Wireless Real Time Bus Location Tracking & Time Predicting System

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Abstract- *The main purpose of this project is to develop a real time bus tracking system to enhance current bus service system and reduce the workload of bus management team. The poor services provided by bus service providers are because majority of them are still implementing manual work. Moreover, passengers are impatient while they are waiting in bus stop because they are not able to know exactly how long to wait and where the next coming bus is. Excessively long waiting time at bus stops often discourages the travelers and makes them reluctant to take buses.*

Global Positioning System (GPS) is the main technology implemented behind the system. A GPS receiver is used to track on real time bus coordination by continuously receiving the position data which are latitude and longitude values from GPS satellite, then send the position data to Microcontroller and process the raw position data into real time information for users. From that we can find the location of bus and to reduce workload performed by bus management team.

Keywords- GPS, GSM, LCD Display, Bus.

I. INTRODUCTION

Public transport, especially the bus transport, has been well developed in many parts of the world. The bus transport services reduce the private car usage and fuel consumption, and alleviate traffic congestion.. Excessively long waiting time at bus stops may drive away the anxious travellers and make them reluctant to take buses.

Among all public transportation services, bus service is the major transportation used by public. Especially in a busy town or city, bus is the most easy, convenient and cheaper transportation. Various reasons that people take bus instead of driving own vehicle such as traffic jam, heavy parking fee and lack of parking slot in destination. However, bus transportation service has very poor transportation information system nowadays. Bus user do not know the exactly arrival time for a bus, but only know the scheduled arrival time. Compare to train or flight transportation system, bus transportation service does not have a proper system to track all buses position and the actual arrival time in every bus stops. These problems occur because current bus service system did not apply real time

tracking technology to track on each buses on the road and also lack of a platform to update latest bus traffic information to bus users. In order to solve these problems and enhance current bus service system, real time bus tracking system has to develop and implement.

The developed bus tracking system will able to provide bus users a real time platform to check on updated bus traffic information. Besides, this system also able to reduce workload for bus management team and provide an immediate platform to update latest and accurate bus traffic information to bus users.

In this paper, the main objective of the proposed system is to apply GPS tracking technology into bus transportation system currently operating in other countries. To provide accurate location of the bus for public.

II. SYSTEM ASPECTS AND DESIGN DETAILS

In this Project it is proposed to design an embedded system which is used for tracking and positioning of Bus by using Global Positioning System (GPS) and will provide signal to bus stations located at far or nearer distance.

In this project ARM7 microcontroller is used for interfacing to various hardware peripherals. The current design is an embedded application, which will continuously monitor a moving Bus and report the status of the Bus on demand. For doing so a microcontroller is interfaced to a GSM Modem and GPS Receiver. A GSM modem is used to send the position (Latitude and Longitude) of the Bus to customer. The GPS modem will continuously give the data i.e. the latitude and longitude indicating the position of the vehicle. The GPS modem gives many parameters as the output, but only the NMEA data coming out is read and displayed on to the LCD. The same data is sent to the mobile at the other end from where the position of the vehicle is demanded. An EEPROM is used to store the data received by GPS receiver.

The hardware interfaces to microcontroller are LCD display, GSM modem and GPS Receiver. The design uses RS-232 protocol for serial communication between the modems and the microcontroller. A serial driver IC is used for converting TTL voltage levels to RS-232 voltage levels.

When a request by user is sent to the number at the modem, the system automatically sends a return reply to that particular mobile indicating the position of the vehicle in terms of latitude and longitude. A Program has been developed which is used to locate the exact position of the vehicle.
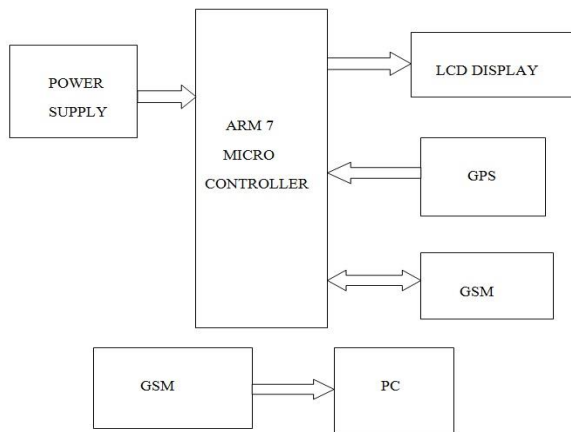
Fig. 1. Block diagram of system
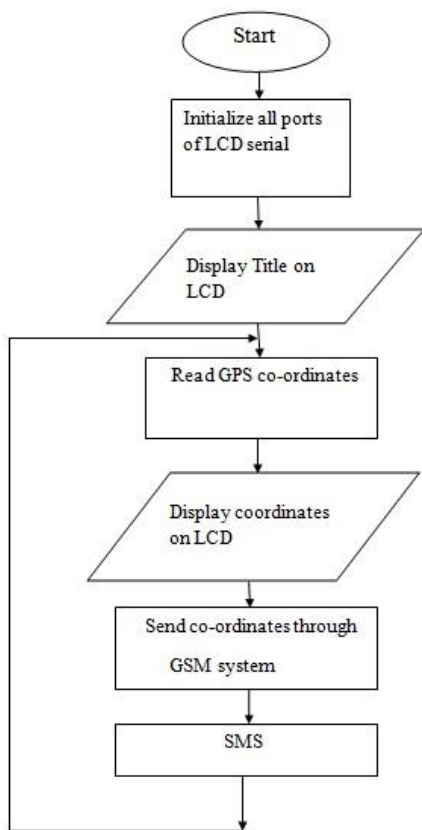
III. SYSTEM OPERATION

Fig.2.Flowchart of system

IV. CONCLUSION

With the implementation of the project a complete track can be kept of the buses around the city. The display at the bus stop saves the commuter's time.

While waiting for a bus, people may felt impatient and anxious if he or she does not know when the bus will arrive. For the bus management side, it is very difficult to provide an accurate schedule for bus user due to some uncertainties may happen on the road such as traffic jam or bus break down. When a bus is delayed, bus management side should inform bus user immediately. However, they do not have a platform to inform bus user in real time about the latest bus traffic status.

In order to enhance bus system and increase the performance of bus service provider, the bus tracking system is needed. Bus tracking system provided a real time platform for bus user to check on bus traffic status in anytime and anywhere. It also provided a platform for bus service provider to monitor bus status and update latest information to user.

FUTURE SCOPE

The estimated bus arrival time is based on the average of arrival time in every bus stop in current version of system and it is not the most accurate estimated time. Because the current system does not consider about unexpected situation happened on the road such as traffic status and bus users boarding status. In future, the system will enhance to provide more accurate estimated arrival time to user.

The range of the RF transmitter can be increased to cover a wider area The project can be extended to other mode of transport such as rail system.

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