RGG Based Transportation Management System

[1]SHIVALEELA M B, M.Tech.,E.C.E Dept., CBTVIT Engineering College,Hyderabad.
[2]Mr.Ashok, Assistant Professor, E.C.E Dept., CBTVIT Engineering College,Hyderabad

ABSTRACT: Children Safety is the topmost concern and priority of parents these days regarding their children. In present time parents worry about their children due to increase in number of kidnapping and road accident cases. The safety mechanism for the children travelling from home to the school and back to home during the daily bus transportation is a crucial part to the parents and to the school management. This proposed system mainly ensures the overall safety of school children and to monitor pick-up/drop-off of school children during the daily bus transportation from and to school. The bus unit is used to detect when a child boards/ leaves the bus and this information is sent to controller and an alert message is issued accordingly.
INDEX TERMS:GPS,GSM,Safety.

I.INTRODUCTION

Children are our most precious resource, but as children, they are lack of skills to protect themselves. So it is our responsibility, as parents, teachers and as a person, to safeguard children and to teach them the skills to be safe. Today, most of students are travelling to school by school buses or school vans. Safety is the topmost concern and priority of parents these days .Parents think that their kids are safe when they travel by school bus. There are many common problems such as school bus getting delayed in traffic, school bus accident. To improve transportation safety, some schools employ a bus supervisor to look after the children inside the bus. Nonetheless, human oversight or supervisor absence may still lead to a heartbreaking ending.

In this project, we focus on a particular risk associated with the daily bus trip to and from school.This project presents a system to monitor the daily bus pick-up/drop-off of children to enhance the overall safety of the daily bus transportation to/from school. The system aims at automatically detecting when a child boards or leaves the bus and issue an alert message when a child does not board or leave the bus to reduce the parent's concerns about using the bus for the daily transport of their children.

There are many works done using Radio Frequency identification (RFID), it transmits the identity of an object using radio waves. One of the work done by K.Vidyasagar and G.Balaji [1] proposed a system which uses RFID Technology and GSM Technology and ARM 7 microcontroller .This system provides the status of the student and is made available to the school principal and with the parent time to time. The information of the children is secured by providing the message to the parent along with the obstacle detection in daily bus transportation. Another work done by Ali-al Maharuqi and Dr. Jayavrinda Vrindavanam [2] proposed a system which uses RFID Technology and GSM Technology and PIC microcontroller .This system provides the entry and exit of the school children in transportation.

In Existing System work done by Anwaar Al-Lawati [3] presented an RFID-based system that aims at enhancing the safety of children in the daily bus trip to and from the school. RFID-based system includes a detection unit which is located inside the bus detects the RFID tags worn by the children's. The system sends data to the system database server, via a GSM modem. The system detects if a child did not board the bus and issues an alert message. In addition; the system also checks the children attendance and updates the database. The parents can log on into system website and monitor the details of their children.

II PROPOSED SYSTEM

For implementing this system we use RFID (Radio frequency identification), GSM (Global system for mobile communication) GPS (Global Positioning System) and MEMS (Micro Electro Mechanical System) based Accelerometer. RFID technology locates the child position GSM (Global system for Mobile Communications) will pass information about child to his or her parents. The system mainly consists of bus unit. The bus unit system is used to detect when a child enters the bus.

Childs information at entry/exit level will be recorded automatically when they pass by the reader. At the same time parents will automatically receive the SMS from the system that inform their child boards/leaves to/from bus. In case an accident is occurred, an SMS is sent to the school administration. In this project the system will send SMS to the parents informing the location and the time at which the child has boarded the school bus.

FIG.1. Proposed System

The system consists of ARM CORTEX-M3 Controller, RFID Module, GSM modem, GPS module, LCD (Liquid Crystal Display) and a MEMS Accelerometer.

- *RFID Module: RFID Module is used to read the data from RFID tags and communicate it to the controller*
- **GSM Modem**: GSM module sends data via SMS to user. GSM module sends data through GSM network to anywhere in the world
- **GPS Module :** After GPS module connected to minimum required satellites, it will find co-ordinates of its location and sends those data to microcontroller
- **Microcontroller:** The microcontroller sends data to LCD display and GSM module. The microcontroller does all the operations. It handles both input and outputs
- **LCD Display:** LCD displays shows longitude and latitude of location. LCD display basically displays information about position and working conditions
- **MEMS Accelerometer:** This will detect and send information to controller, if an accident occurs and an SMS is sent to the Authorized person

Initially when the power supply is turned on the GSM MODEM, GPS Module gets initiated; the status will be indicated by the LED. A SIM is inserted in the GSM Modem which is used as School Administrator, who sends messages to the parent's mobile numbers.

Incase an accident is occurred it has to be communicated to a number so, for this a number has to be registered with the system, which is also related to school department. To register a number a miss call is given to the number placed in the GSM Modem.A message will be sent to the number being registered.

If a child has to board the bus first Door is opened for this a Switch is used which is placed at the Driver Seat; then the child has to place the RFID tag near the reader .The reader will read the tag and sends the data to the microcontroller; simultaneously the GPS will be continuously sending the latitude and longitude positions to the microcontroller, which specifies the location, these are displayed on LCD placed near driver. After reaching to the school - the switch is pressed to send the messages, corresponding messages are being sent by the GSM Modem to the pre-registered numbers. MEMS accelerometer is used when an accident is occurred and a message is being sent to the school administration.

III RESULTS

The system output includes two sections i.e. the outputs on LCD display which is placed inside the bus and the outputs in Parents Mobile .

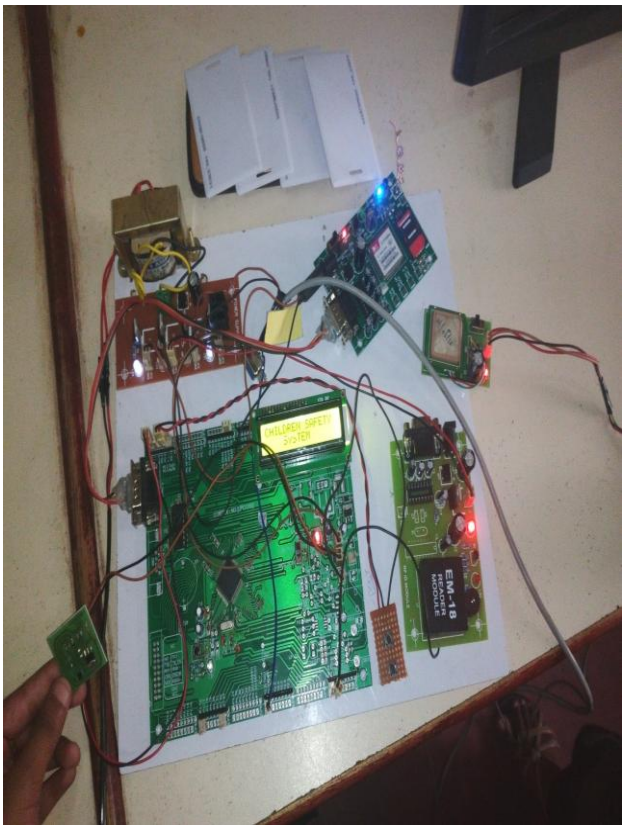

FIG.2. Overall Setup of System

Fig.3.Initially these are the outputs displayingabout GSM Initialization

Fig.4.A number has to be registered by giving miss call to the number placed in the GSM Modem in order to communicate to if incase an accident occurs.

IV CONCLUSION

The system implemented to mainly ensures the safety of the children during daily transportation to/from the school. The system intimate parents and school authorities regarding the children i.e. the time and also the location of the student which is provided by the GPS Module, at which he/she boarded, via a GSM modem. The system detects which child did not board or leave the bus and issues an alert message accordingly. In addition, the system also detects if an accident occurs and a message is being issued. It is very important to ensure the safety of the children during the bus transportation and the system proposed to provide safety and secured information. In future the proposed system can be extended to any educational institutions by replacing the RFID Technology with the Biometric system .This system can be deployed at any location inside the school/Colleges i.e.

near gates, Libraries, class rooms etc. and can also be used as attendance monitoring system.

REFERENCES

[1]. K. Vidyasagar G.Balaji K.Narendra Reddy Dept. of ECE, SSIT Sathupally, T.S, India ," RFID-GSM IMPARTED SCHOOL CHILDREN SECURITY SYSTEM" Communications on Applied Electronics (CAE) – ISSN : 2394-4714 Foundation of Computer Science FCS, New York, USA Volume 2 – No.2, June 2015

[2]. Maryan Said Al-Ismaili, Ali Al-Mahruqi, Dr. Jayavrinda Vrindavanam, Department of Computer and Electronic Engineering,Caledomin College of Engineering, "BUS SAFETY SYSTEM FOR SCHOOL CHILDREN USING RFID AND SIM900 GSM MODEM "International Journal of Latest Trends in

Engineering and Technology (IJLTET)

[3]. Anwar Ali-Lawati, Shaikha Al-Jahdhami, Asma Al-Belushi, Dalal Al-Adawi,Medhat Awadalla and Dawood Al-Abri, Department of Electrical and Computer Engineering, Sultan Qaboos University, "RFID BASED SYSTEM FOR SCHOOL CHILDREN TRANSPORTATION SAFETY ENHANCEMENT" proceedings of the 8th IEEE GCC Conference and Exhibition,Muscat,Oman.1- 4 February,2015.

[4]. http://www.nskelectronics.com/em-18_rfid_reader.html

[5]. https://alselectro.wordpress.com/2013/03/14/gps-receiver-modulepart-2/

[6]. http://www.alldatasheet.com/datasheet-pdf/pdf/432945/NXP/LPC1768.html

[7]. http://www.nxp.com/products/sensors/accelerometers/3-axis-accelerometers/1.5g-low-g-digital-accelerometer:MMA7660FC