

## **COLLEGE BUS INFORMATION SYSTEM USING GPS AND GSM TECHNOLOGIES**

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### **ABSTRACT**

As we know that, day by day traffic is increased rapidly which leads to fail the scheduled timetable of the transportation. Most of the people travel by the bus as it is convenient and cheapest source of transportation. People who mainly travel by the bus are the students and the employee etc. Every day we see people going late to work, student late to their classes, just because of they decide to wait for the bus instead of just using an alternate transportation. So, if buses get delayed is mainly result in the wastage of time of the student. In this paper, we proposed the concept about to track the bus to avoid the time wastage and to reduce the human efforts also to reduce the chance of missing bus. Bus tracking system can also used for the monitoring purpose. This system will be designed for tracking the college bus location using GPS (Global Positioning System) and send message to student using GSM (Global System for Mobile Communication). It provides tele-monitoring system for transportation vehicles such as taxis and buses. We will purposefully design this automated system which will be installed in the college bus. In proposed system, the student database is available at installed system. If student is request for current bus location then system sends bus location to corresponding number automatically without human intervention.

### **General Terms**

Microcontroller, MEM sensor, GPS-GSM.

**Keywords:** Accelerometer, Database, Bus module.

### **1. INTRODUCTION**

As the bus is cheapest and convenient way for transportation, students choose it. However, due to increased traffic and many other problems bus is delayed and students late to their classes. The project proposes a way to automatically send the bus location to students before reach to their stop. So, their waiting problem can be solved. In addition, whenever student wants to know the bus location they can send request message and get the response. Also the bus accident will be detected by MEM sensor and inform to college authority immediately.

### **2. LITERATURE SURVEY**

Aswin G.Krishanan, Ashwin Sushil Kumar, Bhadra Madhu, Manogana KVS proposed the "GSM Based Real Time Bus Arrival System" in 2014. This system consists of bus module and station module. The bus module installed in the bus which mainly consists of user interface for the driver, a control unit and a GSM module. The user interface consists of the switching mechanism which is used to give logic high signal to control unit. The driver is required to use this switching mechanism on arrival of each bus stop thereby signaling the control circuit that the station has been reached. The control unit consist of ATmega8 microcontroller circuitry which processes the user input thereby finding the current location of the bus and generating unique control word which is send to coming bus stop. The control word will be generated based on the bus number and current position of the bus. Station module is installed inside the each bus station and consists of GSM module and control unit and a LCD display.[1]

Abid Khan, Ravi Mishra proposed the "GPS-GSM Based Tracking System" in 2012. This System consists of complete connection of 32 bit ARM processor along with GSM and GPS system. The positions are displayed in requesting cell phone display. If the vehicle resides in any location, positional data in terms of latitude and longitude can be traced out. And location displayed on cell phone in terms of latitude and longitude.[2]

R.Maruti, C.Jayakumari proposed the "SMS Based Bus Tracking System Using Open Source Technologies" in 2014. This system consists of GSM-GPS module which is placed in the vehicle for tracking the vehicle.GPS transceiver used as data pusher in this system. This device receives the GPS data and sends the data as a SMS server. Then the server analyzed the data and sends to the user in format of latitude and longitude. This system required installation of the WAMP server and load the PHP file in the server. Then it also required synchronization of mobile phone with PC using PC suite.[3]

B.Sulochana, B.A.Sarath, Manohar Babu proposed the "Monitoring and Detecting Vehicle Based on Accelerometer and MEMS Using GSM and GPS Technologies" in 2014. This system consists of GSM-GPS module ARM7 LPC2148, Accelerometer. Accelerometer is used to detect the accident by detecting the acceleration. Once the accident is

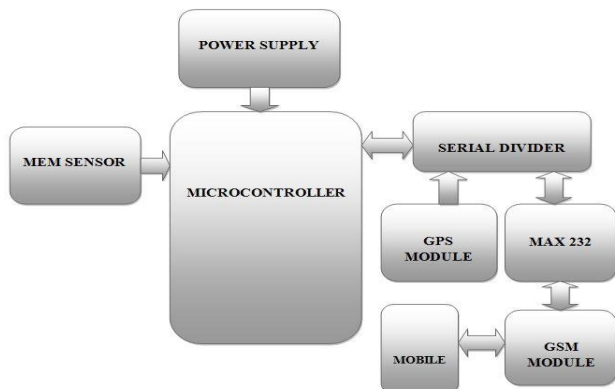
detected then GPS sensor tracks the location of vehicle and sends the GPS data to the ARM. ARM process this data and using GSM it sends information to predefined mobile number.[4]

SeokJu Lee, Girma Tewolde, Jaerock Kwon proposed the "Design And Implementation of Vehicle Tracking System Using GPS/GSM/GPRS Technology and Smart Phone Application" in 2014. This system consists of Atmega328,

GPS Module, GSM Module and Smart phone application. GPS module is used to acquire the vehicle location information and transmit it to the server through GSM network. Also this system required webpage interface written in PHP. A vehicles geographic co-ordinates and a vehicle's unique ID obtained from an in-vehicle device are recorded in a database table. And a Smartphone application has been created to display a vehicle location on Google map.[5]

### 3. BLOCK DIAGRAM

The block diagram consists of GPS module for tracking purpose of the bus which is placed inside the bus module, and continuously gives information about the bus location in terms of latitude and longitude to the microcontroller through serial driver. Then microcontroller sends that information to GSM module through serial driver, after that GSM sends that information to students on their cell phone.



**Fig 1: Block Diagram**

This system is also designed for whenever student requested for the bus location then the requested message given to the microcontroller through MAX232. Then microcontroller process it and give response to GSM through MAX232. For the detection of bus accident we use MEM sensor which placed inside the bus and gives information to the microcontroller. Microcontroller gives that information to GSM module and then send message to main monitoring system in the college.

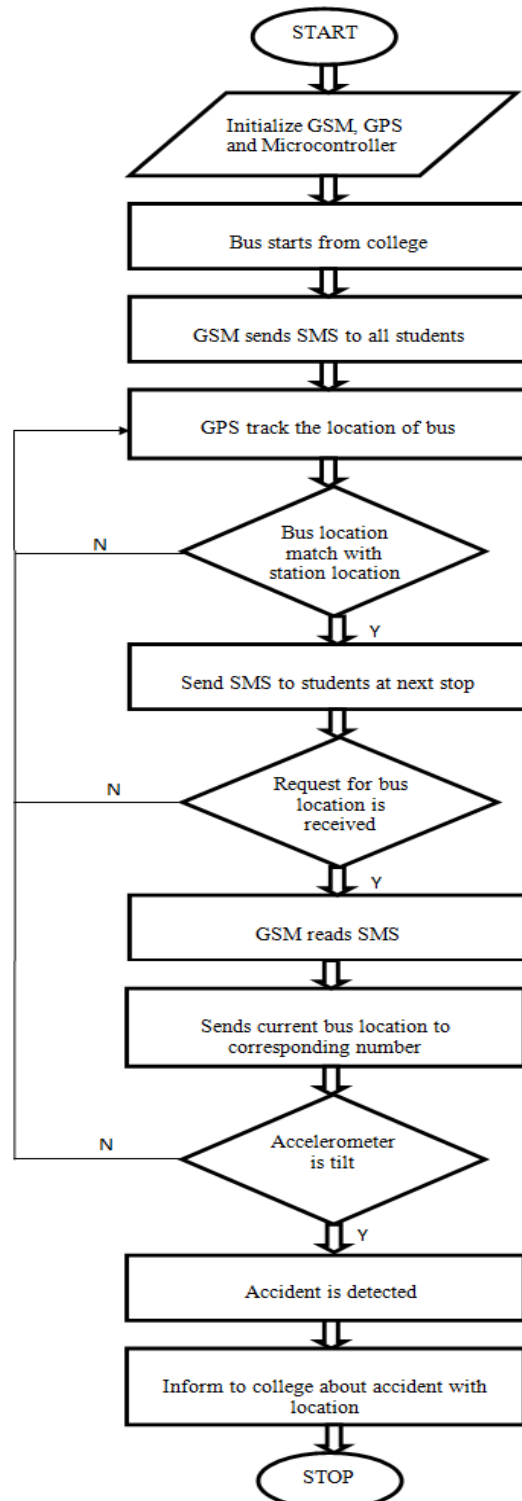
### 4. WORKING

All the students have to store their database (i.e. mobile number) in GSM module. We are placing this GSM module along with GPS module in the college bus. GPS system continuously tracks the bus location in terms of latitude and longitude and sends it to the microcontroller thorough serial driver. Microcontroller sends this information to GSM module and GSM module send SMS message of that information to the stored

mobile numbers.

In addition, whenever students requested for bus location then the requested message given to the microcontroller through MAX232. Microcontroller takes input from GPS module process it and send response through GSM module. Also, whenever accident is happened accelerometer sensor inside the bus send this information to the microcontroller. Microcontroller send message to main monitoring system in college through GSM module.

### 5. FLOWCHART



**Fig 2: Flowchart**

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