

Bus Notification System Using Crowdsourcing

B. Harshini Reddy, K. Jhansi Rani, M.Vaishnavi

Information Technology, SNIST, Ghatkesar, Telangana, India

ABSTRACT

Most of the daily commuters of RTC face problems to know the exact time of arrival of a bus to a particular stop. The time of arrival of bus depends on many factors like traffic, condition of a bus, climate etc. So it is very tough for a person waiting for a bus without knowing whether it has left or not from a particular stop. So here we are providing a solution for this problem by using latest technologies like an Android Application. The solution is that we want to develop an ANDROID APP[1] which gives the notification of a bus arrival in a particular route for a particular stop. The backbone of our application is using CROWDSOURCING. It is nothing but taking the help of some people to help other people. The passengers who have seen or boarded the bus can report the bus location along with an image of bus with the help of our app. Then this location will be sent as a notification to all other commuters in that particular route. The commuters who have missed the bus from the stops through which the bus has already passed, can go with an alternative option and the other commuters waiting at the stops to which bus has to arrive can wait accordingly. This helps in saving our precious time which many of us wasting it in waiting for a bus. In this way our application helps the daily commuters to know the location of a bus and saves their precious time.

Keywords : Crowd Sourcing, Androidapp, Notification, Location

I. INTRODUCTION

Most of the daily commuters of RTC are facing problems to know at which time bus will arrive or it has gone from particular stop. And the time of arrival of bus depends on traffic, condition of a bus, climate etc..so, it is tough for a person to wait for a bus.

So here we are with a solution, to this problem by using Bus notification System with an android application. Our main motto is that the person receives the exact location of the bus with the estimated departure time of the requested bus[7]. To get into this process the person needs to register himself in the application. Once the person gets himself registered he can receive the notifications with the help of VMD(Variable Message Display)[2].This VMD is used to track the co-

ordinates of the bus and send information to the server.

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II. LITERATURE SURVEY

For any enterprise or task, the initial phase would be literature survey concerning with formerly issued journals. Prior to decision making, a thorough patrons review regarding journals is done in a sequence manner. Complete knowledge and interpretation concerning the enterprise would be the main principle of this literature review. It also helps us lay a firm base for upcoming tasks.

Research which is undergone serves as guideline and citation to the enterprise. Once the literature analysis is done, we should be in a position to write to such a degree that manifests our experience and observation regarding that particular domain and realize principal subject which are pertinent for the project. It's important to have an idea about the one's that can be ignored and must be in a position to predict end result.

By summing up wholly, undeniably the intention of literature survey is to find out the oversight pertaining to a task. The SMS Based Forecasting System of Public Transport Arrival Time[5].

After issue being identified and then coming up with suitable solving methodology we organized some research concerning bus passengers stating our issue explanation, also explaining our recommended solution. Three main segments are concentrated in our analysis. They are:

1. Demonstrate as well as appraise the importance regarding issue description .
2. The ultimatum and necessity of suggested end result must be recognized and understood.
3. Providing the issue description demonstrated is correct, extract and analyse it.

Initial review which is organized is for proving that problem regarding buses being late to bus stops exists. At the same time, we assessed the level of significant of the problem. We observed the expected arrival time to each bus stop for a period of time for two weeks. The result of the observation is that most of the time the bus failed to arrive at the bus stop as they are scheduled to arrive. Furthermore, we had got a shocking observation result that is sometime the bus skipped its trip and causing the passengers to wait for the next bus that might arrive an hour later.

Sometimes the bus arrives late at the first bus stop for more than fifty minutes. It is causing the passengers in that entire route to be delayed and arrive at late to their workplaces. Also, the problem even happens during peak hours where most of the passengers will be rushing to their workplaces. These observation results successfully proved that our problem statement is valid and these problems have to be solved urgently for the benefit of the city and the bus passengers. The second study is via survey. The main aim of this survey is to help understand the current demand and acceptance for our proposed solution in the market. In order to understand the culture of the passengers, the problems faced by the passengers, and the need of our proposed system, and the present condition of public transportation we conducted a survey by distributing hundred survey forms to the passengers who travel frequently through these public transportation.

According to our survey results the majority of the commuters of the public transportation are workforce and students who use this for travelling to their respected workplaces daily. Also the most common and major problem that is that the buses usually do not arrive to the bus stops according to their scheduled time. Due this problem there is an inconvenience caused to the passengers and they are forced to wait for unpredictable frame of time. Majority of the passengers who took part in survey reported that a SMS system which gives updates about the whereabouts and the arrival timings of the

bus would be a better solution for their problems. Based on the this survey results and the information obtained we are very positive that our proposed solution would be accepted by the bus passengers.

The current status of the problems faced by the passengers is very high. Thus we derived some hypotheses to help us to understand the factors which are affecting the bus's arrival time. These hypotheses are extremely important for us to understand the parameters involved in this system. Based on the result of the hypotheses, we are able to understand the possible causes of bus delays and this information will provide great assistant.

This report is a survey which helps the passengers to overcome the difficulties they are facing in their daily transportation. This helps to conserve time which in very important. This not only saves the time but also it helps to form an advance transport system.

There are many resources present which gives us the information regarding the bus numbers and its details. In this review we get advance information like vacant seats, location of the bus, estimated time of arrival and departure to a particular place which can be viewed by the travellers. Gradual advancement of bus systems reaches demands pertaining to various areas. Main motto of the application is to have a comfortable, simple and accessible bus facility that uplifts the usage of public transport system.

III. PROPOSED METHODOLOGY

This model consists of four parts. Each and every individual model is divided based on their functionalities. The main activity of our application perform major tasks which include Pre-configuration and Instantiation methods. It consists information about the total distance between the two locations and also about the previous and current location. The status of the GPS is also examined whether it's on or

off. The methods used in this system are onPause(),onResume(),onKeyDown() and onDestroy().The Post-configuration process is managed by onDestroy() and onKeyDown() which makes the usage convenient.

The implemented modules in this system are:-

1. Bus Unit
2. Central Control Unit
3. Client-Side Application

The bus unit consists of GPS which tracks the co-ordinates such as latitude, longitude and other attributes of that particular location and send s it to the server. The GPS is free to use i.e., no subscription fee is required. The GPS has the capability to receive information about these locations from three satellites and calculates the position based on this information. There are three different types of transceivers in GPS such as Data Loggers, Data pullers and Data Pushers .Based on the application, the appropriate transceiver will be chosen to gather the information and track the position. The GPS attached to sends the information to the servers at regular intervals of time. This information is received by the device from the servers.

The received data is analysed by the servers .The GPS antenna is connected to the right jack and fixes it's position to receive signals in the appropriate places .There is a slot allocated for a SIM card, the GSM towers helps in receiving messages from different users and respond to them. The positive and negative wires are connected to 12V or 24V vehicle power system [4]. The tracker device is turned on to receive the signals from the satellite hence thus enabling the device to receive the latitude and longitude values of the position of the bus. At any point of time the GPS receiver gives us the location values. The coordinates of the bus along with the timestamp is present in the bus unit, these values are compared with the previous

coordinates if there is any distinction then the new co-ordinate values are updated and will be sent to the server over the Internet[4].

The location details of the bus are saved in a particular format with few attributes such as Latitudinal position, longitudinal position, ID and timestamp etc. Every bus has a unique ID which helps to identify different buses easily. Every bus has a different identification number called as ID. Server in this system takes an important role and performs major functions. Here the server stores and maintains the complete information. The server also performs actions like a gateway between the user and the bus module. The overall information about the routes, arrival time, department time are stored in the database.

The final user can only view the application which is an interactive web based module. Here the application provides different services to remote users. The user module requires two inputs that is the current location point and the end location point. As the user requests the server, it sends the list the buses available in that location. Once the bus is selected it shows the real time location and time of that particular bus on screen.

IV. RESULTS AND ANALYSIS

The GPS of the system is built in such a way that it tracks the exact location and provides dual role of communication. The communication is done between the driver and user. This process takes a vital role in the development of the application. All the information is provided below. Here we will come across an operating system, run-time environment, and software stack comprising applications, libraries, middleware and services which are a part of the Android Architecture. Visually this architecture can be represented in its best manner. The layers of the stacks available in it

and the elements which are in correspondence with the stack are integrated in a tight manner to provide the convenient and proper execution frame for mobile devices.

As per the advancement of the technology the Android is developed for the touch screen devices like mobile devices and tablets. This android is an operating system developed by Google. The android is based on the Linux kernel[6] whereas the Android's user interface is based on direct manipulation with the help of human touches that help to perform actions on the screen and also to give input[5]. In extension to the devices Google added Android TV, Android Wear etc. with an exclusive new user interfaces. The complication of the mobile world has completely been reduced with the use of Android. The unimaginable features are implemented and high quality phones are made easily with the help of this Android OS.

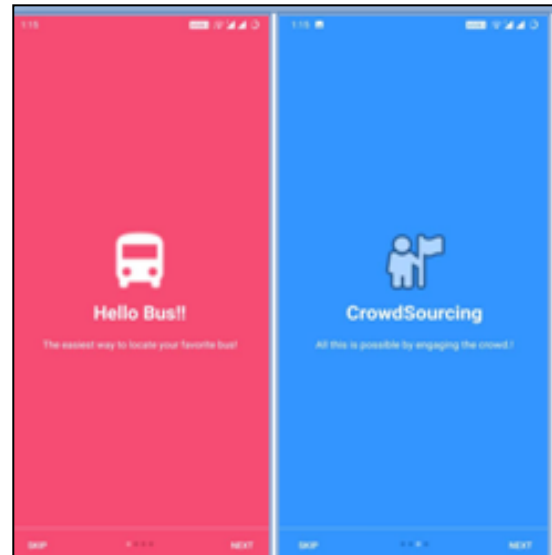


Figure 1. Screen 1 of bus notification system

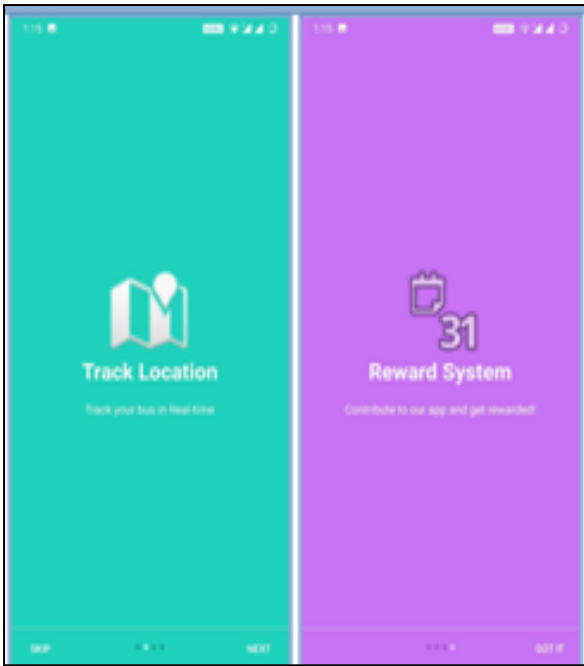


Figure 2. Screen 2 of bus notification system

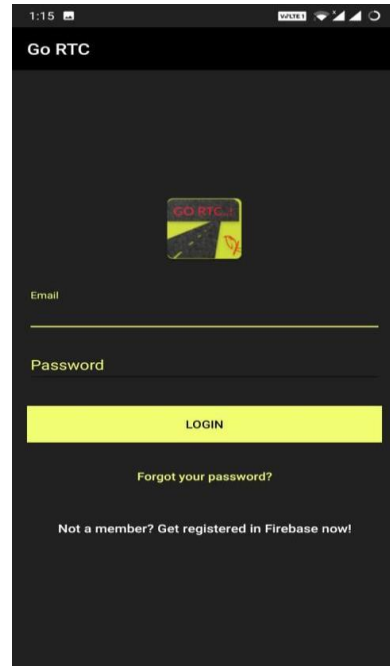


Figure 4. Login for bus notification system

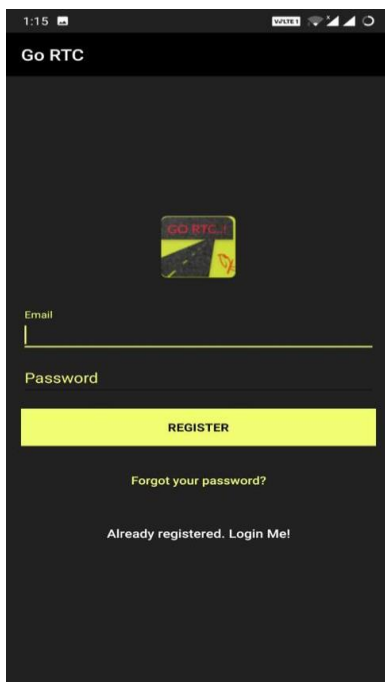


Figure 3. Registration for bus notification system

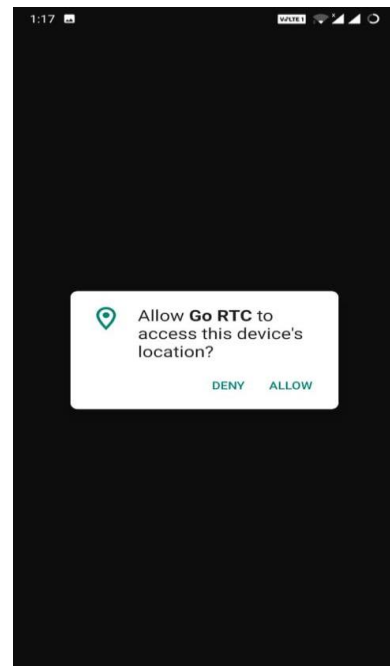


Figure 5. Location accessing for bus notification system

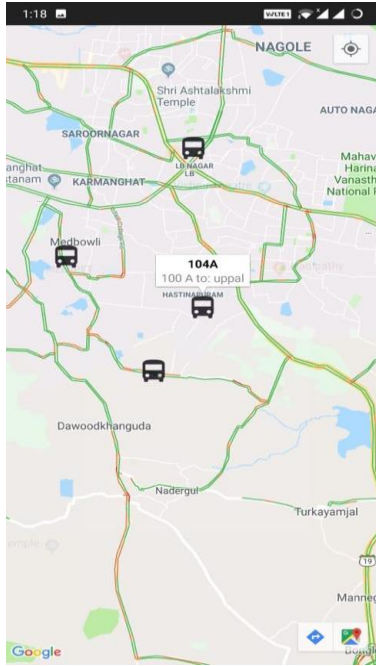


Figure 6. Map page for bus notification system

V. CONCLUSION

The present application relates to a system and methods for notifying passengers of an approaching vehicle. Utilizing this application passenger can save their time and safe in controlled environment. And all these are done by just installing our application android app and we can find the location of a bus.

The project is completely done on Android based platform. Various attributes have been implemented so that the system is very convenient to use with the best and advance features. the domain use in the system is SQL. Since the GPS is added it displays maps automatically. The tracking method is also been made easy with this GPS.

As the application is done using cloud sourcing, it is easily accessible for all the android users. the application is useful for both driver-traveller and tourists. This application can also be modified and be used for tracking any other means of transport. This

method of tracking the location makes the journey easy.

Currently we do not have sufficient data to enable us to draw prediction result with weather factor in consideration. Therefore, we are very positive that the inclusion of weather factor will increase the accuracy of PredictBus system's prediction significantly. Next, we would like to improve the system database's capacity.

Last but not least, we hope to see this application to be able to merge a few bus routes and predict the arrival time. This is an important prediction for users that needs to switch buses in order for them to arrive at their destination.

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