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PREDICTING ACCURATE BUS ARRIVAL TIME USING GPS WITH MOBILE PHONE

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Abstract: People uses transport to move from one location to another. Mode of transports includes air, rail, road, water, cable, pipeline and space. Public transport remains the primary mode of transport for most of the countries and India's public transport systems are among the most heavily used in the world. For personal use a bus is of advantage as it is great way to save money. Buses are also famed for being late. The people need to wait long time to have bus, which is waste their time. This paper proposes the implementation of real time accurate bus arrival information system. The system focuses upon real-time bus operations information which includes the current location of bus and estimated arrival time at the next stop, and distributes this information to the public in an effort to reduce passenger waiting time. GPS is fixed inside the bus. It helps to monitoring the bus route continuously using latitude and longitude via Google maps. Moreover it helps to find out the exact arrival time of the bus very quickly. It is Global Positioning System (GPS) and Global System for Mobile Communications (GSM) combined modern tracking system for exact bus arrival time and location using mobile phones.

Keywords: GPS, GSM, Bus, Arrival time, Location, People, mobile phone.

I. INTRODUCTION

Nowadays vehicle are tremendously increased for their needs. In India most of the people travel by bus transportation. Even though the bus transportation in India gave scheduled timetable can't follow because of traffic in practical and puts the common man in to trouble.Person sitting inside a bus stop is unable to get the information where the bus has reached. These passengers get reluctance to long waiting time for bus and often faces difficulty in taking the decision of whether it would be quicker to wait for the next bus or notto reach the destination. Every day we see people going late to their work, students late to reach their classes, just because they decide to wait for the bus instead of just taking an alternate transportation. The passengers had an easy way to know which bus is near to their location and approximate time it would take to reach the stop, in real-time, they could make a more accurate decision of whether or not to wait at a stop.

Several types of vehicle tracking devices exist. Typically they are classified into two typeswhich are passive and active. Passive devices are store GPS location, speed and sometimes a trigger event such as switch on/off, door open/closed. Once the vehicle returns to a predetermined point, the device is removed and the data downloaded to a computer for evaluation. Passive system is also same as active system but it includes auto download type that transfer data via wireless download. Active device also collect the same information but usually transmit the data in near-real-time via cellular phone or satellite networks to a computer or data center for evaluation.

To avoid this, the travelers usually want to know the accurate arrival time of the bus. Predict the Accurate bus arrival time and exact location of the bus is difficult to find in real time. This make long waiting time at bus stop often discourage the passengers.In the existing the current bus location is tracking using cell tower. In this bus location found out approximately not exactly because of cell tower signals by which the bus comes under which cell tower range. By using this information the system is calculate the bus reaching time is calculated and display at required bus stop. Hence To avoid the inaccuracy in the existing system

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II. ARCHITECTURE AND IMPLEMENTATION

System module on bus:

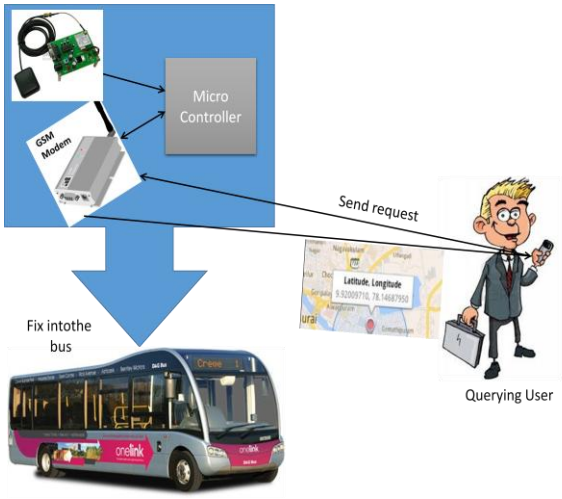

Figure1: Block diagram of bus tracking system using GPS

GPS initialization:If the passenger who need to know bus arrival time make call to the system which is placed on top of the bus. The system reply by message using GSM which is interfaced with controller.At the time GPS has been initialized automatically.

Location identification: After GPS initialization, GPS get the latitude& longitude value of bus where currently running. These values send to the controller and predict the area of that respective value and send to the passenger. The GSM is used to send message to quarrying user about the location.

Predicting bus arrival time: Finally arrival time of the bus is calculated by the system and send to the querying passenger within a short period of time.

This module is installed inside the bus. It mainly consists of a user GPS, a control unit, and a GSM module. The GPS connectedwith control unit. There is no user interface unit. But it has indicator LEDs which are used to show the status of the module. If the passenger make call to the predefine number which is given by system, the LEDs start to blink to indicating the status of the request from the user.After getting request from the user the GPS get initialized.The GPShas both transmitter and receiver. But only the receiver unit in the GPS is connected with the control unit. After GPS get initialized the latitude and longitude values of the current location send to the controller. By which the respected area of these value is predicted using Google maps.And then send this information to the requested passenger.

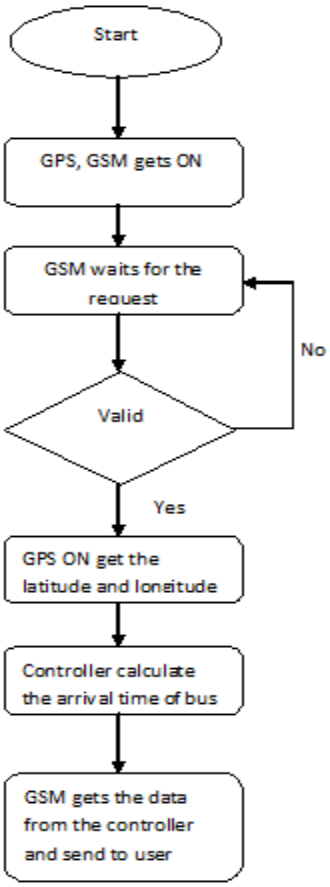

Figure 2: Workflow of proposed system

The information word will be generated based on the bus number and the current position of the bus. It then transmits this control word serially to the GSM module using USART. SIM 900 GSM module acts as the bridge between the bus and bus stations. It sends the control word generated by the control unit as text messages to querying user who present in the coming bus stops.The power supply for the bus module is taken from the 12V DC supply from the vehicle battery. This is then connected to LM7805 to get a 5V DC supply to the bus module. The whole circuitry provides enough current to lead the device load.

III. CONCLUSION

It is very essential for the people who living in cities to use the public means of transport so as to reduce pollution, consumption of fuel and traffic. The bus locationtracking systemwill be very useful and more secure compared to other systems. This system is easy to implement on buses, also it

will be effective. This system grants us to get equipped with work custom and person. This application will provide great assistance for the passengers to plan their journey effectively and thus leading to reduce waiting time for the buses.We also designed android application for this process.

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