

A Review on Tour Guide System Using Mobile Augmented Reality

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ABSTRACT: The application mainly consists of mobile tour guide system. The system provides tourists an augmented information. Augmented reality is direct or indirect view of the physical environment. The augmented information will help the tourist to know about the places and also the physical presence of that place on their mobile phones. The application provides the augmented information i.e. 360 degree panoramic view of those places which user wants to see that means user can see the places on their mobile phone. The GPS facility is also available for the tourist so that they can search for the places. This Paper describes the features and related work on different android applications based on augmented reality.

KEYWORDS: Augmented Reality, 360 degree panoramic view, GPS, Android Application

I. INTRODUCTION

Tourism is one of the fastest growing industries. In order to guide tourist, there are various types of tourist guide methods such as paper based tourist guide, various tourism websites and applications etc. These are the commonly used tour guide systems. Paper based tour guide system is a traditional tour guide system. This type of system consists of paper based information about the place as well as the images. The main drawback of paper based tourist guide system is that the information is not updated and it will take time to update the information about the place. Also it is difficult to find the location from the paper based system. The problem with websites is that they do not provide the 360 degree panoramic view. There are some applications available with 360 degree panoramic view but problem with those applications is that they are GPS based in which user has to connect with the network and then only user will be able to see the view.

To overcome from these problems the smart booklet application was proposed. The application consists of mobile tour guide system. The application will help the tourist to find the best location also the information about the place and it will also provide the augmented view so that the interaction between the tourist and the place will be easy. Tourist can easily understand where the place is, how the place is and he can easily visit that place whenever he wants.

The GPS facility is also available for the tourist to find the places easily. The tourist will experience the physical presence of the location on their mobile phones which user wants to visit. The tourist can also give a feedback (comments and ratings) about the place and also he can see the feedback of other people.

II. BACKGROUND OR RELATED WORK

The smart booklet is today's need for tourists. There are articles on websites and blogs to teach how the augmented reality works. There are reputed websites which also provide the information of tourist places. Other than these reputed websites there are some android applications they also used as tour booklet. Almost all work done on augmented reality is surveyed and studied the challenges and how can better systems be developed [1]. A review of ten years of ISMAR is done [1]. Other than this a booklet is made using 3d rendering for a stand-alone device [2]. Another approach for implementing the augmented reality is the gesture recognition technology [3], based on the 3D motion tracking of human. The human interaction with the virtual world is implemented [4]. In this project the

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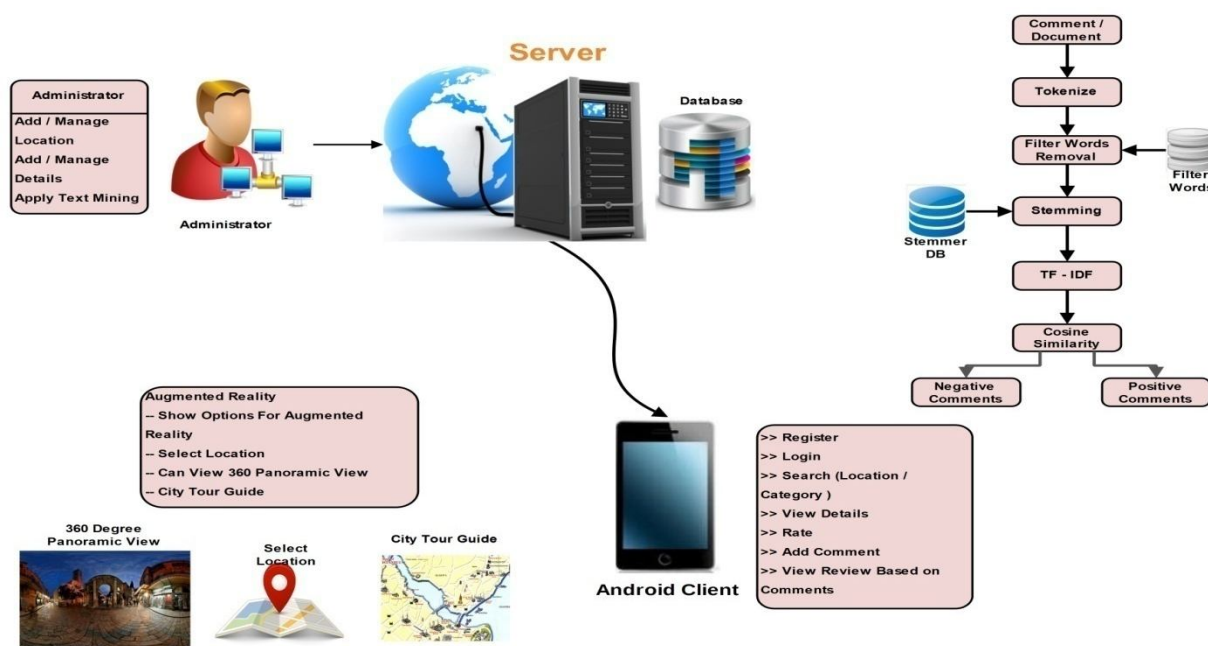
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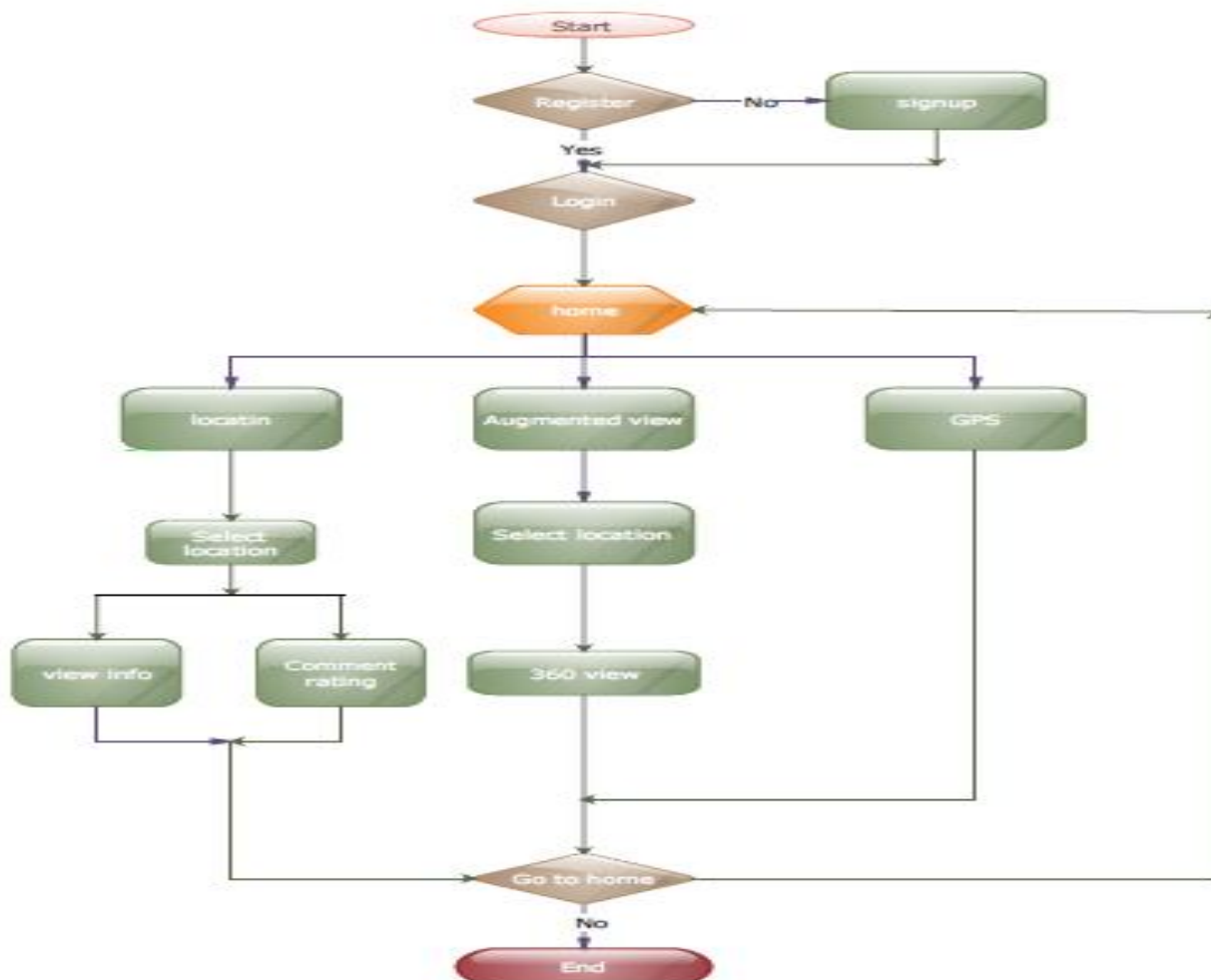
coordinate system and 3D rotation matrix transformation is used to support the virtual approach. As the AR is very wide area there are various approaches to implement it. In this project the coordinate system and 3D rotation matrix transformation is used to support the virtual approach. As the AR is very wide area there are various approaches to implement it. The work on 360 degree view is presented using photo AR technique. They used the handheld devices like smartphones and tablets as a controller. By using tablet user can move in the store. User can see the panoramic view[5].

III. PROPOSED METHODOLOGY AND DISCUSSION

Android clients will register themselves to the system (application) .Then client authentication is performed by administrator after successful registration. If they are already registered then they will just login by using the UID and password. When the client logs in to the system ,the client will view three options.The first option will have the list of the different tourist locations and places,the second option will be the augmented view option which will have the augmented(360 degree panoramic view) of the different locations and the third option will be the GPS option. Whichever option the user selects, then that information is sent to the server.The server then requests the system and provides the result to the android client. If the user selects first option then from the list of different locations displayed the user will select anyone tourist location which he finds interesting and after selecting that location the user will be able to view the positive and negative comments given by different people who have already visited the location,rating of the location and some information about the location.If the user does not finds the location interesting then the user can directly move back and view the next location or tourist spot among the spots displayed and if the user finds the location interesting and wants to view that location then the user is supposed to go back to the window that displays the Three options and select the augmented view option.By selecting that option the user will be able to view the 360 degree panoramic view of the location which will give the user a feel that he is already present in that location.Apart from all these things a tourists also requires where exactly that location is and the nearby hotels , ATMs , bus stations etc ,So for this purpose the third option that is the GPS option will allow the user to have an idea regarding all these things.



Architecture Diagram



Flow of Application

Introduction To JSON Parsing

JSON stands for Java Script Object Notation . JSON is lightweight data-interchange format that can be easily read and write and for machines to parse and generate. JSON is mainly based on the object notation of the JavaScript language. It does not require JavaScript to read or write because it is a text format that is language independent.

JSON notation contains five basic elements :

1. Objects : Objects begin and end with curly braces({}).
2. Object Members : Members consists of strings and values , separated by colon (:). Members are separated by commas.
3. Arrays : Arrays begin and end with braces and contain values. Values are separated by commas.
4. Values : A value can be a string , a number an object , an array , or the literals true , false or null.
5. String : Strings are surrounded by double quotes and contain Unicode characters or common backslash escapes.

Implementation of 360 degree panoramic Projection

1. Read the image from the SD card.
2. Send the image to JSON(Javascript Object Notation).
3. JSON loads the image.
4. JSON reads the properties of the image like

a)Hotspot in image

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b)Type of image

c)Alpha channel for Hotspot

5.Set the sensor location parameters:

a)sensitivity for accelerometer.

b)Initial angle

In this way JSON panoramic image is generated by JSON.

Stemmer Algorithm

A stemming algorithm is a process of linguistic normalization in which the variant forms of a word are reduced to a common form, for example,

connection

connections

connective ---> connect

connected

connecting

The stem need not be identical to the morphological root of the word; it is usually sufficient that related words map to the same stem, even if this stem is not in itself a valid root. Algorithms for stemming have been studied in computer science since the 1960s. Many search engines treat words with the same stem as synonyms as a kind of query expansion, a process called conflation. Stemming programs are commonly referred to as stemming algorithms or stemmers. The rating for each and every location which will be decided on the basis of positive and negative comments that are given by different users the Porter Stemming algorithm and the Binary Term Frequency algorithm will be used.

The rating will be obtained as follows

1.The file which will have comments entered by the different users will be taken as input.

2.The file will be parsed which means sequentially word by word and line by line it will be loaded.

3. The file will be tokenized in the form of words.

4.Then the porter stemmer algorithm will be applied which will find the root word of every word present in the file.

5.Then after that pre-processing will be performed in which all the stop words which means words like this, that,was,wereetc which do not indicate whether the comments is positive or negative will be removed and only those words which decide whether the comment is positive or negative will be shortlisted.

6.After this the Binary Term Frequency algorithm will be used which will count the number of positive and negative words(these words are the root words which are obtained by the porter stemmer algorithm).If the word is positive then it will be marked by 1 and if the word is negative then it will be marked by 0.

7.Cosine similarity will be performed in which the total number of 1's and 0's will be counted.Which means the number of positive and negative words will be counted.

8.By doing so if the number of positive words are more then the comment is considered positive and if number of negative words are used then the comment is considered negative.

9.Finally based on the number of positiveand negative comments regarding a particular location the rating to that location will be given.

IV. CONCLUSION

Due to increase in tourism people need to know the information and popularity of the location they are visiting. We have implemented an android application of tour guide using augmented reality. Our system successfully helps touriststo get the exact information and proper visualisation of locations. We have applied our system in area of tourism and it helps visitors to get the detailed panoramic view of that location.

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