

# Iot based Live Student Tracking System

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**Abstract:** The IOT based live student tracking system is a mobile application ensuring the safety and security of the students. The main objective of the application is to build a smart watch for a school students. Now a days teachers and parents are balking their classes. On certain cases, the teachers did not know about where the student is currently available and our proposed system gives a technical solution for the above problem. The system consists of school unit and bus unit which interact with the user. The school unit consists of a Bluetooth Low Energy device which is like a watch, that is used to send information once the student is out of Bluetooth range and also if the watch is removed by the student and the bus unit consists of mobile module where the app is placed. The parents acts like a end user, they can get a student exact location in their mobile phones. With this help of mobile application the parents and teachers can lively track the students location.

**Key Words:** Bluetooth, Parents

## I. INTRODUCTION

The security of the students are worried by parents and teachers today even in the twenty first century. In recent times the students face problems like kidnapping from the school for money. Recent survey says after USA, UK and Germany, India has the most number of students missing. Many of the students from school or colleges are balking their classes and roaming outside without the permission of the parents and teachers, and this cases leads to kidnapping in most of the times. But technologies used today provides many ways that can ensure the safety and security of the students. Our proposed system is designed to track and monitor the students activities lively. The proposed system is designed in such a way when parents and teachers are notified by the alarm when the student is out of Bluetooth range and also get notified when the watch is removed from the students hand. Parents and teachers are notified with the students live location to track the student as soon as possible.

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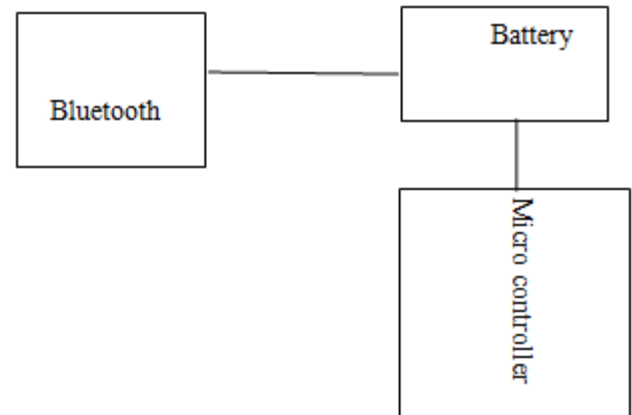
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## II. STUDENT TRACKING SYSTEM

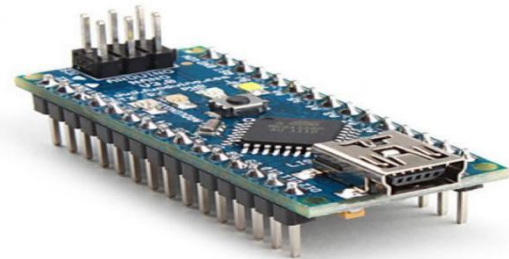


**Fig. 1. Architecture**

This student tracking system can be used in any of the places where the child goes such as schools, tuition centres, play areas, corridors etc. By using this device student can be easily tracked. If the child is not available in the location they can be found by using this device.

### A. Arduino Nano

The arduino nano is one of the basic model of ATmega328. It is very compact and has high specifications and same functionality of arduino ATmega328. It has the inbuilt functions of the Arduino UNO. Nano has various input and output ports in that USB port is mainly for programming and monitoring of the device. Arduino Nano has 36 pins totally from that connections is given to our protocol. The Bluetooth is connected to the USB jack of the Arduino Nano.



**Fig. 2. Arduino Nano**

### B. Bluetooth module

This module is used in various protocol designs for the Bluetooth connectivity for pairing one device to another like connecting to mobiles, mouse, headset. It has high frequency and bandwidth can work on any place without the network. HC-05 module is a wireless communication used in master or slave configuration.

It has blinking led light which blinks when the device is connected to the other.They are connected to the PC via serial to USB.HC-02 is equivalent other module which has only less features.

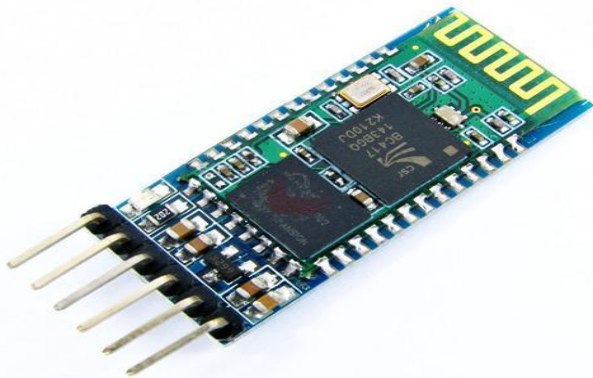


Fig. 3. Bluetooth module HC-05

**C. Battery 9V**

9v battery is small size battery which is handy and used in most of the places such as clocks,detectors.9v battery is made up of cells of alkaline and carbon-zinc types.Most of the testings are done only by this , it can be adjusted according to the needs.The positive and negative terminals are connected with the wired which is on the top of the battery.

**III. APPLICATION**

The application that we developed is called the SSTAPP. All the necessary Configuration regarding our device has to be given.The IP Configuration and the Message Configuration has to be given.In IP Configuration the IP Address of the device has to be given.In Message Configuration the mobile number of the parent or teacher and the message that has to be sent to the parent or teacher has to be given.After Saving the configuration the status of the device that is “Status:Connected or Status: Not in range” will be shown.

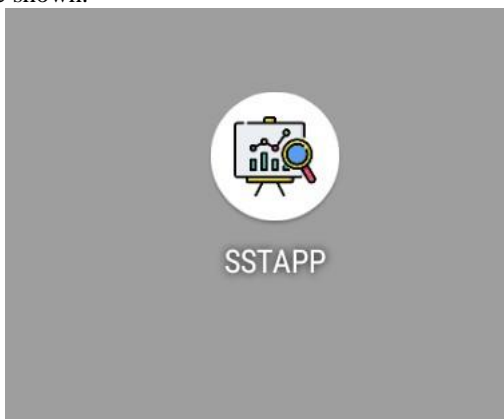


Fig. 4. SSTAPP

**A. Status of the application**

- 1)The device has to be connected to our SSTAPP.
- 2)To cross check whether our device is connected to our app we can use the “Bluetooth Terminal HC-05 app”.
- 3)The “Status:Connected” will be shown when the device is connected to the app.

4)The “Status:Not in range” will be shown when the device is out of range and a message will be sent to given mobile number .

5)The “Status:Not in range” will be shown when the device is removed and a message will be sent to the given mobile number along with an alarm sound.

6) Using the above information the Status of the student can be known.

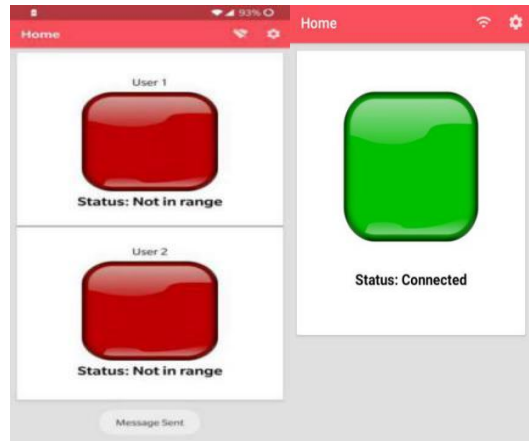


Fig. 5. Device out of range

Fig. 6. Device Connected

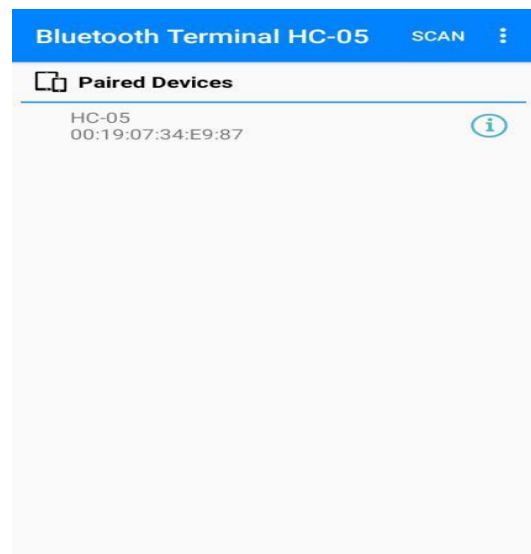


Fig. 7. Bluetooth Terminal HC-05 app

**B. Simulation**

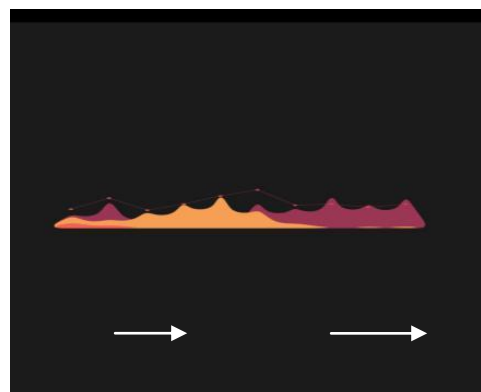


Fig. 8. Simulation

#### IV. WORKING

Unlike mobile phones, a Bluetooth modem doesn't have a keypad and display to interact with. It just acknowledges certain orders through a sequential interface and recognizes for those. These commands are called as Serial commands. Which having the continuous data transaction to the application. If the application stops receive dummy values then we will get alert in the application about missing the student.

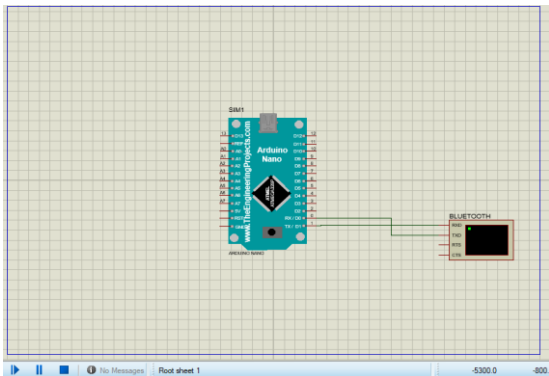


Fig. 9. Hardware connection

#### V. OUTPUT

Thus the student can be tracked when he moves certain surrounding immediately the message goes to the registered mobile number and gives the alert. It gives the location where the student is lost.

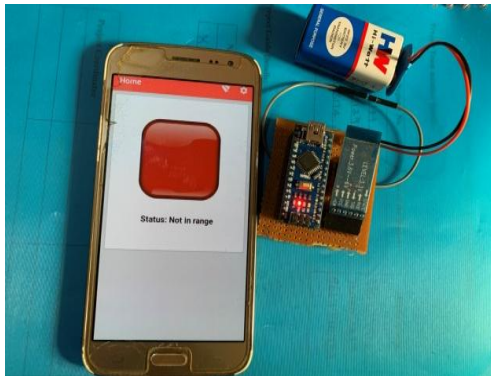


Fig. 10. Output

#### VI. CONCLUSION

Thus the live student tracking system tracks the location of the student thus ensuring safety and security of the student and providing relief to the parents.

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#### AUTHORS PROFILE



**Dr.K.Senathipathi**, Associate Professor, Dept. of Computer Science and Engineering, Sri Krishna College of Engineering and Technology, Coimbatore. He has completed his B.E in Computer Science and Engineering in 2004, M.Tech in Computer Science and Engineering in 2010 and Ph.D, in 2018. He has around 13 years of teaching experience. His area of research includes Bio-Informatics and Cloud Computing. He has published more than 15 papers in International and national journals and has published 1 patent.



**Rahul Gandhi A**, is a student who is currently pursuing computer science engineering at Sri Krishna College of Engineering and Technology, Coimbatore, Tamil Nadu. He has worked on many projects and this is his second paper. He is somewhat good at mobile application development in both native and react components. The first paper was on Paper Presentation in International Conference on "Recent Advances in Engineering and Technology - ICRAET 2019" and has been awarded the best paper of all. The paper presented was about Virtual ICU.



**Sanjay C**, is an undergraduate computer science student pursuing his studies at Sri Krishna College of Engineering and Technology, Coimbatore, Tamil Nadu. Despite working on many projects, this is his second paper after his several days of research on IoT and he is so curious about IOT based devices which led him to complete the research successfully in working this project. The first paper was on Paper Presentation in International Conference on "Recent Advances in Engineering and Technology - ICRAET 2019" and has been awarded the best paper.



**Vasanth S**, who is currently an undergraduate computer science Engineering student pursuing at Sri Krishna College of Engineering and Technology, Coimbatore, Tamil Nadu. He has done several projects with respect to his field and this is his second paper. The first paper was on Paper Presentation in International Conference on "Recent Advances in Engineering and Technology - ICRAET 2019" and has been awarded the best paper of all. The paper presented was about Virtual ICU.