Darideepa: A Mobile Application for Bus Notification System

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Abstract— This paper gives an overview of the Mobile Application Darideepa developed for bus tracking and notification system for Transport Systems. This paper aims at giving passengers the information about the departure of the subscribed bus from the starting point or the passengers can also subscribe for the number of stops from which he wants the notifications. This is done using a VMD (Variable Message Display) which tracks the coordinates of the bus and sends this information to the Server. By checking the passenger’s needs, a notification about the bus with the time is broadcasted to GSM module of all the passengers who have subscribed for similar type of service. For subscribing a bus and to get the notification, a Mobile Application based on Android OS is developed. The application is tried on less number of buses first and later it will be tested on huge transportation system.

Keywords—GSM, VMD

I. INTRODUCTION

Buses are major public transport systems in Bangalore. Most of the people in Bangalore will be travelling by bus transport system to their offices, schools, colleges etc. There always exist uncertainties with respect to the time of arrival of bus at the bus stop. The reasons affecting the arrival time of the buses are:

1. Increasing traffic on the roads of the street
2. Also sometimes buses are cancelled due to their breakdown, strikes, repair work on the roads or any other reason
3. Change of route for a particular bus

The passengers are never informed about this cancellation of buses or change of route.

There does not exist any powerful communication system to intimate the general public regarding such delay or even cancellation of buses.

The proposed system aims to provide an efficient Mobile Application on Android OS for giving information about the departure of a bus from the starting point or number of stops from where he wants to get the notification.

The challenge would be to design an application in such a way that it should be easy to use by all type of people and it should give the accurate time of the bus departure at the starting point as well as all the stops. The passenger will be able to calculate the time for the bus to arrive at his stop based on the bus’s departure at various stops. The notification should be stopped once the passenger is inside the bus. These days more than 50% of the people use smartphones which have Android OS. Main focus of the application is on these users. The passengers will be able to subscribe for buses using bus numbers and also for notifications such as starting point or number of stops.

Few of the constraints which need to be satisfied for this application are as follows:

1. The user should have a good data pack to get the notifications in time.
2. The platform used must be Android only.
3. All the bus numbers must be stored so as to get them whenever required.
4. The application should work offline while showing the details of the bus numbers.
5. The Android version must support the application.
6. The notification sent by the application should be real time which needs good data pack like 2G and above.

The rest of the paper has been organized as: section II briefs on the state of art done so far in this area, section III gives the system architecture of the proposed system, section IV gives the implementation details and section V gives the results of the system developed followed by conclusion and future work.

II. STATE OF ART

Several applications were developed in this area. Few of them are as follows:

1. “Bangalore bus route timings”\textsuperscript{[7]}: This app gives Bangalore BMTC Bus Route & Timings. It also gives TIME. It tells at what time the next bus arrives at the stop one is waiting for. This app also has user reporting feature by pressing the 'Inside Bus Button' when one is inside the bus to inform
others current location of the bus. It has routes and timings for most of the BMTC Bus. (Karnataka, India).

2. "Bangalore BMTC Info"[5]: This app does the following things - Find out the details of the BMTC Bus numbers. Select the BMTC numbers and the route details (source, destination), route length and the number of trips information is shown. Users can search bus numbers by specifying source to destination. The application has the bus route/stops displayed from source to destination. The stops are available for a bus or for a route when a source/destination is selected. The platform number in Majestic/Shivajinagar is also displayed for easy boarding. Easy selection of bus numbers. The bus database has been made robust. Timings have been added. Route plans have been provided. The route plans are sorted by number of hops - less to more. Also, the UI has been improved. Also added SMS functionality and improved the database. User can search for buses by typing (auto complete); Search bus no details when source/destination details have been selected; See Traffic Live and also Camera images live at different traffic junctions

3. BMTC Routes[8]: This app requires a 3G or an EDGE connection to get the latest list of buses and the routes. It allows the user to enter free text to search for an address. Most of the addresses in Bangalore are already in the database so the user will get the suggestions about then once he starts typing the search string, but in case it is not listed the user can still enter the address and the application will try to find the route for it too. It can also search for the indirect routes. Provides a list of routes from source to destination. The list has direct as well as indirect routes. Provides the distance from Source to Destination. Provides the route information to the user. Provides a Route Map to the user from source to destination by drawing the route.

4. "BMTC bus App Bangalore"[6]: This app allows the users for searching the buses by routes or stops. It gives a detailed list of different bus routes.

All of the above apps developed make use of the GPS tracker of the user and the Google maps. Maps take more memory and GPS turned on in the user devices drains out the battery very early. So when the battery is less these applications will not work properly.

By looking at all these examples, there should be an application which should not make use of the users GPS and also the Google map so that less memory is consumed. The proposed app tries to overcome all these issues. Ease of use is the main key of the proposed app. There is no notification systems developed till now. The proposed app takes source and destination and gives the list of bus numbers which are going in that route. User can subscribe for one of the bus number to get the notification.

Since with the same number, lot of buses will be there, the app will take only the bus which is approaching to the user’s stop. The app also allows the user to enter the number of stops from which he wants to get the notification.

III. PROPOSED SYSTEM

The application is developed for helping the users to reach their destination without wasting time and waiting for a particular bus in the bus stop. It is user friendly application which requires only the source and destination information from the users.

The proposed system has both client and the server side. The computation is more on the server side which makes the user friendly.

The application can be divided into two parts: client part and server part. In client part, the username and the mobile number with source and destination information are collected. This information is sent to the App server. In server part, the information regarding the location of the bus is collected from the sub servers which intern gets the information through the VMD (Variable Message Display). This information is stored in a database. The database changes whenever there is a change in the location of the bus. The client and the server parts are combined together through this database. The detailed design is shown in the figure Fig.1.

Fig.1 System Architecture of the proposed system

A. Client part

In the client part the users have to download the app for the first time and they have to subscribe for the bus notification by giving the details of their name and phone number and also source and destination details. There is an option provided regarding the number of notifications the users are interested in terms of number of stops before their source for a particular bus from where they want to get the notification.
Here is the main advantage of the application; the users need not turn on the GPS on their device, which drains out the battery very fast. One more advantage is that nothing will get downloaded to the user device apart from the application which consumes less memory in the user device.

\[ B. \ Server \ Part \]

This user data once collected is stored in the App server’s database, which is used to send the notifications to the users later. The App server makes use of this database to get the source and destination and gets the details of bus numbers which travels in that route. To get the information about the bus currently nearer to the user’s location, App server makes use of the database of the main server where with the bus number the current location information is also stored.

Each bus should be equipped with the VMD (Variable Message Display) unit, which also has a small sub-server which gets the display message, decodes it and sends this information to the main server. In the main server this information is stored in the database. This information in the database gets updated whenever there is a change in the location of the bus.

Instead of using a VMD to get the location information one can use GPS trackers, but it requires additional hardware installation in each bus. Instead of that we can use the VMD which is already installed in most of the buses in Bangalore. Once the bus information is fetched from this database, using the database in the App server the notification is sent to the user device using the internet which will have the bus number and the current location of the bus.

\[ IV. \ RESULTS \ AND \ ANALYSIS \]

As of now we have tested this app for one bus (222A), since there are so many buses in a particular route and also many buses with the same bus number, the data will be huge and we are still working on it.

The system is given an input as shown in the screenshot below:

Once these informations are provided by the user, then rest everything is the server part. Finally, the Fig.5 shows the notification to the user device about the current location of the bus for the entered route.
V. CONCLUSION AND FUTURE WORK

The results and the analysis part of this paper shows that the App is working properly when the user provides the information required. The advantage of this app is very clear that is, the App developed is very simple and is user friendly which is the main motivation of this project. The project has been developed for Android platform and SQL domain.

As conclusion, the project is working fine in the testing environment for one bus in one route. Further, the work is being carried out to test the same in real time and to include more buses in one route and also many routes.

This project will be put up on the cloud platform, so that it will be accessible by every Android user. The application will prove beneficial for every bus traveler, or even tourists.

As a future work for this project, this App can be developed for different platforms like Windows, Java and iOS and also for different means of transportations.

REFERENCES


