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An Android Application for providing information on public transportation in Coimbatore

V.Naveena[1], Ragini[2]
B.E-CSE[1, 2]
Kumaraguru college of technology
Coimbatore,India.

N.Jeba[3]
Assistant Professor[3], CSE Department,
Kumaraguru college of technology
Coimbatore,India.

Abstract— **In a stressful environment it is a hectic task to catch the appropriate bus. The application gives us the exact bus routes from one locality to another along with the timings for each and every stop in the given route, making life easier in a city like Coimbatore. If no direct bus routes are available for the given source and destination it searches for the quickest and the shortest intermediate route. It also provides an additional feature to track the location of the bus through "Inside the Bus" feature which tracks the current location of the user through GPS in android phones and uses it as the location of the bus, which will be available to others users who wants to know the current location of the bus, thus providing a simple one-tap-go experience.If the destination is nearby it notifies the user by a popup message. By providing the frequency of bus timings, it will be easy for the users to predict the next bus to reach their specified destinations in time.**

Keywords: *GPS (Global positioning system), GPS transmitter, GPS receiver, Google map, Bus routes.*

I. INTRODUCTION

Public transportation system plays an important role in the way people move around their communities. Considering some of the benefits of public transportation and the challenges facing its widespread adoption, the android application that provides e-information about the bus route is developed that will meet those challenges. The application also help the new comers to the city by providing duration of their travel and intimate the destination to the user with the popup message before it arrives.

In a busy city, it is a difficult to figure out if it is worth waiting for a bus without knowing its timings and the application aims to solve this issue by providing the exact timings for each stop in the route. And incase if the direct routes are not available between the source and destination, the application provides the intermediate routes between them.

Through this application any person who is in search of transit can search through bus route, timings and location. In order to notify the arrival of destination to the user destination notification facility is provided in the application. Moreover if any general consumer wants to know the location of the bus he can also get details of the bus through "inside the bus" option in this app.

LITERATURE SURVEY

Previous Literatures and research work done by accredited scholars in this domain are being reviewed. Challenges proposed in specific to context aware location based service are presented here. Sudhakar K N, Rashmi K [3]proposes the bus tracking and predicts the bus arrival time with a proposed system in it. Having a GPS is an advantage you can determine your location, whether you are travelling locally or in a foreign land and if you think you are lost, you can use your GPS receiver to know your exact location.

Mr. Nilesh Manganakar [1] states that real-time location tracking system is done by GPS enabled android mobile that transmits location information to the server through GPRS & GCM networks. The database formats the information in a special form that can be used to search and display using Google Earth software or Google Map.

Mr. Pradip Suresh Mane [2] demonstrated a real-time mobile trip planning tool .It also presented evaluations that show improves satisfaction with public transit, reduces wait times, increases transit usage, encourages walking, and improves perception of safety among riders.

The listed literatures gives us the basic understanding of the concepts related to our system

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designing and enable us to develop the new idea of fetching the user's location to provide accurate nus location to other users.

II. SYSTEM ANALYSIS

A. EXISTING SYSTEM

The existing system has some of the features like GPS tracking and transmitting location details to the server through GPRS technology. Moreover there exists similar android applications in Google Playstore which provides the static bus routes in Coimbatore. The existing system has the following drawbacks like

i.The exact position of the vehicle cannot be retrieved

The approximate location of the bus can be known to the users of the existing system but not the exact location in a dynamic view point of the user

ii.Exact timings are not provided

The existing system does not provide details about the exact timings of the vehicle apart from the static database timings listed during the creation of the application

iii.Intermediate route details are not available

If no direct routes are available between the specified source and destination, then it becomes difficult for the travelers to reach out for local people to get details of the intermediate routes to reach the destination

iv.No destination notification will be provided

People new to Coimbatore city will not know where their destination bus stop is. To know the destination they have to communicate with the conductor or nearby passengers to get to know their destination.

B. PROPOSED SYSTEM

The proposed system provides the user to find exact location of the bus from where they are. The proposed system provides bus route along with the exact timings in the specified route. If no direct routes are available between the source and destination, it provides intermediate routes also. Inside the bus feature helps the users to track the location of the bus based on GPS signals of other users travelling in the bus. It also has destination notification feature which helps unknown users to get popups as their stops comes.

III. SYSTEM DESCRIPTION

The description of the proposed system is explained with architecture diagram and module explanation.

A. Overviewof the Project

In this paper, "An android application for providing information on public transportation in Coimbatore " we are going to provide bus routes with exact timings and also track the bus using users mobile GPS . Here we are doing it in the android platform using smart phones because android mobiles contain both GPS transceiver and GPS receiver inbuilt. In the user interface when the user selects the "inside the bus", the location of the bus is displayed in Google map. Further distance and time the bus takes to reach the user is also displayed. The user can inform about their location and transport details to the family and friends through trip alert facility.

B. Technologies Used

The following are technologies used in designing the android application.

i.GPS Technology:

Global Positioning System (GPS) is a system composed of 24 satellites of the United States, which are originally used in military services, and later allowed for commercial use. The satellites emit radio signal of short pulses that are sent to GPS receivers. A GPS receiver receives the signal from at least three satellites to compute its two-dimension (latitude and longitude) position. Therefore, GPS is a key technology for giving device its position.

ii.Google Map:

Google Map is very popular free software that provides maps by satellite images around the world. Google Map is a version of Google Earth that displays the maps on-line using with a web server and a web browser. The program provides plug-ins for community to show objects in the program. Such objects are, for example, 3D objects of skyscrapers using Sketch Up software, pin objects that indicate a point of interest (POI), and line objects to show a track. Google Map is used to show line and pin objects. In our proposed system, we employ Google Map as our choice of track displays to show locations of the bus.

C. System architecture

The architecture diagram provides the clear view of the modules in the project. When the user request for the location of the bus, the exact location of the bus is fetched through the GPS and incase if it is not available in certain situations then the static data stored in the Google cloud server is used to provide information to the user. The location of the bus is obtained when the user opts for the "inside the bus"

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option in the application and the data is being periodically updated in the server for accuracy.

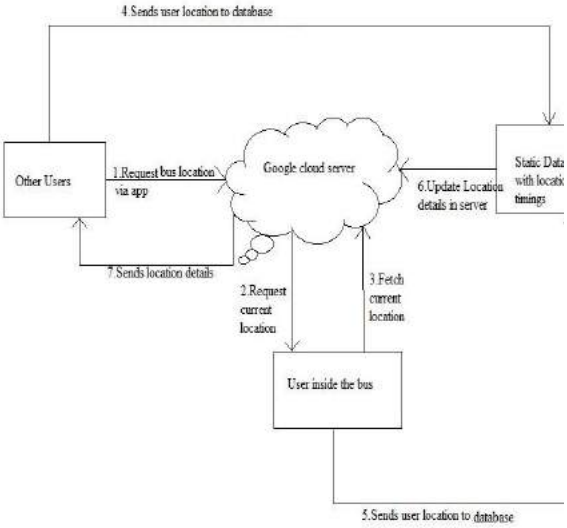

Figure 1.Architecture diagram

When the users uses the search using source and destination option the Google map that shows the appropriate route is being displayed. The following are the modules in the project

a. Search
b. Inside the bus
c. Trip alert
d. Destination notification

D. *Module Description*

a) SEARCH MODULE

Searching for bus routes can be done based on the

- the expected timings
- bus route
- bus number

Figure 2. Screenshot showing search using bus number

b) INSIDETHE BUS MODULE

Inside the bus feature enables the users to track the location of the bus based on GPS signals of other users travelling in the bus based on accuracy

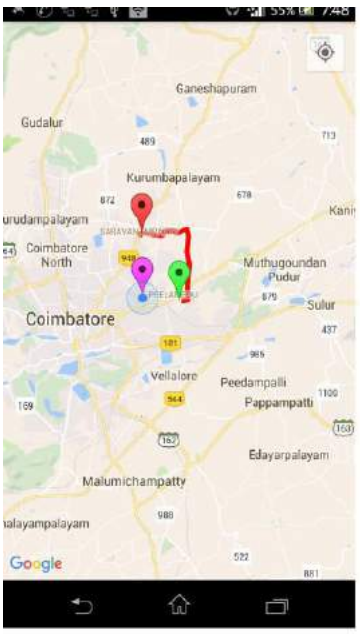

Figure 3. Screenshot showing current location of bus

c) TRIP ALERT MODULE
Children travelling in the bus can have trip alert which enables their parents to get period notification of their wards during their travel in the bus.

d) DESTINATION NOTIFICATION MODULE
People new to the city can get notification which helps unknown users to get popups as their stop comes.

IV. CONCLUSION

The paper presents the overview of information on public transportation to users on smart phones. The application consists of both the transmitter and receiver inbuilt in mobile phones. The movement of bus is always available so this project can also ensure security by keeping track of the bus. So it is going to play a major role in our day to day living.

The application not only reduces the waiting time of the user but also serve as the great support for the new comers to the city. The main feature of the application which is not available in other existing android applications is providing the exact bus timing along with their routes.

V. FUTURE ENHANCEMENT

The scope of the project can be extended to increase the usability of the application to track the bus location in user's preferred language(English or tamil).Other functionalities can be added to ask the user, who is requesting for a specific bus detail,to enter other bus details in their location in order to accurately predict the bus location.

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