Bon Voyage: A travel Guide based on Web application

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Abstract - *Bon Voyage is a cross-platform application that plans the itineraries with an integrated chatbot to assist the travelers to find places of interest in and around. The aim is to develop a web application with an integrated chatbot which can assist the user in planning a trip, finding good places to visit, posting his/her experiences on their trip, taking necessary measures depending on the risks and ensuring safety of the users. It is designed to resolve the travel hassles of tourist access travel information anytime, anywhere, on any device and visualize the areas of interest on a map. The focus of the proposed work is to ensure safety of the tourist, by providing information to the user about all risk-prone areas, appropriate measures and precautions to be taken, along with things to be carried, including first aid and jackets based on weather, about the health conditions and other related information.*

Key Words: Cross-platform, itineraries, Chatbot, tourist, Map.

1. INTRODUCTION

The tourism industry is witnessing a rapid growth in the volume of travel sale services through mobile Internet. As the mobile channel is becoming increasingly popular in the tourism industry, researchers and travel industry professionals are now experiencing the differences in the way of usability between the travel website and the travel apps. An average of 2.7 billion people [1] are using mobile phones to connect to the Internet and their major activities including browsing web pages, activating apps and watching online videos.

The primary hurdles faced by the travelers includes (i)travel itinerary (ii)details about the locations (iii)gadgets and other things to be carried. However, these three questions are nontrivial to answer, because urban traffic and weather changes dynamically over time and is essentially affected by many other factors which may affect the trip [6], a trip without proper guidance also might affect the travel experience and incur uncertainty. Considering these effects study has been made on these questions, by developing a mobile application with an integrated chatbot which can assist the user in planning a trip, finding good places to visit, posting his/her experiences on their trip, taking necessary measures depending on the risks and ensuring safety of the users.

This paper is based on developing a web-based application used solely for travelling purpose. The project is a responsive application which involves in collecting data about the user and keeping them in track using GPS, also suggesting the necessary item needed to be taken for the trip and also providing the information about the travel locality. These data are stored in a database and are used for further study.

2. RELATED WORK

In this section, we review and classify relevant previous studies in the domain of travel recommendation into two categories: 1) attraction recommendation and 2) trip planning. A. Attraction Recommendation In the domain of travel recommendation, the first attractive issue is the attraction recommendation. In [2], Abowd et al. propose a hand-held context-aware tour guide named the Cyber guide project which is a series of prototypes of a mobile. The idea of Cyber guide project is to think what activities could be best supported by mobile technology and then determine how the technology would have to work. They consider that a mobile application should take advantage of contextual information, such as position, to offer greater services to the user. In [3], Huang et al. propose a personalized recommendation of tourist attractions at a given destination. They consider that Bayesian network is a good method to support the combination of content-based and collaborative filtering approach. However, the capability of pure content based or collaborative filtering approach is limited in the travel domain. In [7], Horozov et al. focus on investigating the issues for location-based points of interest (POI) in the context of a recommender system. They use location as a key criterion for generating recommendations based on the proposed enhanced collaborative filtering (CF) solution. In [13], Zheng et al. discuss the issue of mining interesting locations and classical travel sequences. In this work, they propose a HITS-based inference model to mine interesting locations and classical travel sequences based on multiple users' GPS trajectories in a given geospatial region. Although the above works can recommend the interesting attractions to user, they do not consider how to plan a travel trip based on the discovered attractions. a1 a2 a3 au a4 20 20 30 30 30 40 65 50 50 50 RS(a1) = 5 ST(a1) = 30 RS(a2)

= 3 ST(a2) = 20 RS(a3) = 8 ST(a3) = 30 RS(a4) = 10 ST(a4) = 50 Current Location tc = 210 Figure 1. Example of a trip map network. 147 153 B. Trip Planning The second issue is the trip planning. In [12], Soo et al. propose a travel agent to recommend a trip plan for a particular traveler. They

consider that communication and negotiation with the traveler is necessary to recommend a satisfactory trip plan for the traveler. A better travel agent should satisfy not only the customer's personal preferences and constraints, but also the complex spatial, temporal, physical and cost constraints. In [14], Yu et al. propose a rule-based tour planning and design methods for facilitating the delivery of location-based recommendation services. Various recommendations can be generated based on tourists' current location and time, as well as personal preferences and needs. However, this work needs the travel expert to define the travel rules. It may not be suitable for everybody. In [9], Lee et al. propose an ontological recommendation multi-agent for Tainan City travel. According to the tourist's requirements, the agent can recommend a personalized travel route to the tourist in Tainan City. However, the numbers of attractions and restaurants are constant in this agent. In [8], Kisilevich et al. address the problem of automatically finding semantically annotated sequences based on geotagged photos. However, it did not consider the travel constraints and user preferences. In [12], Yoon et al. propose a smart recommendation, based on multiple user-generated GPS trajectories, to efficiently find itineraries. In the itinerary recommendation system, users need to provide a start point, an end point and travel duration. In [11], Lu et al. target at solving the problem of automatic travel route planning. They try to improve the efficiency of route planning by the concept of dynamic programming. The dynamic programming searches all possible trips based on the concept of depth first search. In the process, the sub-tree of a node can be pruned if the trip time of the node is greater than the travel time constraint. Hence, the computational efficiency can be improved. The similar pruning idea is referred to several data mining problems such as temporal moving object clusters mining [10], maximal frequent itemset mining [5], and utility pattern mining [13]. In [4], Ge et al. develop a mobile recommender which has the ability in recommending a sequence of pick-up points for taxi drivers. However, the efficiencies of above works are sensitive to the number of location points

3. PROPOSED SYSTEM OVERVIEW

This proposed system is a web-application that works on any web supported devices and can be accessed using a webpage and runs with the help of API's.

3.1 User Interface

The user interface (UI), in the industrial design field of human–computer interaction, is the space where interactions between humans and machines occur. The goal of this interaction is to allow effective operation and control of the machine from the human end, whilst the machine simultaneously feeds back information that aids the operators' decision-making process

REACT: React is a front-end library created by Facebook. It is utilized for dealing with the view layer for web and versatile applications. ReactJS enables us to make reusable UI parts. It is at present a standout amongst the most well-known JavaScript libraries and has a solid establishment and extensive network behind it.

3.2 API

API represents Application Programming Interface, which determines how one segment ought to connect with the other. It comprises of a lot of schedules, conventions and apparatuses for structure the product applications.

NODE.js: An open-source, cross-stage JavaScript run-time condition that executes JavaScript code outside of a program. JavaScript is utilized principally for customer side scripting, in which contents written in JavaScript are inserted in a page's HTML and run customer side by a JavaScript engine in the client's internet browser. Node.js gives engineers a chance to utilize JavaScript to compose order line instruments and for server-side scripting—running contents server-side to create dynamic page content before the page is sent to the client's internet browser. Thusly, Node.js speaks to a "JavaScript all over the place" worldview, bringing together web application improvement around a solitary programming language, as opposed to various dialects for server side and customer side contents.

Google Maps API: Google Maps is a web mapping organization made by Google. It offers satellite imagery, airborne photography, guides, 360° enveloping viewpoints on avenues (Street View), progressing traffic conditions (Google Traffic), and course making plans for passing by foot, vehicle, bicycle and air (in beta), or open transportation.

Highcharts: Is an item library for diagramming written in unadulterated JavaScript, first released in 2009. It was made by Highsoft in Vik, Norway and has been routinely incorporated into the national media, for instance, Finansavisen and Dagsrevyen. The investigation of the visitor visiting an area is delineated in Fig 1 utilizing the proposed App.

Fig 1 Analysis of Number of Tourists

OpenWeatherMap: Is an online organization that gives atmosphere data, including current atmosphere data, evaluates, and recorded data to the creators of web organizations and compact applications. For data sources, it utilizes meteorological impart organizations, unrefined data from air terminal atmosphere stations, rough data from radar stations, and unrefined data from other expert atmosphere stations. All data is set up by OpenWeatherMap with the end goal that it tries to give accurate online atmosphere figure data and atmosphere maps, for instance, those for fogs or precipitation. Past that, the organization is revolved around the social point of view by incorporating atmosphere station owners in partner with the organization and thusly extending atmosphere data exactness.

Voice Search: Google Voice Actions let customers quickly complete endeavors in your application using voice headings. It's another technique to drive use of your application with Google. Customers' voice and substance movement sales would now have the capacity to lead truly to your Android application, so they can get to your nearby versatile experiences quickly and successfully.

Firebase AUTH: Firebase Authentication gives backend administrations, simple to-utilize SDKs, and instant UI libraries to confirm clients to your application. It bolsters confirmation utilizing passwords, telephone numbers, well known combined personality suppliers like Google, Facebook and Twitter, and that's just the beginning. It leverages industry standards like OAuth 2.0 and OpenID Connect, so it can be easily integrated with custom backend.

Firebase Firestore: Cloud Firestore is an adaptable, versatile database for portable, web, and server advancement from Firebase and Google Cloud Platform. Like Firebase Realtime Database, it keeps your information in a state of harmony crosswise over customer applications through real time audience members and offers disconnected help for portable and web so you can manufacture responsive applications that work paying little mind to arrange idleness or Internet availability. Cloud Firestore likewise offers consistent mix with other Firebase and Google Cloud Platform items, including Cloud Functions.

The Times of India API : With the Times of India API, we can get News and Current Affairs in India and around the globe. This API gives all the present news with photographs and recordings. Remarks are likewise upheld. This API likewise gives Photo Gallery and Video display. This is an official API of Times of India

4. PROPOSED METHODOLOGY

In the data preparation, crowd sourcing is used to create a dataset to obtain data. Based on the information gathered from the people about a place, risk factors, availability of water and food, whether it is a kids-safety zone or animal zone, things to be taken for journey, transports available and networks available in the zone are stored Cloud. The locations that fall within the high-risk zones are shown in the map. The latitude and longitude coordinates sensed by GPS are tracked and the location to be visited is shown with all the information and blips related to the zone via a mobile device app with the geographic location marked on the Google Map using MAPS.ME API. The focus of the proposed work is to ensure safety of the people who travel by providing information to the user about all risk-prone areas, measures to be taken, things to be taken including first aid and jackets based on weather and health conditions and other related information based on the experience of the travelers.

4.1 Data Acquisition

The data is acquired through crowd sourcing. Any data acquired from the client is stored into a database. The appropriate actions are done in the backend and it is accessed again in the client using API endpoints.

4.2 Feed acquisition

A REST based web service is used to collect the dataset and integrate it into an Web app. The data that is acquired from various source are validated and processed through the testing process. Thus the processed data is fed into the different components of the UI. The users can interact with the UI to obtain necessary details from the application.

4.3 Extraction of factors

Extraction of factors is based on the experiences shared by the users which is stored in Cloud. When a user selects a particular location as his destination, all the factors corresponding to the zone extracted from the dataset is shown.

4.4 Query enquiry:

A chatbot facility assists in planning a trip, finding good places to visit, posting his/her experiences on their trip, taking necessary measures depending on the risks and other queries. For the Colombo city the weather details is depicted as in Fig 2. This figure reveals the date and time along with the weather related parameters. The sunrise and sunset at Colombo are also depicted in the weather display option of

the App. Similarly the analysis of tourist visiting this location is represented in Fig 3 using a High chart. The x-axis represents the number of tourist visiting Colombo against the year represented in the Y-axis.
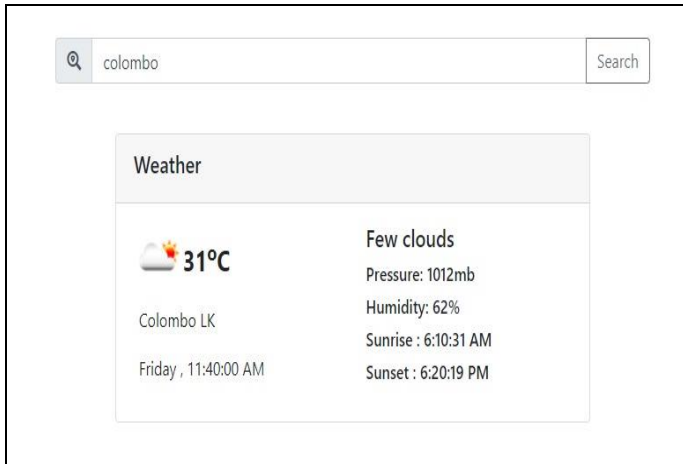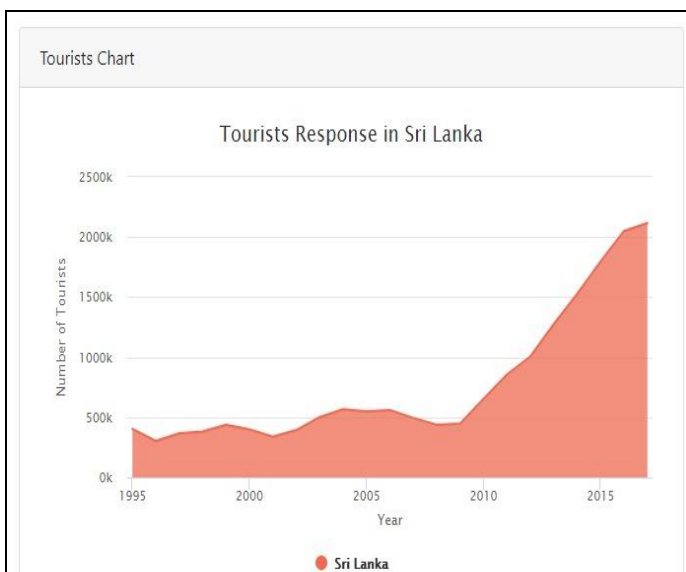

Fig 2 Weather Display

Fig 3 Tourist response in Location

5. RESULTS

In the execution of the project, the parameters, which are held to be the unique perks about it, are taken most care of. This can then translate to a better user experience in later stages. The Login page is made to look appealing to the newer users. It displays the logo of 'Bon Voyage' with login email and password text boxes. Also, a 'remember me' tick box is given so that the password can be remembered. Login and Signup buttons are presented to submit and a backup forgot password link is given to provide assistance if password if forgotten by the user. The side drawer has the options to access the modules and also 'Offers' option to

grant offers to frequent or new users to encourage people to use the project. Besides the modules there is a Logout option to log out the user and Help option to provide assistance to naïve users helping them learn the features.

6. CONCLUSION

Bon Voyage: A smart travel planner is designed to take away the user efforts usually needed in planning travels, be it everyday travels or outing to a tourist destination. In that regard, all the necessary details, needed by the user to reach from one point to another is provided, constantly throughout the travel period. This facility can be accessed using the website through a desktop or a laptop computer before the actual journey commences or by the smartphone application on the time of the actual journey. Most of the website and application environment are centered towards channeling the users mind to embrace it actively so that there can be a brighter future of tourism industry with a boon to everyday travels as an added advantage.

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