Scientific Journal of Impact Factor (SJIF): 5.71

e-ISSN (O): 2348-4470
p-ISSN (P): 2348-6406

International Journal of Advance Engineering and Research Development

Volume 5, Issue 05, May -2018

SMART COLLEGE BUS TRACKING SYSTEM

PRASHANTHA N C[1], RASHMI P[2], RASHMI P S[3], TRIVENI D[4]

[1] *Assistant Professor Dept of ECE BGSIT BG Nagar.*
[2,3,4] *Students Dept of ECE BGSIT BG Nagar.*

Abstract— *The bus tracking system is a cost effective and efficient system. Using this system four application will be developed. First application is establishing communication between college server and bus system which is capable of providing real-time data regarding the current location of buses. Second application is sending a group messages i.e. alert messages to the students waiting at the next stop, changes in current route, bus number, etc., hence it saves the time of students. Third application is generation of e-bus pass system which is an eco-friendly as there is no need of generation of plastic bus passes. Last application is developing an emergency handling system which will send alert messages simultaneously to college, police and ambulance in case of accidents.*

Index Terms— *GPS and GSM Tracking system, student alert system, e-bus pass, automatic accident detection system.,*

I. INTRODUCTION

The goal of this paper is to develop the safety of private and public vehicles which is a major concern now a days so having GPS vehicle tracking system ensures their safety while travelling. Vehicle tracking systems are commonly used by fleet operators for fleet management functions such as establishing communication between college server and bus system which is capable of providing real-time data regarding the current location of buses, sending a group messages i.e. alert messages to the students waiting at the next stop, changes in current route, bus number, etc., hence it saves the time of students, generation of e-bus pass system which is an eco-friendly as there is no need of generation of plastic bus passes, developing an emergency handling system which will send alert messages simultaneously to college, police and ambulance in case of accidents. A vehicle tracking system is an electronic device installed in a vehicle to enable the owner or a third party to track the vehicle location. It works using GPS and GSM technology designed to continuously monitor a moving Vehicle for doing so. A microcontroller is interfaced serially to a GSM Modem and GPS receiver used to send the position (Latitude and Longitude) of the vehicle from a remote place. The first fully operational GPS/Loran-based vessel monitoring system monitors the workstation, communications solutions, and onboard navigation systems providing an integrated capability for the marine fleet operator. The system is a powerful tool for the fleet operator in such applications as shipping, scheduling, harbor operations, and route verification. Moreover, this concept can be applied to the larger problem of safe transport of hazardous cargo. To meet the requirements of an intelligent vehicle monitoring system, the architecture integrates GPS, GSM and a Microcontroller in the whole and is used to prevent texting and calling of mobile phones while driving vehicles. If the driver is using the phone while the vehicle is in motion, it triggers a signal which notifies the cops with the vehicle's number plate and the location with the help of GPS system. It receives the mobile signal and detects the presence of mobile. This signal eventually triggers the microcontroller with a glowing LED. Due to the voltage fluctuation, the message is sent to the cops using GSM communication.

The concept for automated navigation and control of a mobile platform utilizes an ad-hoc mobile wireless sensor network to provide navigational information to the mobile platform embedded control system. An intelligent, automated vehicle tracking system can resolve following problems such as, late arrivals to scheduled, improper use of company time and resources, unsafe driving habits, assigned routes, inefficient dispatching, and passenger's dissatisfaction. This can lead to better traffic flow modeling and a better understanding of driver behavior. It includes various features like ingenuity, simplicity of design and easy implementation. It is completely integrated so that once it is implemented in all vehicles, then it is easy to track vehicle any time.

II. LITERATURE SURVEY

G. V. M. Vasuki on Location based alarm system depending on longitude and latitude.

Based alarm using GPS is an attempt to add an alarm facility for mobiles, based on the location of the device and to find the nearest places from the current location of the mobile device. The location based alarm will give you alert when you reach your desired destination. Location based alarm is a GPS based alarm, If you set an alarm, it will make a sound and notification once it's detected you are within the user defined range from the destination. The user needs to save the current location using longitude and latitude, the alarm will ring when the user is near to the location. This location based alarm is useful for the travelling sales persons and persons who are travelling in a train. The travelling sales person needs to do different kind of works in different places. It is difficult to remember all the places for him. So by using this application he can set an alarm to the places, where he need to go. The GPRS settings must be enabled on a mobile device to use this application.we are using a SHA1 signature to generate a key Google map api key and google play service API for displaying the map in mobile device. The generation of SHA1 signature will be discussed in the methodology.

A. Parvathy on RFID in cloud environment for Attendance monitoring system.

Radio Frequency Identification (RFID) initially is of great use in the marketing field render billing easy. It came into effect since world war-II attained its wide spread recognition only when Walmart introduced it as 'mandate'. An object within the range of 20 feet can be easily tracked with the aid of its unique barcode using RFID chip. It is sophisticated than the primitive barcode techniques as there is no need of positioning of the scanner. Cloud computing is a system which provides access to all soft ware's without installation, for a desired time period, at a specific cost, only with the help of a single web browser.. Interfacing RFID with cloud computing would be more beneficiary in solving current issues. Technological updates can be done without any technical support. This paper presents the overview of interfacing RFID with cloud computing for updating students' attendance and updating it into the parents' corner and faculty mails. By considering the present issue, providing unique RFID code to the students reduce malpractice and human error. Also Human resources can be saved by the application of cloud computing. Time management is the most effective advantage gained from the use of RFID and cloud computing.

Chong Hee Kim, Gildas Avoine on RFID Distance Bounding Protocols with Mixed Challenges.

RFID systems suffer from different location-based attacks such as distance fraud, mafia fraud, and terrorist fraud. Among them mafia fraud is the most serious one as it can be mounted without the awareness of neither the reader nor the tag. In such an attack, the adversary acts as a man-in-the middle who relays the signal between the two entities, possibly without knowing the specifications of the protocol used on the channel. Recently, distance bounding protocols measuring the round-trip times of messages exchanged between the reader and the tag have been designed to prevent this attack. Almost all the existing proposals are based on binary challenges, with no final signature, and provide a mafia fraud success probability equal to (3/4) n , where n is the number of rounds in the protocol, or require too much memory. In this article, we introduce new distance bounding protocols, based on binary mixed challenges, that converge toward the expected and optimal (1/2) n bound and which only require little memory.

III. PROPOSED SYSTEM

Here two separate modules are developed as shown in figure. One is server module present in college and another is the bus module present in college buses. In server module a microcontroller is connected with GSM, GPS, Microcontroller and two IR Sensors, Together this system is connected to college server. GSM system is connected to microcontroller for sending messages. Server module will receive longitude and latitude value from bus module. This will gives the current location of bus and it can be seen on the map from html file. This will help management to keep track of all buses.

When any student pays the bus fees the details are loaded to college database and in sever module, an e-bus pass will be sent to the registered mobile number of student by GSM of server module. This e-bus pass acts as a receipt and an ID for student and now he can show this message to bus driver and use the bus facility. It eases the burden of student as well as management.

In the bus module a microcontroller is connected to accident detection system, When bus start moving from one stop to the next the bus module start calculating the distance and when threshold reaches the system automatically sends message to all the members of next stop using GSM module. In college server module one alarm is attached. If any such message arrives, this alarm starts ringing. The automatic system triggers when MEMS sensors senses the shock, if threshold limit is crossed automatic messages are sent to college, ambulance and police about the accident location. This

application is very important in case of any accident. In college the alarm is set as soon as accident detection message arrives.

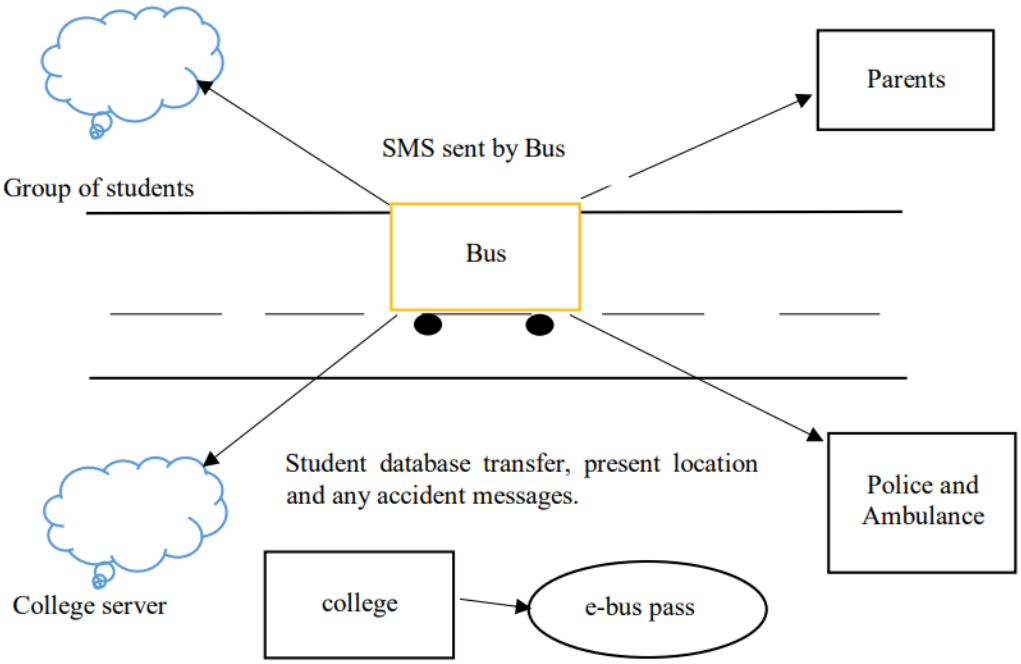

Fig 3.1: Basic working of smart college bus tracking system

IV. METHODOLOGY

3.1 POWER SUPPLY: The 220v, 50Hz voltage is stepped down to 9-0-9 ac and the regulated to get 5v dc using 7805 voltage regulator in order to provide the power to Microcontroller and other modules shown in the block diagram. An alternate power supply of 9v using Battery can be provided.

3.2 RFID TAGS: RFID is a tracking technology used to identify and authenticate tags that are applied to any product, individual or animal. Radio frequency Identification and Detection is a general term used for technologies that make use of radio waves in order to identify objects and people.

3.3 RASPBERRY PI: The hardware is the same across all manufacturers. The Raspberry Pi has a Broadcom BCM2835 system on a chip (SoC), which includes an ARM1176JZF-S 700 MHz processor, VideoCore IV GPU and was originally shipped with 256 megabytes of RAM, later upgraded (Model B & Model B+) to 512 MB. It does not include a built-in hard disk or solid-state drive, but it uses an SD card for booting and persistent storage, with the Model B+ using a MicroSD. The Foundation provides Debian and Arch Linux ARM distributions for download. Tools are available for Python as the main programming language, with support for BBC BASIC (via the RISC OS image or the Brandy Basic clone for Linux), C, Java and Perl.

3.4 PYTHON: Python is a wonderful and powerful programming language that's easy to use (easy to read and write) and with Raspberry Pi lets you connect your project to the real world.

3.5 GPS MODULE: GPS receiver-tracker which has one inbuilt antenna for receiving the GPS signals. It can communicate with other devices serially using UART protocols. The default baud rate is 9600, which is modifiable. The default refresh rate is 1Hz. The string format put out from the GPS module follows the NMEA protocol standard. This standard involves the consecutive transmission of up to 16 different datasets, each carrying data of a particular characteristic.

3.6 GSM MODULE: The modem can either be connected to PC serial port directly or to any microcontroller. It can be used to send and receive SMS or make/receive voice calls. It can also be used in GPRS mode to connect to internet and do many applications for data logging and control. In GPRS mode you can also connect to any remote FTP

server and upload files for data logging. This GSM modem is a highly flexible plug and play quad band GSM modem for direct and easy integration to RS232 applications.

CONCLUSION

The Smart college bus tracking system uses the wireless communication technique and was successfully designed and tested for real time data. The system has the advantages of small size, low costs, full-featured and powerful expansibility. It can be easily installed and used in the buses to ease the burden of transport department as the educational institutions have large number of buses. This system is based on embedded system and can also be developed on android platform. This is an intelligent and sophisticated mobile vehicle checking system that could keep-up with fast infrastructural growth . This system proved to be much more efficient and produced good results such as Sending location of bus to college, In case of accident sends Alert to college, police and ambulance,Finding bus location with respect to stop number, If the bus is in the range of 500mtrs- 2000mts Send alerts message to the students waiting in the next stop, Generation of e-bus pass hence eco friendly.

REFERENCES

1) Kunal Maurya , Mandeep Singh , Neelu Jain “Real Time Vehicle Tracking System using GSM and GPS technology. An anti theft tracking System”, International Journal of Electronics and Computer Science Engineering ,ISSN 2277-1956/V1N3-1103-1107
2) Reynolds, J.C. ; Denaro, R.P. ; Kalafus, R.M.“GPS-based vessel position monitoring and display system” ,Position Location and Navigation Symposium, 1990. Record. The 1990's - A Decade of Excellence in the Navigation Sciences. IEEE PLANS 1990.
3) Ananthanarayanan, N., "Intelligent vehicle monitoring system using wireless communication," Advances in Technology and Engineering (ICATE), 2013 International Conference on , vol., no., pp.1,5, 23-25 Jan. 2013
4) Yunck, T.P.; Melbourne, W.G.; Thoenton, C.L., "GPS-Based Satellite Tracking System for Precise Positioning," Geoscience and Remote Sensing, IEEE Transactions on , vol.GE-23, no.4, pp.450,457, July 1985
5) Rude, M ; “A flexible, shock-absorbing bumper system with touch-sensing capability for autonomous vehicles “ Intelligent Robots and Systems” 96, IROS 96, Proceedings of the 1996 IEEE/RSJ International Conference
6) Ramanath, T.S.; Sudharsan, A. ; Udhayaraj, U.F.; “Drunken driving and rash driving prevention system” Mechanical and Electrical Technology (ICMET), 2010 2nd International Conference
7) Karimi, H.A.; Lockhart, J.T., "GPS-based tracking systems for taxi cab fleet operations," Vehicle Navigation and Information Systems Conference, 1993., Proceedings of the IEEEIEE , vol., no., pp.679,682, 12-15 Oct 1993
8) 8. Yagimli, M.; Varol, H.S., "A piezoelectric-based system design for sensing shocks " Recent Advances in Space Technologies, 2009. RAST '09. 4th International Conference on , vol., no., pp.6,12, 11-13 June 2009

