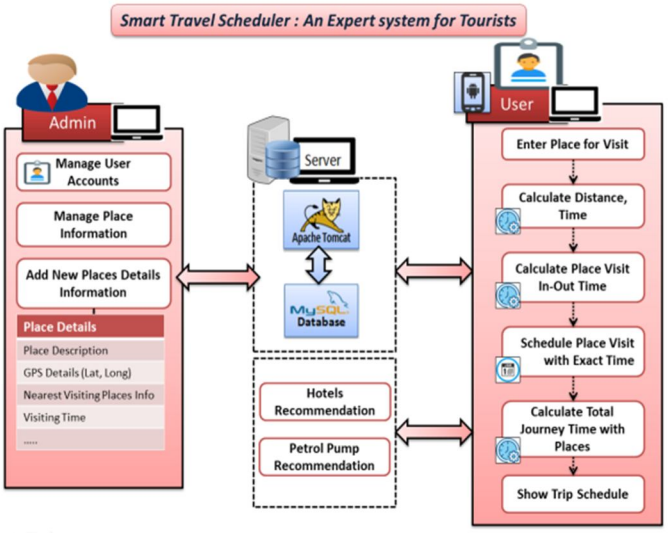

Figure 1: System Architecture

The architecture for e-tourism services is shown in Figure1.This architecture consists of different modules like the user interface, collecting the user data, analyzing the collected data from the user, scheduling the trip, calculating the budget for the trip and lastly contacts the user and book the trip specified by the user.

A. Users Activities

1) *Places Recommendation:* The system will provide a recommendation of new tourist places to the users.
2) *Explore New Trip Locations:* Any user can search new interesting locations that he wants to visit. The user will just need to enter the trip location and the system will provide all the necessary details to a user about that place.
3) *Estimate Distance and Time For The Trip:* Users should be able to see the estimated time and distance required for visiting the trip location (In-Out time of the place Hence a algorithm is used to match these attributes example if U1 has A1 as A,B,C and U2 has A1 as B,C then their matching score would be U1(A1)intersection U2(A1)/#of U1(A1).
4) *Explore Nearest Visiting Places:* The system will provide details all the details about that particular place and their nearest visiting places.
5) *Schedule the Trip:* Users should be able to schedule the trip/tour with exact time using the Android Application.
6) *Display Trip Schedule:* Users will be able to view and track the trip schedule and will receive notifications on their Smartphone devices.

B. Administrative Module

1) *Manage Users Accounts:* Admin should be able to manage user's accounts which include user's details, users Authentication, etc.
2) *Manage Places Information:* Admin should be able to manage information about various places, adding new places with details like the description about the place, GPS location, nearest visiting places, visiting time of the places, etc.

IV. ALGORITHM USED

A. Dijkstra Algorithm

1) The Dijkstra Algorithm finds the shortest path from a source to all destinations in a directed graph (single source shortest path problem). During this process, it will also determine a spanning tree for the graph.
2) The idea of Dijkstra is simple. Dijkstra partitions all nodes into two distinct sets: unsettled and settled. Initially, all nodes are in the unsettled sets, e.g. they must be still evaluated.

3) A node is moved to the settled set if the shortest path from the source to this node has been found. Initially, the distance of each node to the source is set to a very high value.

4) First only the source is in the set of unsettled Nodes. The algorithms run-up to the disturbed nodes is blank. In every repetition of a process, it chooses the node with the smallest distance from the origin of the unsettled nodes.

5) It reads all edges which are outgoing from the source and evaluates for each destination node, in the edges which are not yet settled, if theknown distance from the source to this node can be reduced while using the selected edge. If this can be done when the distance is updated and the node is added to the nodes which need evaluation.

6) The pseudo-code for shortest path problems is shown below:

```
// Let v1 be the origin vertex,
//   and initialize W and ShortDist[u] as
   W := {v1}
   ShortDist[v1] :=0
   FOR each u in V - {v1}
      ShortDist[u] := T[v1,u]

// Now repeatedly enlarge W
//   until W includes all verticies in V
   WHILE W <> V

      // Find the vertex w in V - W at the minimum distance
      //   from v1
      MinDist := INFINITE
      FOR each v in V - W
         IF ShortDist[v] < MinDist
            MinDist = ShortDist[v]
            w := v
         END {if}
      END {for}

      // Add w to W
      W := W U {w}

      // Update the shortest distance to vertices in V - W
      FOR each u in V - W
         ShortDist[u] := Min(ShorDist[u],ShortDist[w] + T[w,u])
   END {while}
```

B. User Based Collaborative Filtering

*1) Step 1.*User u, set of attribute Au for which rating (u, a)is known.

2) Step 2. Pick K other most similar item u1,.....,uk:

$$\mathrm{DIST}(u,u') = \sum_{a_i \in A_u} |\mathrm{rating}(u,a_i) - \mathrm{rating}(u',a_i)|$$

3) Step 3. Score other users a by popularity with the "similar" ui :

$$\mathrm{SCORE}(a) = \sum_{i=1}^{K} rating(u_i, a)$$

V. PROJECT SCREENSHOTS

We have implemented a system which can help the people who want to make a trip to places they are unaware off and wish to explore.User gets all the details about place to be visited and their nearest visiting places

Figure 2 shows the user interface of proposed system. User has to login to the system with user name and password for using the application.

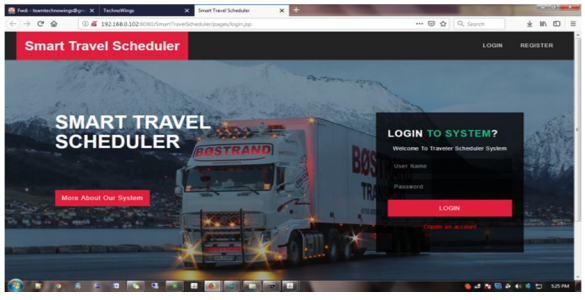

Figure 2: System GUI

After login to the application it shows the user can add the new journey with the source station and destination station. Figure 3 shows the same.

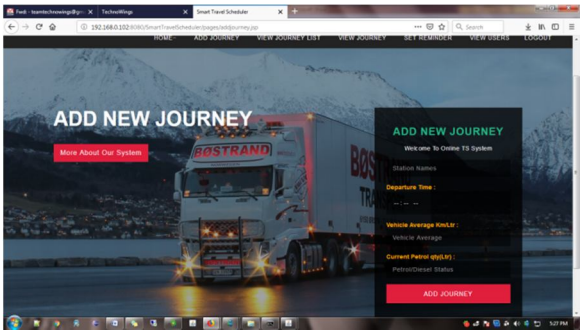

Figure 3: Add New Journey

This application can help the user to view the journey list with all the details mentioned in the below figure 4.

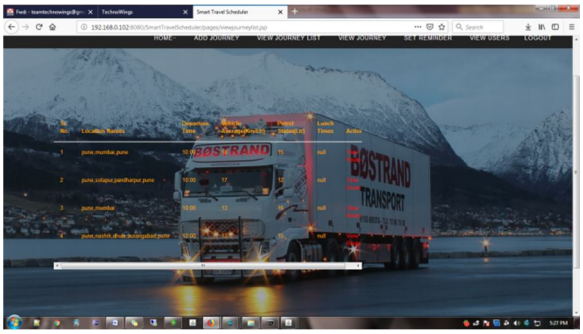

Figure 4: Journey List

User can view and track the trip schedule and will receive notifications on their smart phone devices.The system also recommends nearest restaurants, petrol pumps for user.

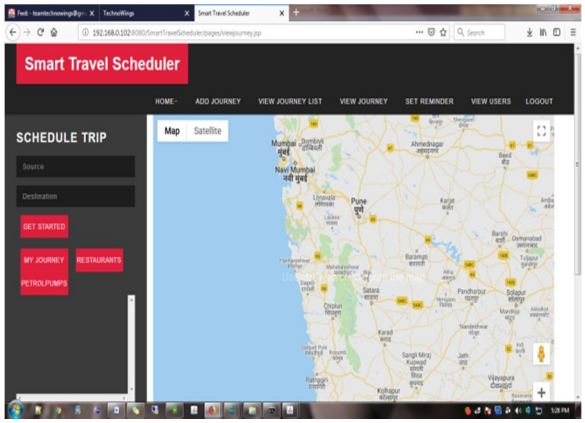

Figure 5: View Journey

VI. CONCLUSION

In the proposed system users only enters the place which he wants to visit and it will display all the details about that particular place and their nearest visiting places. Hence this allows the user to easily know about that place instead of searching the whole internet for the trip he is going to make. The system also recommends nearby visiting places to the user. After that system generates the schedule of the trip with the time constraint. Admin can also manually add the place details like their GPS locations, nearest visiting places, visiting time etc. Also, they manage the place information and user accounts.

We have two techniques that are Dijkstra's algorithm and collaborative filtering. The collaborative filtering is used for recommend near places. The Dijkstra's algorithm calculates the time and distance for the entered place.

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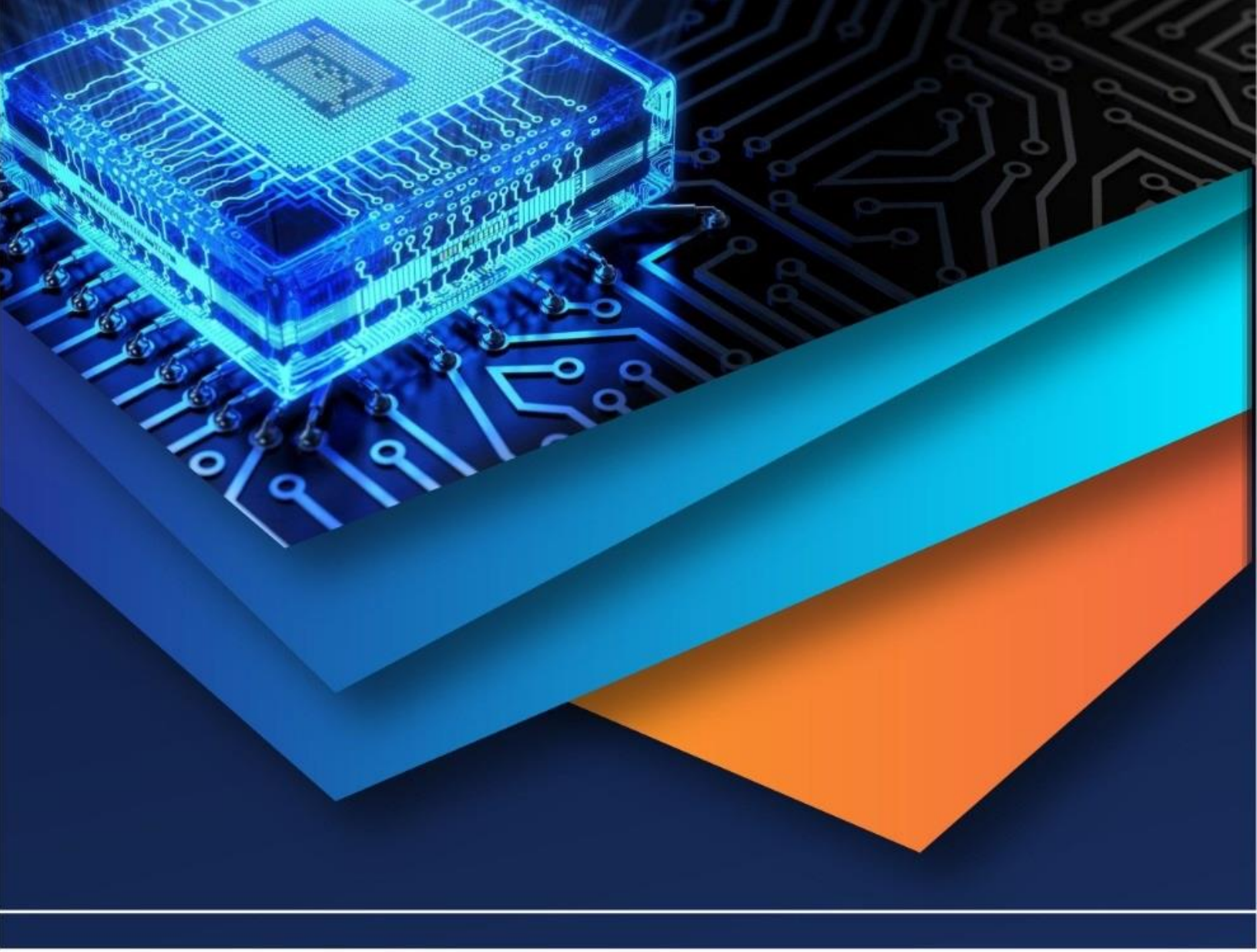

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