

## STUDENT SAFETY AND SECURITY TRACKING SYSTEM

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### ABSTRACT:

Nowadays all are interested to do Smart work in everything. faculty, students were missing their buses as their location isn't identified. This internet of Things (IoT) based bus tracking system helps to solve this issue. implementation of an IoT-based system that permits folks students and faculty to trace the Position of a College bus. An embedded device will be kept in the bus which tracks the site of the bus and transfers the collected information to a mobile app. The buses Carry GPS Devices to trace the Current position of the bus. It displays the exact location of the bus that are moving on maps. This enables the students and faculty to be updated with the Current location of Buses. The main theme of the application is to say accuracy in the tracking of buses.

**KEYWORDS:** Raspberry Pi 3B, IoT, Web Development, Android App, MySQL, GSM Module, GPS Module, RFID Module, IR Sensor, Buzzer.

### INTRODUCTION:

In our College, many Students are & faculty not aware of the exact timing and location of the college bus.By implementing a tracking system for a Smart College easy transport faculty using IoT. The location of the bus is tracked using GPS and sends the collected data to a remotely located server using the Gsm module using this application students and staff Can locate the bus at any time when they need the Collected data to be retrieved and processed by the server? who are It is very useful to Convenient for traveling from the long distance. There are more no of students who travel long distances from home to college parents want their children to be protected while going to college is a big issue. The parent wants a safe journey while going to college. This project will inform parents by SMS when student board the bus. It recognizes through IR sensors interfaced with buzzer and also interfaced RFID (Radio frequency identification) [1][2]. The verge of increase in technology has led to a decrease in hardships for bus drivers as its permits us to know the location of the students using global positioning system (GPS) [1][3] and with using internet of things (IOT) [4][5].

The help of this project is used to solve this type of issue giving a trustable college transport global positioning system in our project we created a website page in which we can contact the drivers, college organization, and bus administrator. In our project, students can acquire a mobile application with the interfacing of GPS. The app will directly be accessed by google maps where the continuous location of the vehicle is updated in the MYSQL database system the location will be refreshed continuously while the bus moving. The app will only be accessed via the internet. For example, if the student wants the exact location of the bus the application

will contact the central tracking unit for the particular bus location, and the application access google maps. This project will take care of the students' safety the students can check their bus location area by GPS. This application, where the bus moving is shown on the mobile screen respectively by using raspberry pi 3B is interfaced with RFID. For finding the location we use an IR sensor and the GSM module is interfaced with RFID. It will help to refresh the web screen which is stored in the MYSQL database on the CPU. The IoT plays a prominent role in our project to help students and faculty for finding the bus location.

### **LITERATURE REVIEW:**

Students for unnecessary reasons are taking up lives which a reason due to a lack of security to them.[7] The RFID however can only help us to provide with only by information about their entry and exit. It is lacking in efficiently telling the traveling circumstances of the student.

To follow the live location of the area where the bus traveling rapidly distortions when they exposed to accidents and it will contact the guardians of the college and the bus administrator about the dangerous conditions of the bus and to keep away the rash driving of the bus driver while the bus is exposed to a dangerous condition,[8] our paper tells the technique where the student dropped in the correct area or by chance the student dropped at somewhere else then, an alert is sent to the guardians. The system screens the students in a safe sheltered way.

By using a mix of RFID and GPS. Every student should consist of a unique RFID card. When the student entered the bus or while exited the bus. The student's entry and exit will be recorded and the information of the student is stored in the database. The RFID consists of two tags i.e.; the RFID tag, and the RFID reader. These types of chips will produce information in different types of structures.

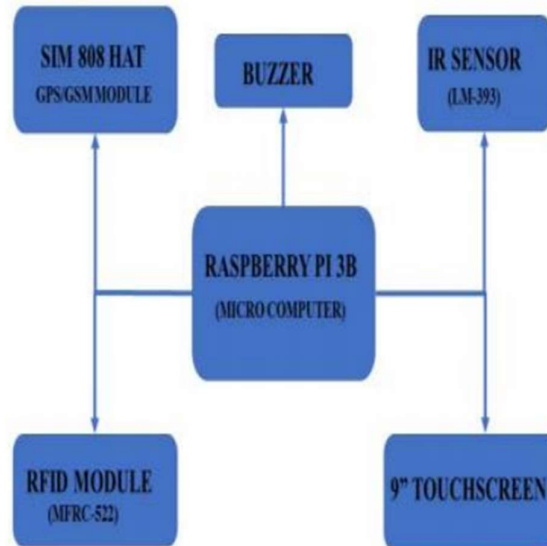
### **EXISTING SYSTEM:**

This IoT-based application tracking system is not for only college / School bus tracking, which applies to public transportation systems also (Ex: APSRTC). Day by Day the population was increased there is a need for efficient public transportation system like buses, remote user needs a smart system which provides accurate information to people who are using public transportation system So our application can handle all information like the Current location of Bus, Bus starting timings & so on. arriving, departing timing. The tracking of buses & is done by the proposed system. The data will give to a remote user who wants to know the Bus tracking location. By using some technologies like (GPS) Global positioning system, Google maps, and GPRS (General packet radio service).are used for improvement purposes. Our System Provides web-based applications, which give the real-time location of the bus on google maps to the remote user.

### **REVIEW OF THE FRAMEWORK:**

This system is operated by which is embedded in the Bus which gives related information about bus accurate time location, Bus route details bus timings. We are finding the location with the help of GPS. By wiring wireless communication the data will be transmitted in our system we wing RTC (real-time clock) which is used to know the current time. In this system, we use a Central tracking unit ((TU) that embedded are Raspberry Pi 3b the information is Passing through SIM 808 (GSM/GPS) module for identification by using IR Sensor. students can access

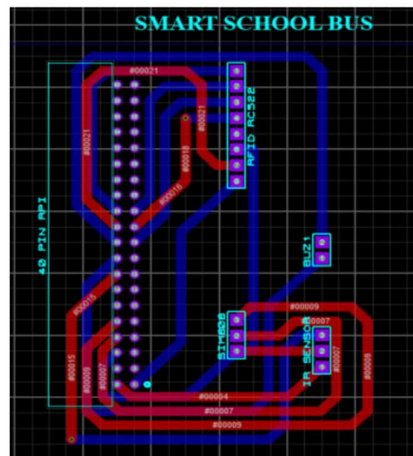
it by using android mobile to know the location of the bus. The data will be Continuously stored. MySQL database information. By using the database, it stores the student information[9].



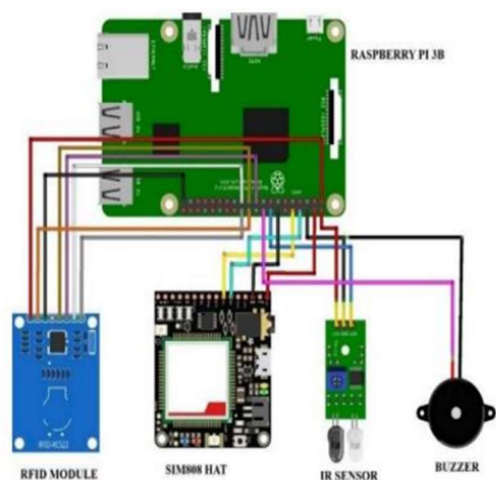
**BLOCK DIAGRAM OF CENTRAL TRACKING UNIT**

**TECHNICAL SPECIFICATION:**

In-Circuit Diagram Raspberry Pi 3B, RFID RC522 module, IR Sensor, signal, and SIM (808 Gsm/GPS) module. The raspberry pi is an interface with Sim C 808. The card perusing scope of RFIDMRFC 522 is around 3cm with a Provided Card. we wed sim808 module which has SMS capacity and has the fastest exchanging ability among GSM and GPS. weused an IR sensor (LM358) interfaced with a ringer as a yield.



**Figure 3: PCB Systematic of Central Tracking Unit (CTU)**



**Figure 2: Circuit Diagram of Central Tracking Unit (CTU)**

### SYSTEM INTERFACE:

In our proposed system three major Interfaces comprise the following.

- 1) Bus Route Tracking
- 2) students' Attendance Record.
- 3) By using MySQL Students' records will be stored
- 4) By using RTG (Right time clock) which gives accurate time.
- 5) This interface conveys transport timings at different stops.
- 6) The attendance is recorded for every student that data is also stored in SQL Data Base.
- 7) By using google maps the students can. access information of Bus schedule.
- 8) This interface is useful to travel in a free manner to both students and data will be recorded in College management.
- 9) It is a major advantage for the student to manage their time to study.

### IMPLEMENTATION:

The central tracking unit is interfaced with the power bank will give perfect on and off of the raspberry pi system. By interfacing with the power bank, the transfer of power flexibility is simple through the MI tab raspberry pi micro-USB adapter without any overload of the power bank and raspberry pi. When the CTU system is started raspberry pi will start blinking red and yellow lights [6]. At that point, the information boost to rasp Dian bluster OS will operate [10]. The bus driver should log in to the website then the information of the bus driver will be known and student attendance will be maintained in a particular bus by the program. In our project, we have interfaced with RFID, IRE sensor, and GPS module these three were introduced after booting the raspberry pi. By interfacing with these modules, the student will get a unique ID card of RFID. The raspberry pi will have the information from the MYSQL database which we have to get the information from the RFID module. Suppose we do not get the information on the screen it will exist in the database and it will message for a parent to be sent by using the GSM module.

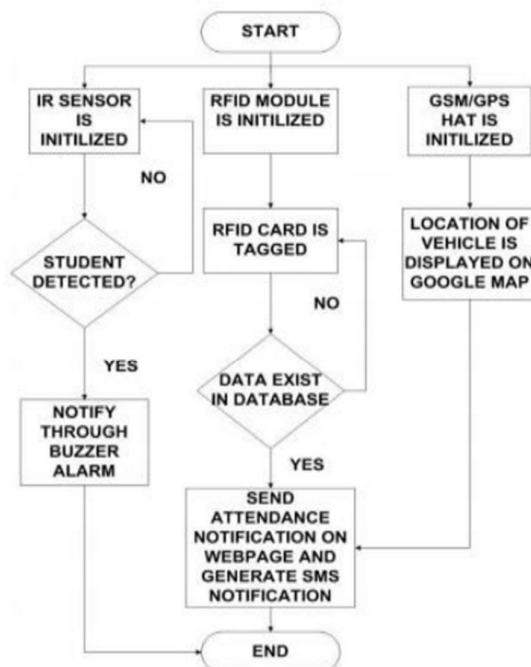


Figure 4: Flow Chart of Central Tracking Unit

## CONCLUSION:

Our proposed system's main aim was for students' day-to-day transportation to be easy. RFID embedded in the bus identifies student RFID labels which give Student attendance data, Bus location timing. By implementing this type of transportation which provides Safetransportation to college management and guardians, students give the student records to both College management and parents too.

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