Novel Design of Data Extraction for Urban Area using GPS and Data Warehouse

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Abstract— The fast and efficient exchange of information is the need of future mobile applications. There are 95 percent people who use mobile phone for communication and out of which 55 percent people use smart phones [10]. Using mobile phones to obtain information is not only quick, but also more convenient and shortcut to improve people's lives. In this paper, we propose an Android Application based on web services for pune city tour guide. City Guide Android application is an application for searching information of hotels, restaurants, shopping malls and spiritual places from user's current location using GPS embedded on user's smart phones. Along with these features, application provides latest offers, news of events conducting on various places and reviews.

Key words: Android, Mobile computation, GPS, web server, data warehouse

I. INTRODUCTION

The survey from the Pew Research Center's Internet & American Life Project[10] has found that cell phone ownership among adults has exceeded 90%. Cell phones are now being used by 91% of adults, according to the survey conducted between April 17 and May 19 of 2,252 adults. Smart phones are thus widely used with which they provide various applications and functions that makes human life easier. Most of the applications depend on internet and other internet services.

We propose to design and implement a City Guide Android application which will be helpful for user to find and navigate to hotels, restaurants, shopping malls in the city from his current location and with the help of inbuilt GPS system it navigates user to its destination. E.g. When a person enters into city not having any idea about the place and not knowing anything about the city, in this case the person either asks people or searches on internet for information.

With the first option it has a drawback that if that person is unaware of local language, then it's very difficult for that person to communicate with other people. With second option to find information is very hectic process. As such all information is available on internet but not in integrated manner , to find single place in city we have to visit many different site for information one site , images other site and for map another site.   With our proposed approach we provide all this information on single click of user.

Now a days smarts phone run on android operating system. These android applications are widely used by human that cause more and more programmer's moving towards mobile computing fields. Android platform is of open system architecture, with versatile development and debugging environment, but also supports a variety of scalable user experience, which has optimized graphics systems, rich media support and a very powerful browser.

Android is a package of software for mobile devices, including an operating system, middleware and core applications. The Android SDK provides powerful tools and APIs necessary to develop applications on the Android platform using the Java programming language.

II. LITERATURE SURVEY

From the literature survey we found that there are many tourist guide application, using the new technology to enhance the quality and functionality of products. A Personalized online travel time predication model[1] involves time predication model aims to address urban traffic issues from individual perspective. It is able to offer a predication time to reach the destination with current travel status. It provides information of hotels, scenery, restaurants, and traffic in the city. Lack of using GPS system which enables to provide route and transport facilities. In travel guide using GPS [2], author proposed a system and mobile application which tracks the current position of the user and send it to the server which will send the requested information about bus stop & related bus information to user. The system will reduce the waiting time for travelling. This is beneficial for user to move around the city but does not provide all the information about the city.

Android city tour guide system based on web service[3] implements a system which help user to find nearby locations, their maps and other necessary information. Like M-indicator[8] is available for Mumbai city which provide all information about Mumbai transport system, time table of local trains, Bus time table and other information. Travel guide using GPS Like system provide only traffic information, some system does not provide GPS for navigation.

Mobile travel guide by using android[9] and Mobile Location based tour guide[3] are some system developed to provide information based on user current position. System track user location with the help of GPS and responds to his queries and navigate him to destination.

The Protected Urban Planet App "PUP Sight Guide" [7], provide an innovative city guide application for world Heritage city. Mobile Applications for Cultural and Historical Places application also provide same functionality but only for historical and cultural place in the city. This application provides basic information about the historical place and about its culture, also provide navigation information and transportation facility to reach historical place. Some applications provide geo graphical information with the help of augmented reality for providing information visualization for city CityViewAR: A Mobile Outdoor AR Application for City Visualization[6], this application provides information about the building, historical places, spiritual places that are no more present, got destroyed in earthquake's or other natural disasters. This will provide information in different formats including 2D map views

augmented reality or visualization of 3D models of buildings or photographs.

All the above mentioned system provides guidance to the tourist but also have the limitations as following:

1) Some of systems do not use the GPS system so Navigation not provided clearly.
2) Limited piece of information is provided.
3) Daily news and offer not provided by existing system.
4) Tourist systems are available but for specific domain e.g. only for historical places or heritage place [7], not covering all other information.

Because of all the above limitations we propose a system that will cover all the information and provide all functionality that will help user to get information more easily.

III. PROPOSED SYSTEM

We propose an android application for city guide which will cover all the limitations of existing systems. It will provide all functionality like searching specific location based in user current location and provide a navigation path and available transportation facility to reach destination. It will also provide information about various event, functions going to held in city with their information like place, timing and tickets. In this system user can submit his/her review about the place and system and can read others reviews.

In this system GPS functionality is used, System provides surrounding information on user query, functionality based on the user's current position. And user's current position is achieved through the GPS embedded in the smart phone. We propose the following system architecture with following components.

Fig. 1: Proposed System Architecture

A. System Database:

Database is responsible for data storage. We propose use the SQLite database, SQLite is ACID-compliant and implements most of the SQL standard, using a dynamically and weakly typed SQL syntax. SQLite is a popular choice as embedded database for local/client storage in application software such as web browsers. It is arguably the most widely deployed database engine, as it is used today by several widespread browsers, operating systems, and embedded systems, among others. SQLite has bindings to many programming languages. Database contains different table contains different attributes. Information about places contain and unique id for each place, name of place, address and transportation facility.

B. Web Server:

This is important component which integrate the client with the server. Web server is responsible for data processing and responding user queries. This is an intermediate between data storage and data display. Java language is used to develop a web server. A web server is developed on a personal computer.

IV. IMPLEMENTATION

A. Android Architecture:

Android is based on Linux open source mobile phone operating system announced by Google in Nov 2007. Android system uses a layered architecture, from the top to the lower are the application layer, application framework layer, system runtime library and Linux kernel layer. Android architecture and its main components are shown in Application layer provides a wealth of core applications, including email client, SMS short message programs, calendar, maps, browser, etc. All applications are written using the JAVA language. Application framework layer simplifies the reuse of components, any application can publish or use other applications released block. System runtime library contains a set of core runtime libraries and the Dalvik virtual machine. Linux core layer which use of YAFFS2 file system is used to provide services underlying systems, and it locate between hardware and other software layers.
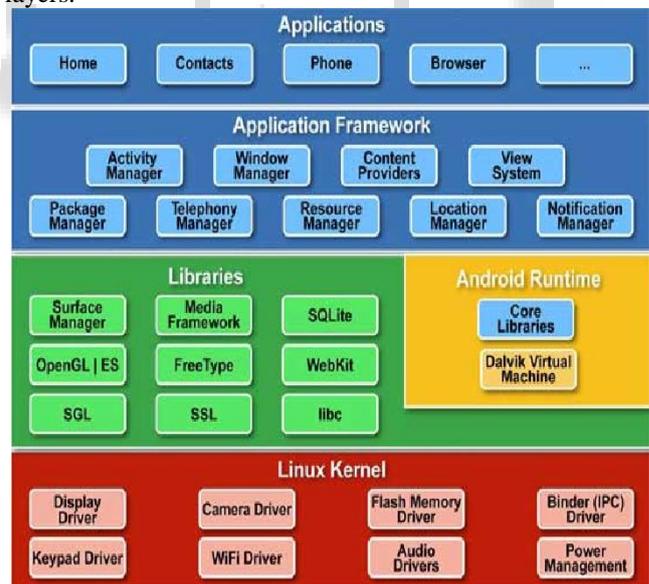

Fig. 2: Android Architecture

B. Module 1: Android Application

Front End of system is an android application installed on user android cell phone. We are going to provide simple and interactive user interface. 1st there is a Loading screen ,then a user Registration form will be there to get some user information just for knowing how many user are using this application. This information includes user name, email address and phone no.
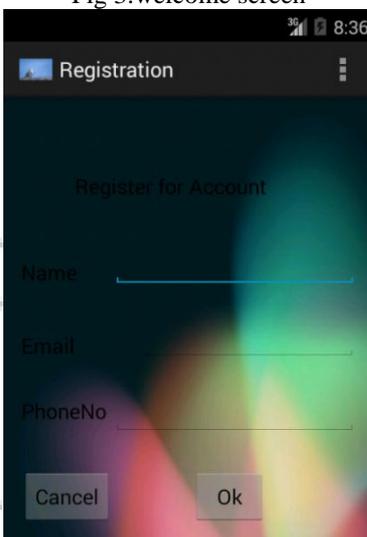
Fig 3.welcome screen

Fig. 4: Registration screen

After the registration form Home page will be show. Those include various options and setting menu. User can select particular option and get the all information from the

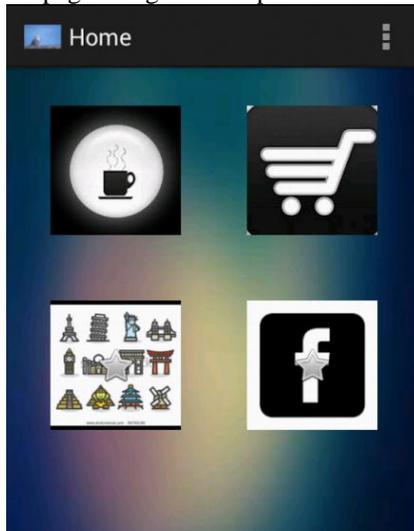Next page and get the map to reach destination.

Fig. 5: Home page screen

There is a facility which provides users to add post by filling, add post form. Before other user see this post, this post is verified by the administrative person. and only after verified by admin this post is visible to other users. There is Review and feedback form for user in which user can give feedback and can read other user feedback. Rating facility also provided to user.
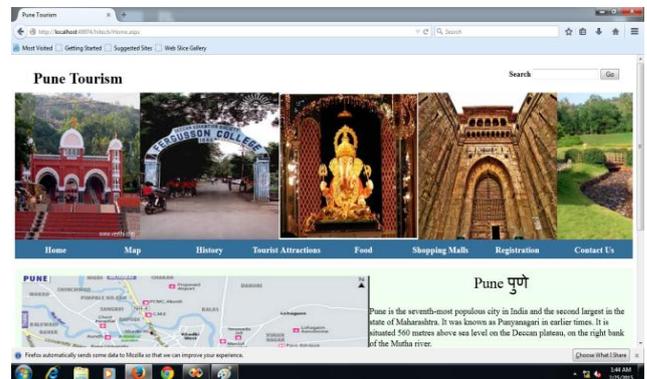
C. Module 2: Website designing

Fig. 6: Home page screen
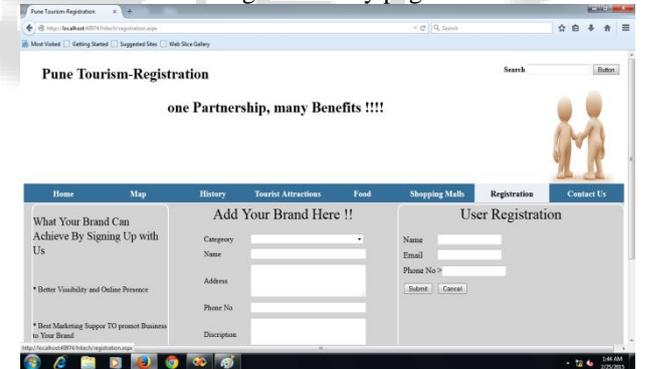

Fig. 7: History page

Fig. 8: Registration page

In the website designing, we design the website for user. User can access the application from the website and through phones. Home page contains map for pune, some popular place image and some information about pune city. History page contains all the information about the pune history. Registration page has two registrations one for user and second is for any owner who wants to advertise his brand on our website. Shopping mall page contains the events, offers in different malls. Food has all the restaurant information, reviews.

V. CONCLUSION

In this Paper, we developed a city guide android application based upon android operating system. Also for availability, website is also developed. These application tracks user's current location using GPS system embedded on user smart

phone and provide all nearby place information like shopping malls , restaurant and hotel, also provide map to navigate user to destination, with various other facilities like showing offers, reviews etc.

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