Smart Travel Planner based on AI

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Abstract: *Tourism is gradually becoming the first biggest industry in the world. As the foundation of tourism, tourism resources managements are the indispensably part of the tourism system and it is of great importance to ensure the sustainable development of tourism industry. In the era of information, effective utilization of the information technology can enhance the second revolution of tourism. Currently tourists & traveller waste a lot of time to plan their trips, and available all options to plan a trip right now does not actually provide a cost effective and all substitute to their travel.*

Keywords: tourist, travel, journey planning, web services, intelligent systems

I. INTRODUCTION

The emerging trend towards globalization in recent years has been accomplished by an unprecedented increase in both local and international travel characterized by a propensity to visit multiple places in the same trip .Consequently creating a travel plan has become an ever more intimidating complex and time- consuming process involving multiple steps – to name jus a few: choosing a time among several transportation options, places to visit and hotels to stay in, searching for tourists attractions at the various destinations, creating daily schedules factoring in breaks for meals an rest, sifting through dinning choices an d last – calculating the routes with the least travel durations

Smart travel Planner by the name indicated smartly makes its way in analysing the user's likes and dislikes and the time the user is willing to explore a place and gives him Amazing results in the form where utilization of time is maximum.The Smart Travel planner app based on AI" is a web -based system for simplifying the travelling process, Different or other similar application work as calendaring programs where our systems is slightly different because it merge all the information and function needed for travel planning in their complete process in a single piece of software which includes features such as calculating optimum route between user-specified location and also checking hotel availability and providing hotel reservation service and also offering suggestion of sightseeing for user and considering their needs for particular meeting, flights and location also personal preferences for dinning ,relaxation & sleep.

In the project we have used web API which the foursquare API along with various technologies.Such as java as it is official language and is used for android development in this app and consequently it is the most used language,Many of the apps in the play store are built in Java and many are supported by google. Android studio Ide is we are using in our app which is a rich UI development environment with templates to give new developers a launching pad into Android development. The database we are using is the firebase for storing the data.

II. LITERATURE SURVEY

Rabira Jafri, Amal Saad Alkunji, Ghada Khaled Alhader : They created a web based system for making travelling process easier in which various travel -related services mashup are included.There system has a unique feature that it integrates the information and functions needed for travel planning in their entirely within a single piece of software providing many features.[1]

Feng rong published this paper in which they aim to design a tourism resources management system and guide the tourist to plan their travel routes.This resource management system contains information organization and filtering module and contents module.The information organization include three function modules :RSS filtering,Collaborative filtering and Tag filtering.Main aim of the paper is to introduces AI to travel resource management by proposing web data extraction method to generate tourism website contents[2].

Demis Hassabis, Dharshan Kumaran, Christopher Summerfiled the neuroscience and AI has been long but the communication was lost between this two. This paper argue that better understanding biological brains could play a vital role in building intelligent machines.They have done survey about the interaction between the AI and neuroscience and emphasize current advances in AI that is inspired by neural computations.[3]

Luc De Raedt Kristian Kersting ,Sriraam Natarajan: The intelligent agent that is interacting with the real world will encounter individual people,courses,test result drugs prescriptions and all this needs to reason relations among them as well as the uncertainty. As uncertainty can be studied in logic in predicate calculus and its extension.[4]

Matthew Hutson.- Here the author have explained how AI faces reproducibility crisis. Also there are so unpublished code and sensitivity to training conditions make many claims hard to verify.[5]

Jiang, F, Jiang, Y, Zhi, H.-As AI aims to mimic human cognitive functions. It is bringing a paradigm shift to healthcare,powered by increasing availability of healthcare data n=and rapid progress of analytics techniques. Here we discuss about the status of AI application in healthcare and discuss it in future.[6]

Lichun Li, Rongxing Lu, Kim-Kwang Raymond Choo : This paper generally deals with the problem of the association rule mining from distributed vertically portioned data with the goal of preserving the confidentiality of each database. In this every site holds to find so,or the other attributes of each transaction and it wish to work together to find global association rules without showing individual transaction data.This problem generally occurs when we same users access several electronic shops purchasing different item in each. Here he have to present two algorithms for discovering frequent itemset and for calculating the confidence of the rules.[7]

Guoqi Qian, Calyampudi Radhakrishna Rao, XiaoyingSun :Recent association rule mining are mostly deterministic and intractable for mining a dataset . In this paper we develop a Gibbs-sampling induced stochastic search procedure to randomly sample associationrules from the itemset space and perform rule mining from the reduced transaction generated by the sample.[8]

Rayan Nurbadi ,ArindaAmyus ,BrolynPratma,AbiyyuFawwazKanz,Ahmad Nurul Fajar :Smart Travel System Based on Service Oriented Architecture, 1st 2018 INAPR International Conference ,7 sept 2018 ,Jakarta,Indonesia -In this paper this various travel services are combined into one applications including travel service and given an additional features. How to integrate these services in one application including travel reservation services and give an additional features.[9]

Andre Constantio Da Silva : Has mobile device has many purposes which include commerce,entertainment and education etc. This mobile also have app include many other information they are free. Exactly what features this app have to know this the work is done in this paper in which one tourist have used total 26 mobile applications.Studies have been done on analyzing the data collected by this.[10]

J.Sindhu Sri , N.V.SriSravani , P. Suresh Kumar -Travelling has become a passion now a days. But it is not easy unless we now the places. So there are ways in which we can collect the details about a place but we can face many confusion.In this paper a model is created for guiding traveler with the image matching algorithm in which it gives the information related to the image.In this way the traveler feels comfortable in knowing about the places.[11]

Kuan-Hua Lai , Neil Y.yen , Mu-Yen Chen : – Empowered Recommender System for Travelling Support: Individual Traveller as an Instance ,IEEE 2018 – I n this paper it target to support individual traveller while arranging travel itinerary and travel -related issues through a newly proposed intelligent framework. This framework employs the technique of artificial intelligence,collaborative filtering and optimization algorithm.[12]

Raymond ChiongJofryHadi Sutanto ,Wendy Japtura Jap – A Comparative Study on Informed and Uniformed Search for Intelligent Travel Planning in Borneo Island- In this paper they aim to examine different search algorithms from artificial intelligence that can be used for solving the shortest path problem .We investigate the use of these informed d=search algorithm for intelligent travel planning based on some major cities and towns in Borneo Island.[13]

Jason C.Hung ,Victoria Hsu, Yu-Bing Wang – A Smart Travel System Based on Social Network Service for Cloud Environment ,IEEE 2011- There is rising services and applications are delivered through clouds over next-generations network now. This paper introduce a new tourism system based on SNS IOT, and UGC which we call it as Smart Travel system[14].

Athanasios Kountouris ,EvangeloSakkopoulos -Survey on Intelligent Personalized Mobile Tour Guides and Use Case Walking Tour App, IEEE 2018. This paper introduces a solution an electronic guide applications for Android smartphones and tablets that aims to assist users with guidance to predefined or user defined points interest and routes.[15]
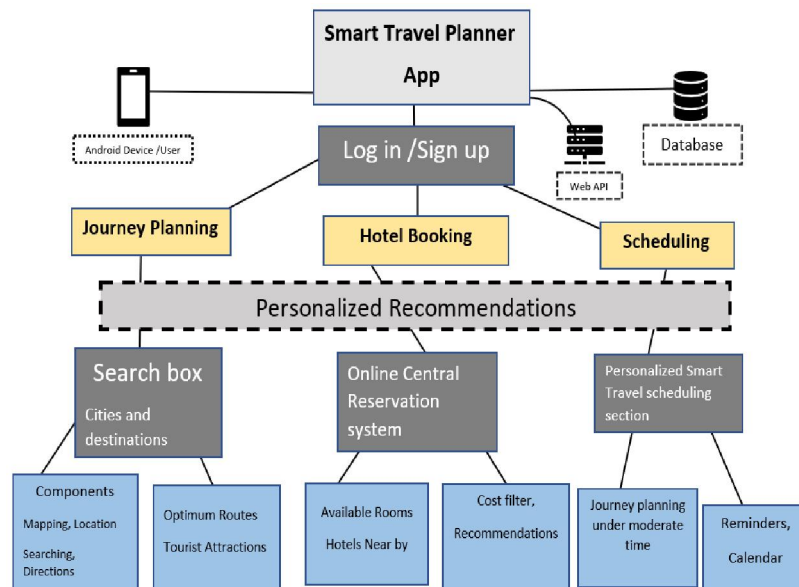
III. SYSTEM ARCHITECURE

Fig.3.1 System Architecture

The smart travel planner app based on artificial intelligence include various modules .The app is developed to make journey easier and enjoyable along with all the planning done.This paper uses collaborative filtering and various technologies to design and implement this system. In this app the users firstly have to signup/login in order to access the app which is the first step indeed.The overall architecture of the system include 3 layers as the main modules which are journey planning,hotel booking and scheduling. After this is the main layer of personilzed recommendation through which the users are reviewing as well as anlazying the places based on there interest.

Up next are the modules which are based on personalized layer of what the user what's exactly.Here there are again 3 modules through which the user can plan more specificially about his journey. Then once the user decides then there are 2 sub modules for each one which is again taken down to make it easier for user to plan the journey. After the journey is finalized then personalized recommendation is given . there is search box for searching various places if the user's didn't find any in which the user can find components such as mapping,searching for directions. Also the user can search for most famous places and find optimun routes to reach there.

Journey Planning

This is the first module of the smart travel planner app based on AI .In this the user can plan the journey according to his/her needs .Firstly it will ask the user if he wants to go in city or visit outside .Then once the user select it will ask the user to enter destination and according information will be provided.The user have to plan for how many days the trip should be planned. There is search box for searching various places in case if user's didn't find any of his interest. In search box the user can find components such as mapping,directions. Also the user can search for most famous places and find optimun routes to reach there.

Hotel Booking

Once the journey is planned and the destination and dates are decided the user can go to the next module which is the hotel booking.If the user in living in the same city and has to visit nearby places which lie there then he can skip this module but for those who are visiting outside for them it is essential to find a stay .So,this modules shows the best

recommended hotels of the places along with its cost per day .Then the user can select based on the recommendation given or can search also.Once the hotel is booked then it will show the reservation system but first it will check for rooms avaliabilty and also the cost will be displayed.If the rooms are obtainable then the reservation can be done.

Scheduling

This is the last module in which once the journey planning and hotel booking is done the user has to schedule the journey by which dates he should start and accordingly, alerts and remainders will be set to remind him about the journey based on the times and dates entered. This will also complete the journey planning process as well as the overall overview of the journey along with time to reach specific places will be cleared.

IV. ALGORITHMS AND TECHNIQUES

Proposed System:

Firstly the user will start and create a account and login the system will receive the input from the user after that main page will shown the main modules after successful login then the user can choose according to his preferences. First is the journey planning where the user will add our search for the preferences of where to go for holiday. Based on the city or places that the user have entered the app will show the optimum route to reach there. Once the place and route is decided then you have to enter the start time of your journey and when to end it. Now here the condition is applied that the journey duration should to greater than 2 hrs and less than 25 hrs if it so then the journey is planned else it will show the message that invalid range .This is because 2 hrs is very less to travel and 25 hrs range is quite long. After the time is set and journey is planned then its comes to an end and the user's feedback is taken about it.

Simultaneously , the other modules works means once is journey is planned then there is hotel booking where you can book hotels to stay if you are visiting outside your city .In which we search for hotels in your area the after selecting one is then it will check for rooms if the rooms are available then it will confirm the booking and you will make the payment and then the journey ends.

After doing this both the third is the alert it is not mandatory , once this 2 things are done then you can set the alert to remind you of the journey for that it will first search for your event and then you will set the date and time and the all the details will be fetched and accordingly you will be reminded of your journey. And lastly the feedback will be asked for better customer service.

Algorithms :

Step 1: Start

Step 2: Create an account login

Step 3: Then Select the option{Journey Hotel Booking and Alert}

-If we select Journey,

Then add preference like (city, Restaurant Park, Mall, Historic Place ,lunch and Dinner}

Enter Start time and End time

If all information is valid then it calculates the paths and then automatically set alarm ,which is start to ring before the journey.

Once the journey is done it shows the done.

-If we select Hotel Booking,

Here we search the hotel room availability then we book the rooms if available.

-If we select the alarm then we set the alarm.

A. Collaborative Filtering

In Collaborative Filtering , we tend to find similar users an recommend what similar users like. In such type of recommendation system, we don't use the features of the item to recommend it, instead we classify the users into the mass of similar types, and recommend each user according to the preference of its mass.

Through this filtering we can recommend many products, places etc,to the user's having similar interest based on there preferences. This method is being used in building recommender system of big data. There are basically four types of

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these techniques through which we can build various recommender systems.In this project we have used collaborative filtering for filtering various places, restaurant according to the multiples user's reviews and similar preferences of two user's based on the area of interest.

B. Tag Filtering

Tag Filtering is a techniques is used for collecting nodes that have some specific tag assigned. We can used this tag filter to tag persons, products, places etc.Through this tag filtering multiple peoples come to know about some particular places, persons etc. Tag filtering is used to increase the area and form a broader connection with large no of peoples. In our project we have used this for tagging persons, places ,hotel so that multiple users using our app will get to reviews as well as more information about the particular things through another user's . This will increase our users as well as more people will come to know about the traveling journey if there are willing to plan one.

C. RSS Filtering

Rss stands for Really Simply Syndication. It's an n easy way for you to keep up with information to you, and helps you avoid the conventional methods of browsing or searching for information to you,and helps you to avoid the conventional methods of browsing or searching for information on websites or apps.

An RSS reader is a small software program that collects and display RSS feeds. It allows you to scan headlines from anumber of sources in a central location.Some browsers ,such as the current versions of Firefox and safari have to built in RSS readers. If you're using a browser that doesn't currently support RSS,there are a variety of RSS reader available on the web; some are free to download and others are available for purchase.

D. Mathematical Model

Association Rule Mining : Association rule technology is also known as shopping basket analysis. Its proposed purpose is to find a certain internal connection between database items from a large amount of data, so as to improve the decision support ability of the application system. The association rules are defined as follows: If the item sets are X □ I , Y □ I and X ∩Y≡□, the implications of the form X => Y are called association rules, which means that a transaction T containing x item sets is also likely to contain Y item sets. Among them, X is called the former item set of association rules, and Y is the latter item set of association rules. If c% of the transactions that contain X also contain Y, then the confidence of the association rule X =>Y is called c%; if s% of the transactions in D contain X U Y, then the support of the association rule X =>Y is called s%.

The calculation expressions are:

$$\text{Support}(X => Y) \; P(X \cup Y)$$
$$\text{Confidence}(X => Y) = P(Y|X)$$

Steps for Working of Google map in app.

1. Calculate the distance between the places (Google API Distance Matrix)
2. Mark all the nodes an unvisited .Set the initial node(start place)as the current node. Create a set of unvisited nodes called the unvisited set consisting of all the nodes (start place) and the destination node(destination node)
3. For the current node ,consider all the unvisited neighbours and search for the nearest one.
4. Mark the current node as the visited ;add it to result tree and remove it from the unvisited set. Then set the current node to the nearest node.
5. If the unvisited set is not empty ,go back to step 3;otherwise go to the next step(step 6).
6. For the destination node(start place),add all of its neighbour, except the initial node(start place) to a set called the unfit set.
7. Search the unfit set for the farthest node for the destination node.
8. Change the position for the fastest node in the result tree by making it as a child and remove it from the unfit set.
9. If the unfit set is not empty ,go back to step 7; otherwise go to next step(step 10)
10. The result tree shows the shortest path between the start place and the destination place.

A expanded overview of the problem encountered during the system and their resolution is provided here.

We were unable to find the API available free that might give us the information of countries and the state and provinces/state mentioned in them. We did find the database maintained by google containing the accurate list of cities. However this database could not be exported ,we had to manually run SQL script to obtain the data from this database of the city, state/province and country names. A frequent issue was preventing the page from refreshing when the user chose a country to load its associated states and again to load the cities associated with those states

Fig . 4.1 Interface for calculating the user-required places.

V. ADVANTAGES AND APPLICATIONS

The Data is very accurate and authentic as we take all the data from Foursquare. Also the user can also find the paths to follow the reach the final destination in map which gives a better view to the users. In this app hotel room system is also available. In one app multiple services are available. Real – life use. The application of the smart travel planner app based on AI are it can planned the journey through app in city or outside the city. Also it can calculate the distance and Optimum route for reaching our destination. And after this it can also check for hotel room booking Services .The full journey can be scheduled through this App.

VI. CONCLUSION

This paper describes about the Smart travel Planner app based on AI how it makes travelling journey easy for the travellers as well as save there time by providing various features for journey planning.

This App Is Smart Travel Planner Based On AI , An AI-Base Intelligent System that Assist Travelers Planning For Their Trips By Providing Them With A Single Application With A Unified Interface For Accessing An Overwhelming Amount Of Travel-Based Information Scattered Throughout The Internet And Also Enables The To Create Itineraries, Calculate Routes And Block Personal Time Slots.

As we are extending our work in future by providing more features in calculating route ,traffic etc.. Similar to we are contemplating utilizing semantic web technologies to return results better customized to user preferences. We also aim to port this application to a mobile platform.In this case ,GPS information from the mobile device may be used to determine the user Information relevant to his current context. Since the performance of any performance of any application can be improved by storing static data in a local database avoiding the need for constantly refreshing this information ,we will thoroughly examine our system to determine which data can be locally stored and also explore what if any, other optimizations can be applied to enhance the system's performance. As many performances of any applications can be improved by storing static data in a local database avoiding the need for constantly refreshing the information and we will thoroughly examine our system to determine locally stored and also explore.

VII. FUTURE SCOPE

We plan to extend this system in several ways in the future :We intend to add additional functionality to the system by providing the hotel room reservation as well as car rental options, email/mobile phone alerts about transportation time. We also decide to improve the "Calculate Route" function by taking current traffic and weather conditions into account when determining the route .In future we will be adding car rental service to our app so that it will be more easier for the people to travel especially for those who are travelling from outside the cities. Transportation ticket Purchase services will be provided which will include the train. ,Bus or plane ticket service purchase.Also we will be adding

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