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Combined Scheduling Of Gps Signals in a Gsm Based Guidance System

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ABTRACT
As the population is increasing in cities transportation has become difficult. In this paper, we present an easy way of transportation. The GPS module collects the position of the bus via GPS receiver and then sends the data of positions to specified center through SMS by using GSM service. After processing data, the position of the mobile vehicle will be displayed on the PC.
Keywords: Bus station module, GPS, GSM and In bus module

I. INTRODUCTION

The bus arrival time at bus stops in urban traffic environment is highly unpredictable. This is due to random fluctuations in travel demands and interruptions caused by traffic system, incidents, and weather conditions. As the population is growing day by day, one of the major issue people facing is proper transportation facility. Due to the non-availability of the prior information of the buses arrival time, people are using their own vehicles or private vehicles like Motor bikes, auto-rickshaw, taxi etc. Because of these again some problems are there like traffic, air pollution. So the public transportation system should be enhanced [1].

Owing to poor infrastructure of roads in country, the annual growth rate of vehicles has created problems in controlling the traffic flow resulting in traffic congestion on roads. Also with the increased number of vehicles, the content of carbon mono-oxide and particulates matter concentration is found higher thereby deteriorating the environment and causing lung diseases [2].

Every day we are witnessing the breakthrough of new technologies in all forms of passenger transport. The meaning of technology, future development, and application are based primarily on finding of methods how to make life easier. Today's development of information and communication technologies is directed to wide population of users equipped with sophisticated terminal devices. The starting point has been guided by the idea that the implementation of new technologies should fulfill the requirements of
user like what they want they want it and in the best possible way in which they want it [3].

In this paper, a transportation management system is developed for enhancing public transportation services based on integration of GPS and GSM. GPS is used as a positioning device while GSM is used as communication link between different modules. These modules include BUS Station Module, In-Bus Module. Bus Station Module contains a GSM engine interfaced to PC and transmits the data to user when requested. At the same time, it turns on GPS receiver installed in the bus. The bus then starts transmitting its location to the BASE Station. IN BUS module consists of GPS, GSM modules which transmit data to the Bus station module. ARM7 (LPC2148) microcontroller is interfaced serially to a GSM Modem and GPS Receiver. A GSM modem is used to send the position (Latitude and Longitude) of the vehicle from a remote place. The GPS modem continuously gives the data i.e. Latitude and Longitude indicating the position of the vehicle [4].

The GPS modem gives many parameters as output, but only data coming out is read and displayed on 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 [5] is used to store the mobile number. The hardware modules interfaced to microcontroller are LCD display, GSM modem and GPS module. The design uses RS 232 protocol for serial communication between modems and the microcontroller [6, 7]. A serial driver IC is used for converting TTL voltage levels into RS 232 voltage levels. When the request by user is sent to the number at the modem, the system automatically sends a return reply to that mobile indicating the position of vehicle in terms of Latitude and Longitude.

II. RELATED WORKS

2.1 GPS module

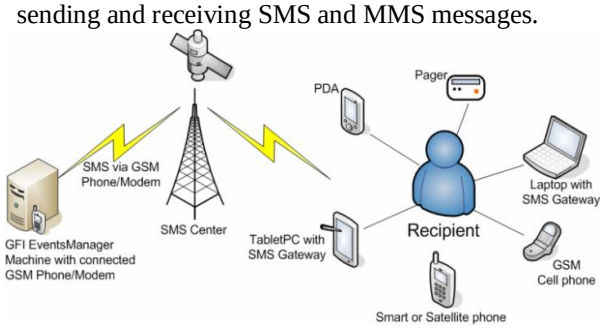
The Global Positioning System (GPS) is a space-based satellite navigation system that provides location and time information in all weather conditions, anywhere on or near the Earth where there is an unobstructed line of sight to four or more GPS

satellites. The system provides critical capabilities to military, civil and commercial users around the world. [8].The orbits are designed so that there are always 6 satellites in view, from most places on the earth. [9].

GPS-634R module is with 51 channel acquisition engine and 14 channel track engine, which be capable of receiving signals from up to 65 GPS satellites and transferring them into the precise position and timing information.

2.2 GSM module

A **GSM modem** is a specialized type of modem which accepts a SIM card, and operates over a subscription to a mobile operator, just like a mobile phone. From the mobile operator perspective, a GSM modem looks just like a mobile phone. When a GSM modem is connected to a computer, this allows the computer to use the GSM modem to communicate over the mobile network. While these GSM modems are most frequently used to provide mobile internet connectivity, many of them can also be used for sending and receiving SMS and MMS messages.



GSM 900A is very compact in size and easy to use as plug in GSM Modem. The Modem is designed with RS232 Level converter circuitry, which allows you to directly interface PC Serial port. It is suitable for SMS as well as data transfer application in M2M interface. The modem needed only 3 wires (Tx,Rx,GND) except Power supply to interface with microcontroller/ PC.

III. SYSTEM IMPLEMENTATION

3.1 In-bus module

In-bus module is installed in bus consists of GSM module and GPS module. Signal is initialized before transmitting data to the bus station module.GSM and GPS modules are initialized. GPS module continuously transmits the latitude and longitude values to the bus station module. The bus station module receives the location of the buses through GSM mobile network.

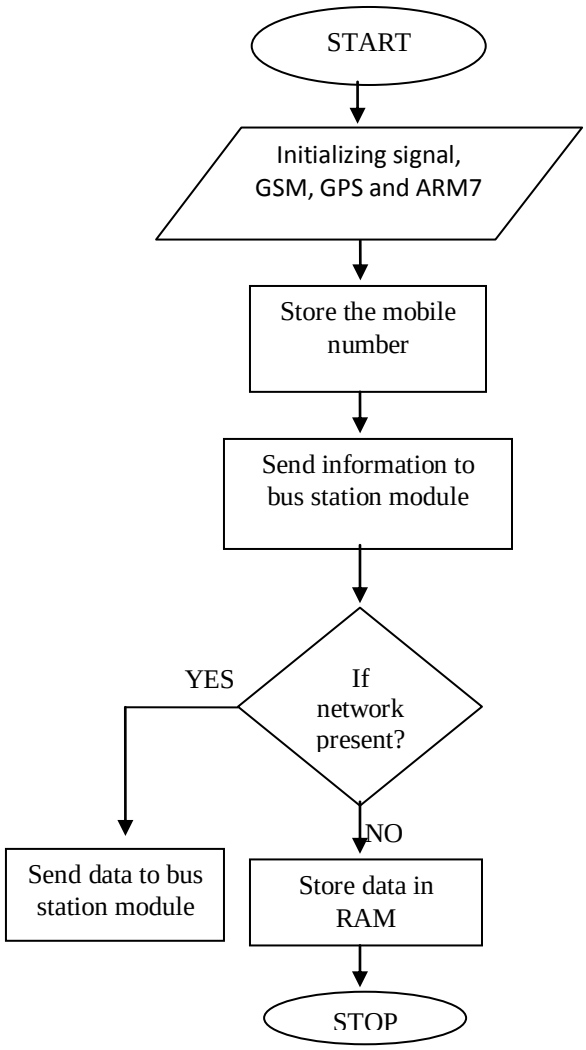


Fig1.FLOW CHART FOR IN BUS MODULE

3.2 Bus station module

Bus station module is installed at bus stops consists of GSM module and PC. When bus station module requests for bus information In-bus module transmits the information requested and sends a URL link. The URL link can be tracked using PC.

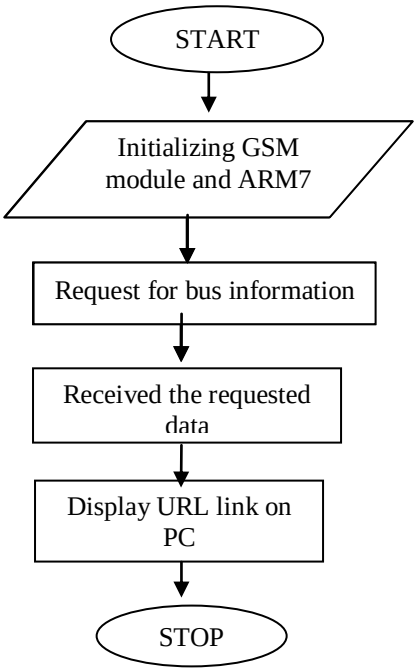


Fig2.FLOW CHART OF BUS STATION MODULE

3.3 USER

User gives miss call to In-bus module and requests for bus information. GPS tracks the location and transmits the information to user. User can track the location in the mobile.

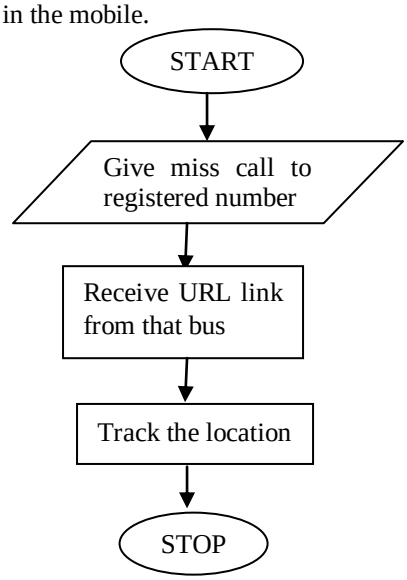


Fig3. FLOW CHART OF USER

IV. CONCLUSION

A system is developed with different modules linked together.GSM network is used for the transfer of data between the modules. A convenient way of transportation is been developed. So that people no longer have to wait near the bus stops. This gives user the current location information of desired buses and plan according to the given information.

V. FUTURE SCOPE

In case of traffic jams an alternative route can be updated by installing automatic route guider in the in-bus module. Cameras can be used to read the bus number eliminating the use of operator.

VI. RESULT ANALYSIS

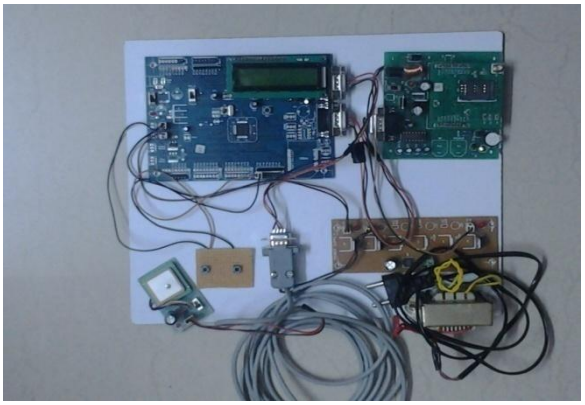


Fig4. DESIGN OF IN-BUS MODULE

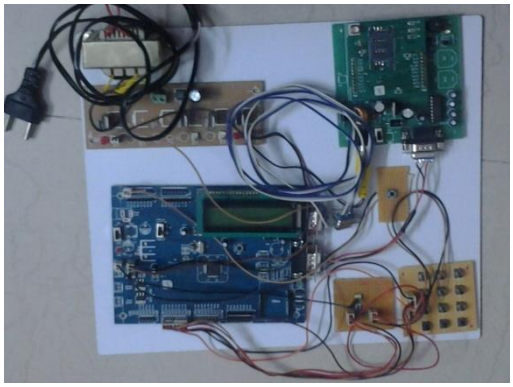


FiG5. DESIGN OF BUS STATION MODULE

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