

Students Tracking System In Institution Transport Using RF-ID

Venugopal.E¹, Abirammy Karthika.K², Amrithapriya.P.V³, Lavanya.G.S⁴

¹Asst. Professor, Dept of ECE

^{2, 3, 4}Dept of ECE

^{1, 2, 3, 4} Sri Eshwar College of Engineering, Coimbatore

Abstract- *Our main motive to start this project is for the student's safety. Nowadays students from school to college are misguided in many wrong ways. To reduce child trafficking and to make parents aware of their child's activity after leaving their home, we have come out with a solution.*

As per the survey, nearly 10 students are kidnapped every day. Our project gives the parent a relief that their ward is safe. Since our project is a one-time installation it is cost-efficient and it is reliable for common people.

Our project is based on the student's security. It is designed in such a way that it gives awareness to parents about their ward's location. In this system, the scanning of RF-ID cards plays a vital role. The student has to scan the ID card while entering and leaving the institution transport. The student picks up and a drop off location is already fed in the database. While they are scanning their ID card in the morning and evening their current location is known by their parents through SMS. If their scanning location and the actual location are given to the institution varies it will send the alert call to their parents. In addition to that our project gives an overview of attendance for institution purpose; it is also useful to gain information for food preparation and Fast Movable Goods purchase is taken.

Keywords- RF-ID card scanner, transportation safety, student management.

I. INTRODUCTION

The project aims to style a transportation safety system for college children supported by RFID technology. Children's safety is the most significant for folks. School buses transfer scores of children daily in various countries around the world. In today's generation students lack the ability to guard themselves. The supervision of the regularity of scholars during their entry and exit from the bus is difficult to be controlled by drivers, which led to endangering child safety. So it's our responsibility as an individual to safeguard children and to show them the abilities to safe. In our day to day life parents trust institution management for his or her children's

transport safety. Within the epoch, child trafficking may be a major problem, and students aren't tuned in to the society.

In this system parents can monitor the pick-up/drop-off status of the scholars. By this technique, management can fulfill the parent's needs about their ward's safety. This technique would be much flexible and reliable for its functionality. This technique is employed to safeguard the kids from the incorrect identification of their destination location, a way to curtail the scholars sleeping within the bus its self without leaving for classes.

II. LITERTURE SURVEY

[1]School Children Transportation and Safety Enhancement System Based On RFID:

The system employs a microcontroller to persist the whole task. First, the RFID – reader reads the knowledge of the youngsters who entered the bus at the boarding point so forwards the knowledge to the microcontroller, the microcontroller then forwards a message to the GSM modem informing about the arrival of the student within the omnibus and therefore the GSM Module forwards that information to the respected child's parents. This method doesn't check the particular location of the scholar it just sends the scanning location of the scholar to the fogeys. This method sends only the messages regarding the boarding point of the scholar thus it doesn't give any information about the destination location or just in case of any location mismatch conditions

[2]Implementation of Student Safety System Using RFID:

This system will alert the parents only in the case of absence. In this system they use RF-reader to check the attendance before they enter the school. In this system students should scan their ID card while entering the bus, the microcontroller will check the scanned ID card with the detail in the SD card if the details about the student are not in the memory it will give the alert to the driver with the help of buzzer. The student cannot use the other bus of the same institution in any special occasion. In this system if the ID card is not scanned it will give the alert message to the

parents. It does not give any information about the student boarding point. The student can take the bus at any bus stop.

[3]RFID-based System for School Children Transportation Safety Enhancement:

In this system they have two unit bus unit and school unit. When the student board or leave the bus they scan their id in the Reader that information is sent to the school unit which saves it in the database. They also use this process for attendance purposes. The school sends the alert message to the parents whose card is not scanned in the bus unit. In this system the parents can't get the knowledge about the boarding location and ending location of their ward. This system alerts the parents with the message only when their ward's id card is not scanned in the RF-reader. This system does not give any information about the student on a daily bases.

[4]School Bus Attendance and Monitoring System Using RFID:

In this project they use RF-reader and GSM module to communicate. They allow the students to scan their id at the time of check-in; the count is displayed in the LCD. The microcontroller will save the count. When at the time of returning they are asked to punch their card if the checking counts and check out counts not get tally the information is sent to the parents and the institution management. This system is proposed only the absence of the students in the evening may be in any case student may drop off at the wrong destination there is no source to identify that. It does not say any information about the location of the students at the time of boarding and leaving.

III. COMPONENTS

1. ARDUINO UNO

The Arduino UNO is an open-source microcontroller board based on the Microchip ATmega328P microcontroller. Arduino has a 20 digital I/O pin of which 6 pin is used as a Pulse Width Modulation output, it has 6 analog I/O pin, 16MHz ceramic resonator, a USB connection, a power jack an in-circuit serial programming header and a reset button. It is programmable with the Arduino IDE using a type B USB cable. It can be powered by the USB cable or by an external 9-volt battery, though it accepts voltages between 7 and 20 volts.



Fig 3.1.1 Arduino UNO

The ATmega328 on the board comes preprogrammed with a boot loader that allows uploading new code to it without the use of an external hardware programmer. The Arduino/Genuine UNO has a number of facilities for communicating with a computer, another Arduino/Genuine board, or other microcontrollers.

2. GPS

The Global Positioning System is a satellite based radio navigation system owned by the United States government and operated by the United States Space Force.



Fig 3.2.1 GPS module

The GPS does not require the user to transmit any data, and it operates Independently of any telephonic or internet reception, though these technologies can enhance the usefulness of the GPS positioning information. GPS provides the critical positioning capabilities to the military, civil and commercial user all around the world. The United States government created the system, maintains it, and makes it freely accessible to anyone with a GPS receiver.

3. GSM

The Global System for Mobile Communications (GSM) is a standard developed by the European Telecommunications Standards Institute (ETSI) to describe the protocols for second-generation (2G) digital cellular networks used by mobile devices such as mobile phones and tablets.



Fig 3.3.1 GSM module

The GSM standard originally described a digital, circuit-switched network optimized for full duplex voice telephony. This expanded over time to include data communications, first by circuit-switched transport, then by packet data transport via General Packet Radio Service (GPRS), and Enhanced Data Rates for GSM Evolution (EDGE).

A GSM unit is a device that can be attached to any of your electronic items or appliances. It utilizes the same GSM cellular networks that mobile phones use. ... The item or appliance connected to the unit is subsequently opened, closed, switched on or switched off by making a phone call to the SIM card number.

4. RFID MODULE:

Radio-frequency identification (RFID) is the use of a wireless non-contact system that uses radiofrequency electromagnetic fields to transfer data from a RF transmitter attached to a vehicle (ambulance), for the purposes of automatic identification and tracking. These devices use a power source (9V) and emit radio waves (electromagnetic radiation at radio frequencies). The transmitter sends signal to the receiver which can receive from several meters (yards) away.



Fig 3.4.1 EM-18 module

RFID (Radio Frequency Identification) is a technology that uses electromagnetic fields to identify objects in a contactless way; it is also called proximity identification. There are 2 elements in RFID communications: the RFID module (or reader/writer device) and an RFID card (or tag). The RFID module acts as the master and the card acts as the slave; this means the module queries the card and sends instructions to it. In a normal RFID communication, the RFID module is fixed and the user takes his card near it when he needs to start the interaction.

IV. PROPOSED SOLUTION

In this system we use Arduino UNO as microcontroller, GPS, GSM and RFID module. The students while entering and leaving the bus they should scan the ID card that is worn by them. While scanning the ID card the RFID reader gets the information and forwards it to the microcontroller. At the same time microcontroller get the data from the GPS at where the location card was scanned. Microcontroller checks the student database which contains the actual pick up and drop off location of the student.

The data matched it will comment the GSM to send the regular message that their ward is pick up at the right place, if the data information from the GPS is not matched with the database microcontroller will request the GSM to send the call alert to their parents. Parents there are not at the correct location. It also used for the institution management to take the attendance for the students in the bus. By this additional advantage the management can find the students who travel to school by bus but not attending the classes, this process is very flexible and reliable for all kind of functionality. Parents get the complete detail about their ward.

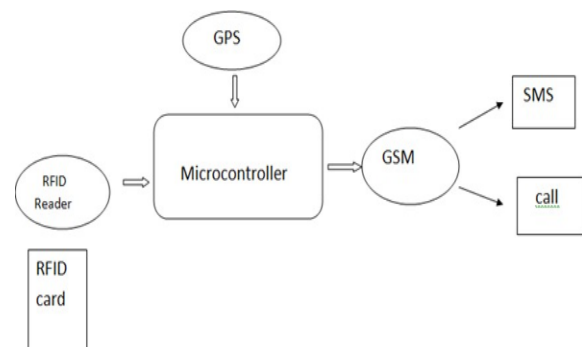


Fig 4.1 Block Diagram

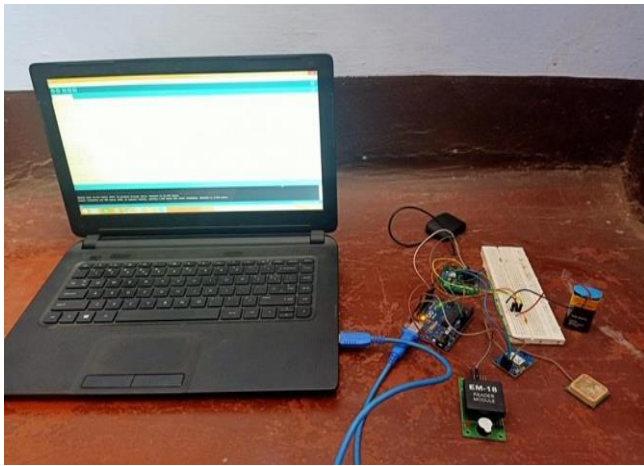


Fig 4.2 Hardware Setup

V. RESULT

In this system students pick up and drop off location is fed in the database. Once the id card is scanned for the first time it check the scanned location with the pick-up location then when the same id card is scanned for the next time it checks the scanned location with the drop off location and send the message that there ward is pick up and pick down at the correct location. Once the location mismatch, it sends the alert call to their parents about their wards location.

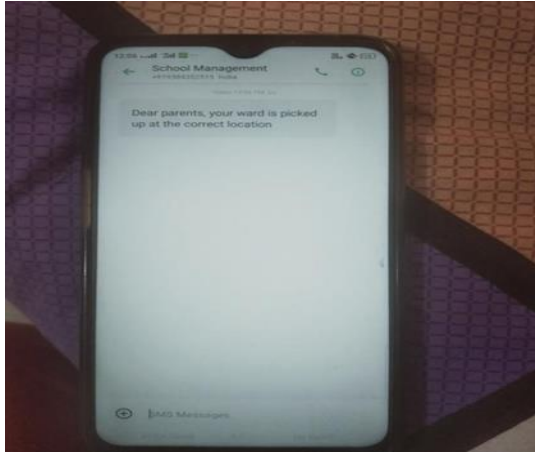


Fig 5.1 picks up output status

This picture shows the output when the student is picked up at the correct location. This type of message is sent to the parents if their ward is picking up at their location.

When the student is not pick up or drop off at their actual location their parents are get alerted with the call. Their ward activity is continuously monitored by their parents through call or text. Managements also get benefited from this product. This can handle the attendance management system, and their food court food quantity management system, etc.



Fig 5.2 if student not at correct location call alert

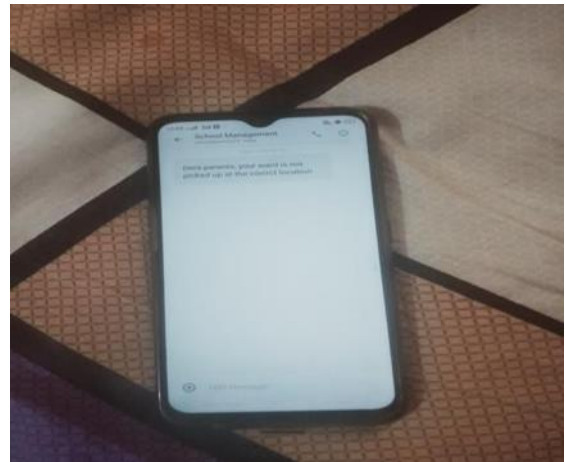


Fig 5.3 drop off output status

VI. CONCLUSION AND FUTURE WORK

In this project the whole student management system works under the Internet of Things. In this project, Arduino plays a major role. Through this project, the parents get complete knowledge about their child's activity. By this, we can avoid child trafficking, misbehavior of the student, etc. In future, we will develop a mobile application for tracking the student bus through GPS. By this application, we can track the bus after the ward check-in and also we know at what exact time the bus will reach the stop. If we miss the bus that allocated for us we can use that application for checking any other bus that is available for that stop.

By this system, we can get the knowledge about the bus speed and if the bus gets any break down we can make note of that. From the management, they can watch at which timing the bus reaches which stop and all the other details about it.

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