

A Review on Attendance Monitoring with Location Tracking System

Divya Dandekar¹, Bhagyashree Sharma², Payal Kalamdar³, Kalyani Ladekar⁴

^{1,2}Student Dept. of Electronics and Telecommunication Engineering, Yeshwantrao Chavan College of Engineering, Maharashtra, India.

^{3,4}Student, Dept. of Electronics and Telecommunication Engineering, S.B Jain Institute of Technology, Management and Research, Maharashtra, India.

Abstract - Nowadays, educational institutions are concerned about the irregularity of the students and the toll that it takes on their academic performances. The main purpose of the project contributes towards the safety and regularity attained by the children when they are away from home heading towards their educational institutes in a school bus or a van. This would help parents get a notification of the real-time location of their child via SMS. The device will read the information through an RFID card (passive) provided to every student which will record attendance as soon as it will be tapped on the RFID reader. The GPS module will track the current location and the GSM modem will send the message to the specified number. The key feature is that it will also monitor the speed and temperature of the bus to prevent any accidental hazards.

Key Words: GPS module, GSM modem, Radio Frequency Identification Technology.

1. INTRODUCTION

The project will help in tracking children's location once they board the bus. The device will read the information from the RFID (Radio Frequency Identification Technology) card provided to every student. As soon as a student will board the bus from a pickup point and scans the "ID card" to the device, the device will then send a message with the location and time to their respective parent. It can also count the number of times students checked in and out while boarding and leaving the bus. This will help parents to find any student who accidentally left the bus. The additional feature is, if the driver exceeds the speed limit, then a warning message will be generated till the speed is controlled. A record would be kept about the number of times the driver breached the speed and after a specific count, it will then send it to the school authority. Further in the future, one can also include an alcohol sensor in the module kit that will sense the consumption percentage of alcohol of the driver and if the driver is drunk then an alarm will ring and notify the institutional authorities, after which the necessary actions would be taken against the driver.

2. LITERATURE SURVEY

The proposed solution which we offer is known as "Attendance Monitoring with Location tracking System" which will provide daily attendance of the students to their

parents. This system will inform the parents whether their ward has taken the bus for school or not. While researching for this project, we came across very noteworthy papers and articles. These papers provided us with details about the functionality and scope of what we were trying to achieve.

Some key points from the papers we studied thoroughly are given below:

- i. "SMART ATTENDANCE MANAGEMENT SYSTEM (SAMS)", Published Paper ID: JETIR1602010, Published In: Volume 3 | Issue 2 | February-2016, DOI (Digital Object Identifier), Page No: 47-50, ISSN Number: 2349-5162. This paper presented us with the opportunity to stumble upon the idea of using RFID for our project. They mentioned the use and importance of RFID in their paper as "The paper to maintain student record in college database using RFID presented a novel concept to improve upon the processes in university environment using RFID technology. A system is implemented for the automation of time and attendance using RFID systems. The system is comprehensive, effective and efficient, thus can help in automating the students' administration."^[6]
- ii. "MODERN ATTENDANCE SYSTEM", ISO 3297:2007 Certified Vol. 7, Issue 4, April 2018 Copyright to IJARCCCE DOI 10.17148/IJARCCCE.2018. The authors of this paper used Ultrasonic sensors and Wi-Fi Module to take advantage of IoT technology alongside GSM modem for the ease of sending messages as well as maintaining the records. While this was one intriguing concept, for us a setback from this paper was the size and cost of it. The hardware is a little big for the bus entrance and the use of Arduino, Ultrasonic sensors and Wi-Fi Modules in each one of them increases cost effectively.
- iii. "STUDENT ATTENDANCE MANAGEMENT SYSTEM", Paper ID: IJSRDV4I90357, Published in: Volume: 4, Issue: 9, Publication Date: 01/12/2016, Page(s): 545-546. The paper mentioned delivers a web application for taking attendance which can be administered by the admin and teachers where as a 'student module' section helps students to view their own attendance. This gave us an insight of how we wanted to structure our project since it will be used on a moving vehicle and the

students will “mark their own attendance by scanning the RFID”.

3. METHODOLOGY

3.1 Working Principle:

When the RFID reader senses the electromagnetic field induced from an RFID card that is being scanned, the PIC controller will send a signal to the GSM module which will then notify the respective guardian. It works on the technology of the Radio Frequency Identification method.

3.2 Working

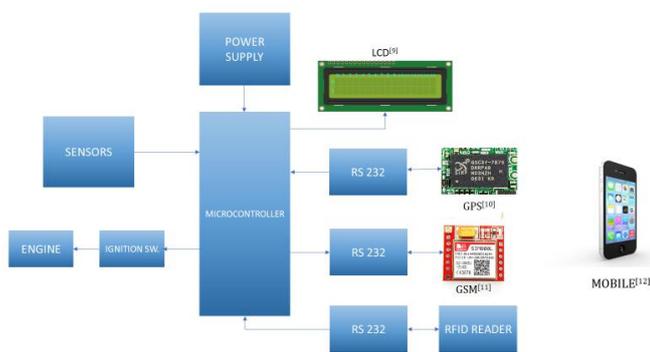


Fig -1: Block diagram of attendance monitoring with location tracking system

The system consists of a PIC microcontroller which will drive the complete circuit. The GSM, GPS, RFID reader will be interfaced substantially through the controller. PIC controller requires 1.84 to 5.6 voltage to operate for functioning which will be provided through the battery source. The system will be mounted at the entrance of the bus where students will scan their cards. Thus, the signal transferred to the controller will send a message to the parent via SMS. The message will contain the pickup point (location) and time. Additionally, the temperature sensor in this device will monitor the surrounding temperature and if it exceeds the range then it will alert the driver. The project also proposes the speed limit for the bus to prevent harsh driving. The warning message will be sent to the driver till he slows down the bus to a proposed speed limit. The device will also register the count of the speed limits breached by the driver and send it to the school authority. Along with that, a button on the device is placed for an emergency. This button must be pressed 5 consecutive times for the system to inform all the parents about the location and time of the incident. The LCD display will show the entry and information being processed.

4. ADVANTAGES

- This will ensure that the parents have enough information regarding their children’s whereabouts.
- The overall functioning of the transportation of one institution can be analyzed easily.
- The proposed device will help to maintain a safe travel speed that is suited for the bus and can be modified according to different guidelines from different institutions.
- Better planning and management of bus routes for students can be done with the information gathered.
- Parents can keep track of how often their children are travelling by school bus.

5. CONCLUSION

With safety being the topmost concern of any parent, this device has distinguished and clarified the vital advantages of RFID innovation. This system as it is can be used in institutions, but with few modifications, this can be developed on a larger scale. The Student Attendance System utilizing Radio Frequency Identification innovation with object counter will essentially improve the current manual cycle of tracking student attendance and their safety reach to institutions. The tracking done is secure and precise. The temperature sensors we used can be integrated with the bus engine to avoid excessive rise in temperature of the engine to prevent any mishap. This entire review of the attendance management and location tracking system discards the traditional way of calculating performances(of drivers) and introduces a friendlier and efficient way of administration.

6. REFERENCES

- [1] Pankaj Verma 1, J.S Bhatia. [International Journal of Computer Science, Engineering and Applications (IJCSEA), “Design and Development of GPS-GSM Based Tracking System with GOOGLE MAP Based Monitoring” (2013).
- [2] Ankita Agrawal and Ashish Bansal, – “Online Attendance Management System Using RFID with Object Counter”, International Journal of Information and Computation Technology, ISSN 0974-2239 Volume 3, © International Research Publications House, Number 3 (2013), pp. 131-138.
- [3] Sabira Khanam, Maliha Mahbuba. International Conference on Electrical Engineering and Information & Communication Technology (ICEEICT) “Improvement of RFID Tag Detection Using Smart Antenna for Tag Based School Monitoring System” (2014).

- [4] Nitin Shyam, Narendra Kumar, Maya Shashi "SMS based kids Tracking and Safety System by Using RFID and GSM" vol2. Issue5, May (2015).
- [5] Anwaar Al-Lawati, Shaikha Allahdhami, Asma Al -Abri. 8th IEEE GCC Conference and Exhibition, "RFID -based System for School Children Transportation" (2015).
- [6] Rasika Naik, Maumita Mal, Shweta Koli, Aakash Karnani and Bhavesh Chetwani. "SMART ATTENDANCE MANAGEMENT SYSTEM(SAMS)", ISSN Number: 2349-5162, Volume 3, Issue 2, February-2016.
- [7] Heeral Chauhan, Shubham Gokhale, Ekta Chhatbar, Sompurna Mukherjee and Nikhil Jha. "STUDENT ATTENDANCE MANAGEMENT SYSTEM", Paper ID: IJSRDV4I90357, Published in: Volume: 4, Issue: 9, Publication Date: 01/12/2016, Page(s): 545-546.
- [8] Prof. S. Y. Kanawade, Sonali Shinde, Kamini Matale, Manjusha Shelar. "MODERN ATTENDANCE SYSTEM", ISO 3297:2007 Certified Vol. 7, Issue 4, April 2018 Copyright to IJARCCCE DOI 10.17148/IJARCCCE.2018.
- [9] <https://stackoverflow.com/questions/42781037/meaning-of-setcursorx-y-coordinates>
- [10] https://sv.wikipedia.org/wiki/SiRF_Star_III
- [11] <https://www.electronics-lab.com/project/sim800l-gsm-module-nokia-5110-lcd-arduino/>
- [12] <https://pixabay.com/photos/iphone-smartphone-3d-render-mobile-2470314/>