ISSN: 2278 – 1323
International Journal of Advanced Research in Computer Engineering & Technology (IJARCET)
Volume 5, Issue 4, April 2016

DESIGN AND IMPLEMENTATION ANDROID APPLICATION TO PROVIDE INFORMATION ABOUT PUNE CITY

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Abstract - *Today there are separate mobile applications available for services like hotels, picnic spot, hospital, ATM, Police station, bank details etc. This becomes time consuming to search for services over different application. In Our proposed system Location based Services give many advantages to the mobile users to retrieve the information about their current location and fetch that data to get more useful information near to their location. With the help of A-GPS in smart phones and with help of Web Services using GPRS, Location based Services can be implemented on Android based smart phones to provide these value-added services for advising clients providing routing information, helping them find nearby hotels, picnic spot, hospital, ATM, police station , bank. This system is a mobile based application system. It provides information for new visitor in Pune by displaying schedules of buses, trains, day and night auto fares, hotel hotels, picnic spot, hospital, ATM, police station, bank. In our proposed system which is helps people to find the buses, trains, and picnic spot based on city. This application will provide information about each service. It offers many benefits like saves cost, time and provide various information through one application.*

***Key Words*: Location Based Services, GPS technology, Haversine algorithm, searching, Android.**

1. INTRODUCTION

The idea of using the mobile handsets and Mobile phone is to convey the expensive services except the basic message that had been started in the early 1990s. When Internet was added in Voice Telephony. Location-based services refer to a set of applications that exploit the knowledge of the geographical position of a mobile device in order to provide services based on that information. Location-based services offer many merits to the mobile clients.

Mobile tourism is comparatively a new tendency in tourism and involves mobile devices as electronic tourist guides. While most of the technology is already available there are still some issues to be considered such as design, usability, and functionality. Location-based services or LBS pass on to a set of applications that develop the information of the environmental position of a mobile phone tool in order to provide services based on that information. Location-based services (LBS) provide the mobile clients personalized services according to their current location. They also open a new area for developers, cellular service network operators, and service providers to expand and provide value-added services providing routing information, helping the users to find nearby picnic spot. Location-based services offer many merits to the mobile clients. To determine the nearest location such as a Picnic spot or Hotels.

Maps Navigation- The users can use the Google Maps to get to the particular location or to trace the route between any two locations.

Location based Services can be classified in 2 categories:-

a) Public Safety / urgent situation Services: The location of the client can be determined by the mobile carrier hence it finds great use during Emergency since it can be used during the emergency/health hazard to locate the mobile clients.

b) Consumer Services: Now days, smart phones like (Android, Blackberry and iPhone) provide a set of location based applications and services which helps the users to access the many services based on the user location.

This system is a mobile based application system. It provides information for new visitor in Pune by displaying schedules of buses, trains, day and night auto fares. It saves time as it is not required to visit different sites of different services. This mobile application will give ease and faster access to all information that is required about the city. This becomes time consuming to search for services over different application. This application allows users to:

- -Search buses by route number or start and stop destination names. View the route details showing list of stops.
- To determine the nearest Hotels and Picnic Spot
- Friend finder or acceptance the location of the stolen cell phone.

A geographic information system (GIS) integrates hardware, software, and data for capturing, managing, analyzing and displaying all forms of geographically referenced information. GIS allows the data to be viewed,

understood, questioned, interpreted and visualized in numerous ways revealing relationships, patterns, and trends in the form of maps. Mobile devices present many unique characteristics that make their use as electronic tourist guides particularly attractive, such as ubiquity and convenience; positioning: by employing technologies like GPS, users may receive and access information and services specific to their location.

Tourism is a worldwide industry which involves the propagation of large amounts of information. As in most industries, Information Technology has penetrated the field of tourism for the manipulation of such information. The of IT and communications technologies and the rapid evolution of the Internet has been one of the most influential factors in tourism that change travellers behaviour. The granularity of location information is most accurate (Latitudes and Longitudes.

2. BACKGROUND

In the last few years, the smart phones have taken over the market of Nokia based Symbian Phones in India. And these smart phones come with specific function of A GPS functionality which provides the useful coordinates of the user location. Android Network Location Provider determines user location using mobile phone tower and Wi-Fi signals, providing location information in a way that works indoor and outdoor, responds faster, and uses less battery power. Assisted GPS, also known as A-GPS or AGPS, improves the performance of standard GPS in devices connected to the wireless network. A-GPS increase the location granularity of cell phones (and connected devices) in two ways:

- A-GPS develop and stores information about the location of satellites via the mobile phone network hence the information does not need download.

-By helping position mobile device when GPS indications are not strong or not present. GPS satellite signals made problematic by tall towers, and they do not clear building centers well. A-GPS uses to region a close around the mobile phone keeps to calculate location when GPS indications are unreachable. It addresses signal and wireless web problems by using help from other services. Such a technology in our smart phones can help in various ways like tracking current location, receiving turn-by-turn way instructions and route tracking, etc.

2.1 Limitations of the existing system:

The traditional manual generations of tourism application a lot of problems which may include the following?

- A lot of error may occur as a result of confusing the new visitors.
- Perfectly not found particular task & add to new visitor.
- It is require more time to display particular nearest location.
- It is not flexible as changes may not be easily made.

2.2 Advantages of the proposed system:

- It greatly reduces the time needed to generate nearby hotels, picnic spot, hospital, ATM, Police station, bank.
- It provides an easy to handle.
- It increases productivity.
- It simplifies the Display time table for Train & bus and also displays emergency services.
- It reduces time.

2.3 Project scope:

The proposed systems was developed to solve the problem being faced by new visitors in Pune reduce the time and save cost involved in the location of nearby hotels, picnic spot, hospital, ATM, Police station, bank and also give the information of Railway, Bus, Auto Fare. The system has capabilities for input of the various buses, trains, hotels, picnic spot and the specification of a few constraints from which the display Time for buses and trains and also display the nearby hotels, picnic spot, hospital, ATM, Police station, bank in their current Location.

3. PROPOSED SYSTEM

System architecture shows the overall plan or model of a system consisting of all specifications that gives the system its form and structure i.e. the structural implementation of the system analysis. This application use to find out picnic spot and restaurants and hospital which are nearest to current geographical location of

mobile device also it can be find schedule of transport service like Bus, Train & Auto.

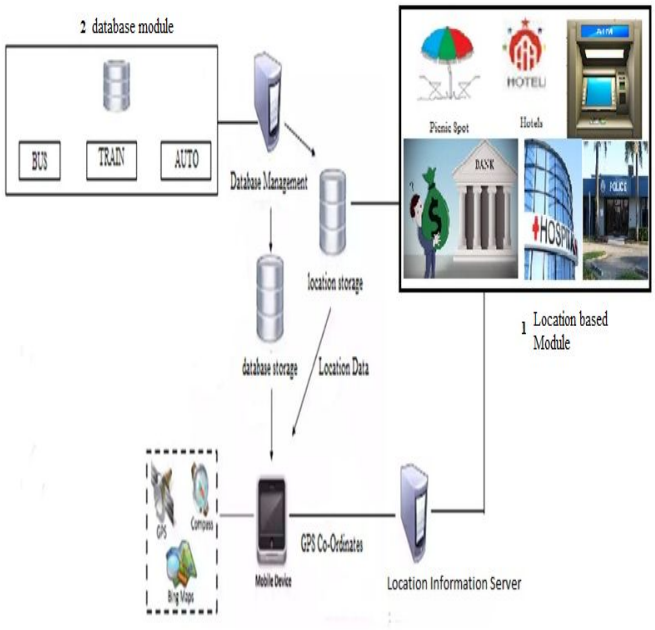

Figure No 1: Proposed System Architecture

In above figure the client side i.e. user can be transfer the GPS co-ordination in location information server through using Bing Maps, compass and GPS. After this information can be store in location storage server. This server can be sending the location co-ordinates to the mobile device. Also the user can be retrieving the schedule like Bus, Train and Auto. Bus and Train can be display the schedule of proper time to that user destination, and also auto can be display the kilometer wise fare.

3.1 Need of Pune tourism

- Different user use different way to go to their specific location in searching and finding the content to different application. Some user need to spend time by going location in finding the appropriate application
- With respect to the user come in Pune, an tourism application provide schedule on train and bus & also display the distance wise fare. There is need of user to use this application and it can be more useful to them. This will allow the every user to use easily and friendly.
- Many a times the users have to search nearest picnic spot and hotels wise every time different application, this makes them to pass through different application taking time. To overcome this, problem can be provided by all information like bus, train, auto and also display the nearest picnic spot, hotels, hospital and their address.

4. ALGORITHM IMPLEMENTATION

The Haversine formula is an equation important in navigation, giving great-circle distances between two points on a sphere from their longitudes and latitudes. It is a special case of a more general formula in spherical trigonometry, the law of Haversine, relating the sides and angles of spherical triangles.

In our proposed system we can derive law of Haversine one needs to start the calculation with spherical law of cosine i.e.

$$\cos a = \cos b * \cos c + \sin b * \sin c * \cos A$$

One can derive Haversine formula to calculate distance between two locations as:

$$a = \sin^2(\Delta latDifference/2) + \cos(lat1).\cos(lt2).\sin^2(\Delta lonDifference/2)$$

$$c = 2.atan2(\sqrt{a}, \sqrt{(1-a)})$$

$$d = R.c$$

where,
ΔlatDifference = lat1 – lat2 (difference of latitude)
ΔlonDifference = lon1 – lon2 (difference of longitude)
R is radius of earth i.e. **6371 KM or 3961 miles**
And **d** is the distance computed between two points.
Here is the example result delivered by Haversine

Formula:
Let's take one of latitude-longitude for calculation distance,

SOURCE: Sahakar Nagar
Latitude: 18.492672 Longitudes: 73.848844

DESTINATION: Parvati Hill
Latitude: 18.494901 Longitudes: 73.844111

Do compute the distance with the above written formula.

ΔlatDifference = 18.492672 - 18.494901 = -0.002229

ΔlonDifference = 73.848844 - 73.844111 =0.004733

$a = \sin^2(\Delta latDifference/2) + \cos(lat1).\cos(lt2).\sin^2(\Delta lonDifference/2)$

$a = \sin^2(-0.002229 / 2) + \cos(18.492672 \cos(18.494901).\sin^2(0.004733 / 2)$

$a = \sin^2(-0.0011145) + (0.498364)(0.948351)\sin^2(0.0023665)$

a = (-0.0011144) + (0.498364) (0.948351)(0.002366)

a = - 0.0011144 +0.0011182

a = 0.0000038

c = 2.a tan2 (√a, √(1−a))

c = 2* 0.0000038 tan2 (√0.0000038, √ (1−0.0000038))

c = 0.0000076 * tan2 (0.00194, 0.99999)

c = 4.59238

d = R.c

d = 4.59238 * 6371

d= 2925 m OR d= 2.9 km.

Here we calculate the distance between Source and Destination using the haversine Algorithm. By using that we can find nearest places of current location of mobile devices.

5. SCREEN SHOTS OF APPLICATION

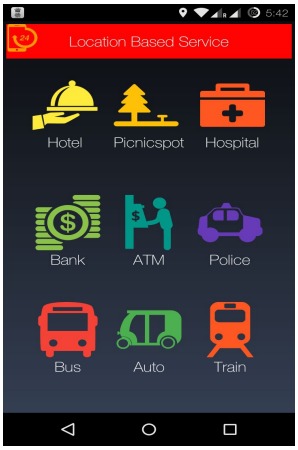

Fig.2 Homepage

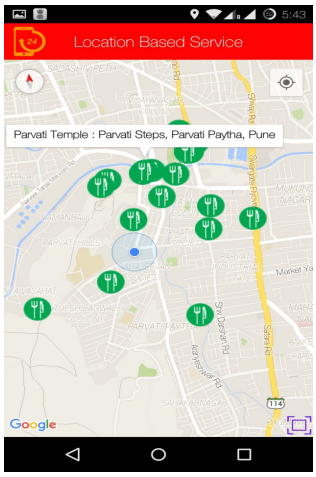

Fig.3

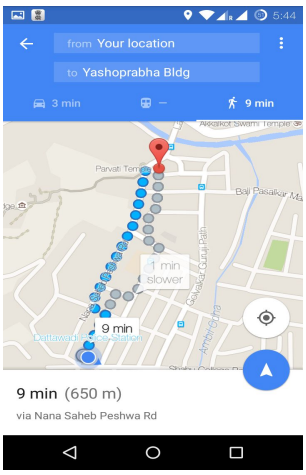

Fig.4

In our proposed system there are six module which work using GPS to find the nearby places of current location of mobile device. As per fig.1 If click on the picnic spot icon it shows the all nearby picnic spot of current location of mobile device. Then select any one of the place from all find places. After it as per fig.2 then click on navigation bar to navigate the path from current location to desired find out location.

Same as picnic spot module all other module like to find out nearby hotels, Hospital, Bank, ATM ,Police Station are work.

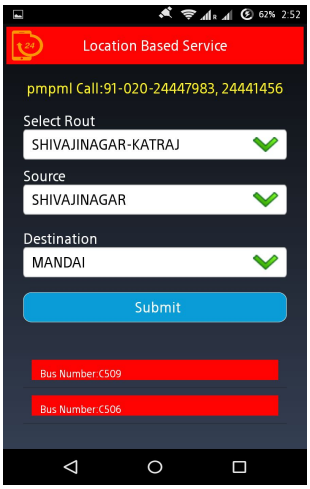

Fig.5

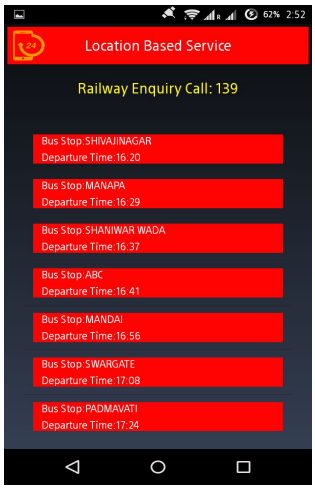

Fig.6

In proposed system there are three static modules which are useful for gives the information of about pune transportation service like Bus, Train,Auto. In fig. 5 ,Bus module it help user by show the bus which actually neccesary to him/her for it user gives source and destination bus stop to application and fig.6 it shows bus number and time of bus. Same like bus module Train module givesthe information about train time. In Auto module , user provides the source and destination autostop then it shows diastance between source and destination with fare of that particular distance.

Parameter	Existing System	Proposed System
Time Required to use system	Different application use there for it is time consuming	Different module are used in one system hence it is Save time
Use of system	Find out information by Manual or Book or diff apps .	User can be handle easily .It can display accurate time table & their Location.
Flexibility of system	Changes may not easily made.	Changes made by admin.
Simplification of system	Display time table & location But different application.	Display nearest picnic spot , hotels & train ,bus time table in one application.

5. RESULT AND ANALYSIS

This result is generated on the base of testing of application with the existing system

6. CONCLUSION

The main aim of the project is to provide an ease to use application for searching information about Pune city such as PMPML bus timings, trains Auto-Fare and to search for different places etc. Therefore by integrating all such module " PUNE TOURISOM" android application is developed. The application has been implemented and tested on real devices. Thus, this project successfully demonstrated a mobile based “PUNE TOURISOM" android application.

ACKNOWLEGEMENT

The authors would like to thank Mr. Ramesh s. Lavhe sir, professor at Anantrao Pawar college of engineering & Research, Pune for providing us generous support and help in terms of the information of PUNE TURISOM mobile application.

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