IJIREEICE

ISSN (Online) 2321-2004
ISSN (Print) 2321-5526

International Journal of Innovative Research in
Electrical, Electronics, Instrumentation and Control Engineering

Vol. 8, Issue 5, May 2020

Student Tracker Using Android Application

Sakthi Suramanjari U[1], Sowmiya S L[2], Madhumitha V[3], Mrs.P.Vigneswari[4]

BE ECE, School of Engineering, Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore[1,2,3]

Assistant Professor, School of Engineering,

Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore[4]

Abstract: In this paper we have proposed a student tracker. This paper is about developing a mobile application to track the location of students. The tracking device intimates that a student is out of range. This paper consists of a hand-held wireless tracking device. It consists of three parts. The first part is a band with Bluetooth and a microcontroller which is worn by the student. The second part is a web server that will receive the data which is accessed over the Internet. The third component is the faculty/parent interface that will allow them to visually see where the hand-held device is.

Keywords: Bluetooth, RFID and GPS technologies

I. INTRODUCTION

Today, parents are worried about the safety of their children. There are a lot of issues like kidnapping children on their way home or during an excursion or during a party. In India approximately 96,000 children go missing each year taking 4th place after United States of America, United Kingdom and Germany. Nowadays even the child getting back home delayed due to a small reason make their parents bothered about it. But today's technology can provide a much better solution to ensure the children's safety. To track and monitor the children, the proposed system provides an android based student tracking system. The registered users can view, collect and exchange data about the student using the android application. In an excursion, there would be a teacher or faculty who would be in charge of the student and he or she would also be in charge of taking student's attendance. The faculty or mentor who is in charge will receive an alert in case of a missing student. The Bluetooth in student's band is used to check whether the student is in range or not. Once the student is out of range, the mentor will be able to know using application. This helps the mentor to keep him or her updated regarding the status of the students.

II. RELATED WORK

The Literature [1] implements a vehicle monitoring system for school children, using GPS tracking mechanism to track the vehicle position and finally the child's presence is monitored. The Literature [2] proposes and implements the real time information of the vehicle like the location, the route, the speed, the list of passengers the adherence of drivers to schedule, using RFID and GPS technologies and connect them to a remote server over WiFi. The information can be accessed by the parents through a mobile application and the application also allows the administration to be informed of emergencies or complaints. The Literature [3] proposes and implements an automated student attendance tracking system based on voiceprint and location, where student uses smartphones to submit attendance. The presence of the student is verified by voiceprint and real time location.

III. PROPOSED SYSTEM

The proposed system is an android application to track the position of students. The application is handled by the staff and an alert is received to parent/guardian. The staff views the position of the students through the android application and when the student is out of range an alert message is received to an emergency number given by the parent at the time of emergency. Each student has an unique ID to track the student's position.

IJIREEICE

ISSN (Online) 2321-2004
ISSN (Print) 2321-5526

International Journal of Innovative Research in
Electrical, Electronics, Instrumentation and Control Engineering

Vol. 8, Issue 5, May 2020

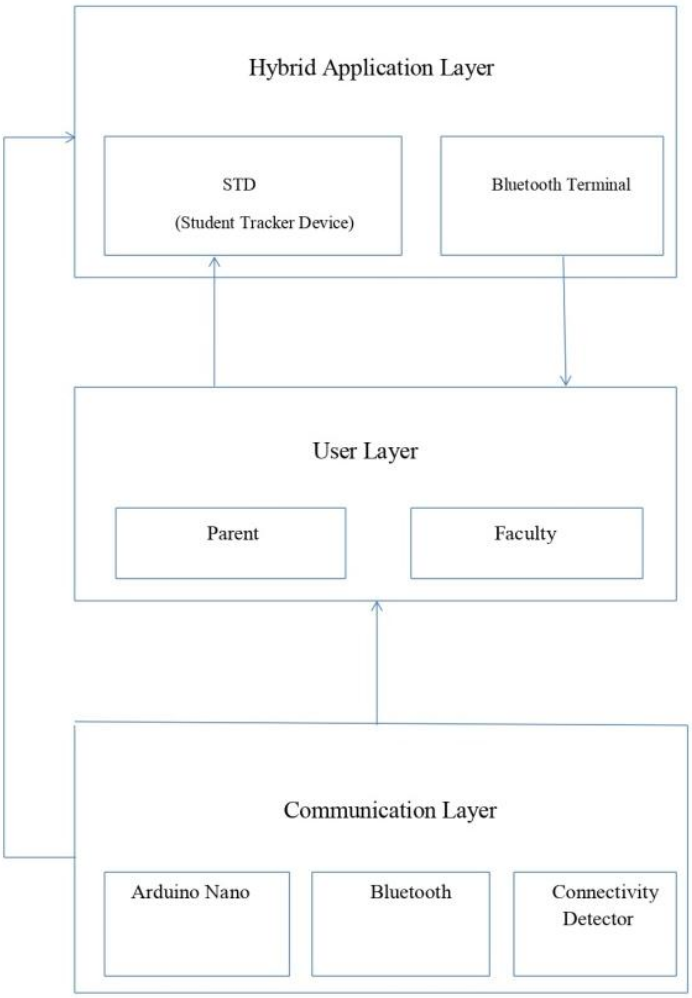

Fig 1

i. Communication Layer:

The communication layer is used to communicate with the user layer and the hybrid application layer using Bluetooth hc-05, Arduino Nano and a connectivity detector.

Bluetooth:

Bluetooth is a wireless communication system service. Bluetooth hc-05 is used to detect the distance moved by the student from the faculty. Bluetooth hc-05(4.0) can measure upto 35 feet of distance difference from the faculty. If the student exceeds the distance the connectivity goes down and an alert is generated.Using this technology data are sent from communication layer to the application layer.

Arduino Nano:

Arduino Nano acts as the basic controller in the communication layer. It sends the Bluetooth data and the connectivity detector layer to the application layer.

Connectivity detector:

This acts as a loop. Its just a terminal connector if any of the terminals are not connected properly it stops sending data to the application layer and thus alert message is received to the user. The main purpose of the connectivity detector is to ensure that the student wears the communication band and does not remove it purposefully.

ii. User Layer:

This layer consists the clients / users of the application. They interact and receive and send the data to the other layers.

IJIREEICE

ISSN (Online) 2321-2004
ISSN (Print) 2321-5526

International Journal of Innovative Research in
Electrical, Electronics, Instrumentation and Control Engineering

Vol. 8, Issue 5, May 2020

Faculty:

The android application is handled by the staff/faculty using a android mobile of version 10 or above. The faculty is alerted by an indication in the display of the mobile application whether the student is in range or out of range.

Parent/Guardian:

When the student is in out of range an alert message is received by the number given by the parent / guardian at the time of emergency. The number gets notified only when the student is out of range.

iii. Hybrid Application Layer:

This layer consists of all the backend process of the student tacker.

Bluetooth Terminal:

This application consists of the connectivity between the Bluetooth and the mobile. It helps to connect the correct required Bluetooth device with the mobile.

STD (STUDENT TRACKING DEVICE):

This application is the main application. It is used to display the student's status. It also takes the input like the Bluetooth device connected to it and also the emergency contact number to be used in the case of emergency.

IV. Algorithm

This section consists of the algorithm used. The tracker uses the Bluetooth to find the distance covered by the student. The screenshot's of the application is in Fig 2.

Tracking Student in the Parent / Faculty Module

Input: Login Parent/Faculty.
Output: Students location status.
1.Login to STD application.
2.Enter each student's detail.
3.Check the status of the student in the
application display.
4. Fetch data from Bluetooth for every changes that occurs.
5. If the student goes out of range the display in the faculty module alerts.
6. An alert message is sent to parent or guardian emergency number

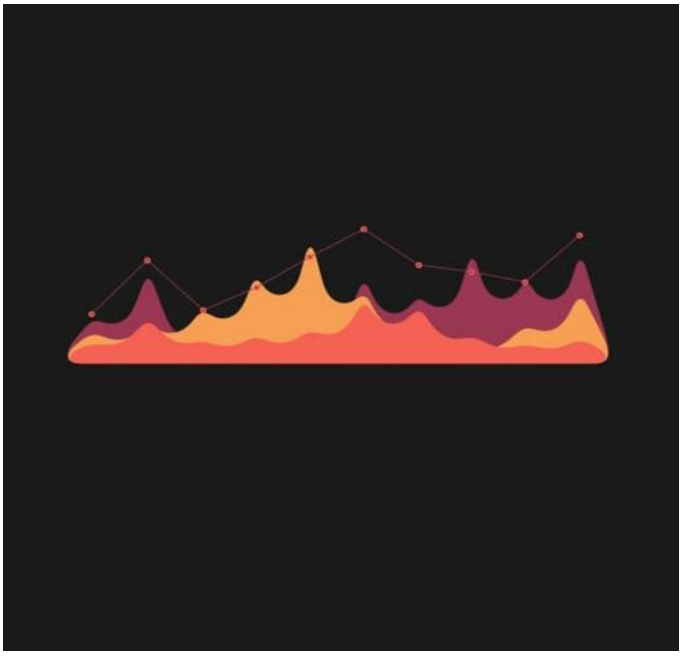

Fig 2

IJIREEICE

ISSN (Online) 2321-2004
ISSN (Print) 2321-5526

International Journal of Innovative Research in
Electrical, Electronics, Instrumentation and Control Engineering

Vol. 8, Issue 5, May 2020

V. Results

The system was developed using android studio. The application is basically installed in android tabs and phones of version 10 and above. It contains different modules faculty, parents and hardware module. Screenshot of hardware module [Fig 3], faculty view[Fig 4], [Fig 5] [Fig 6] and parents view [Fig 7] has been shown below. Application contains student's location monitoring features.

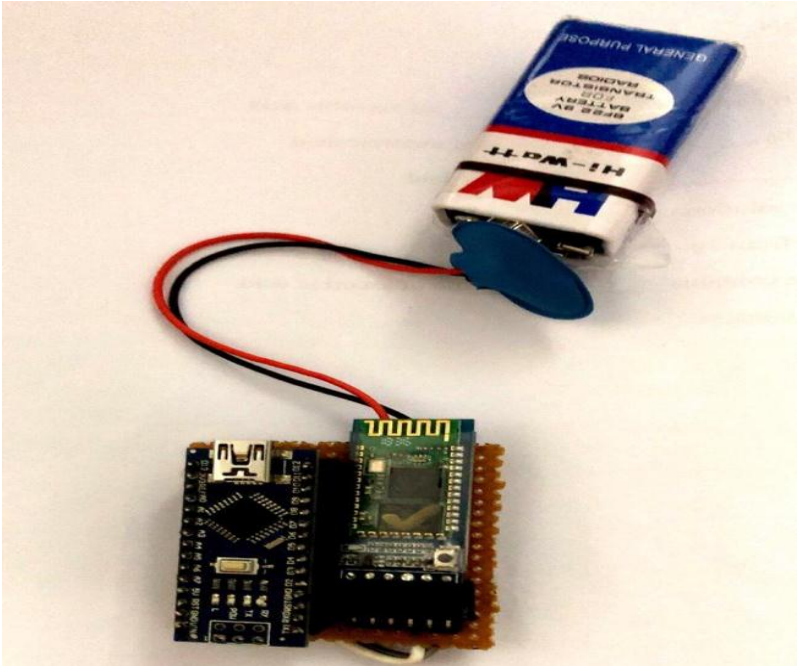

Fig 3

Fig 4

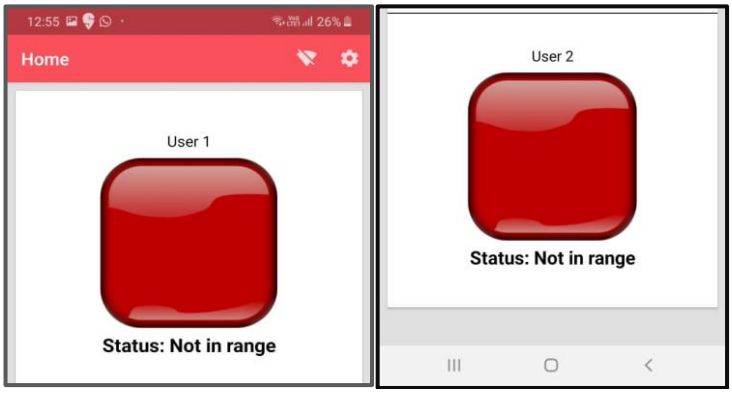

Fig 5

IJIREEICE

ISSN (Online) 2321-2004
ISSN (Print) 2321-5526

International Journal of Innovative Research in
Electrical, Electronics, Instrumentation and Control Engineering

Vol. 8, Issue 5, May 2020

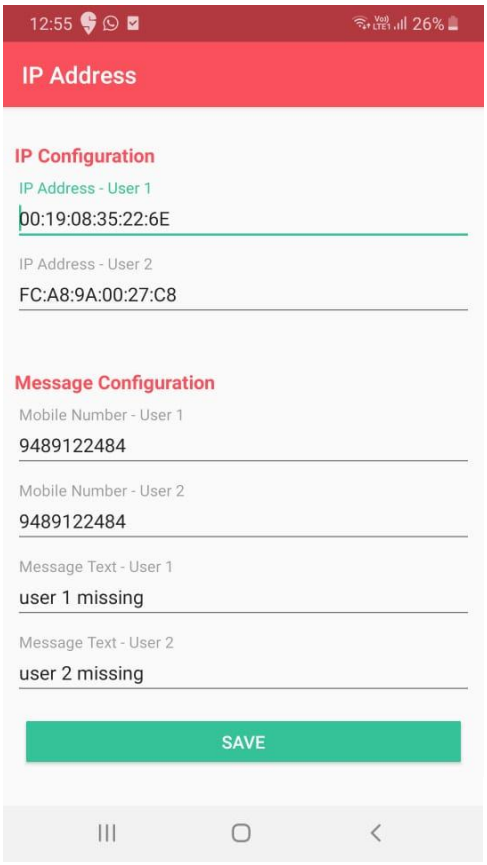

Fig 6

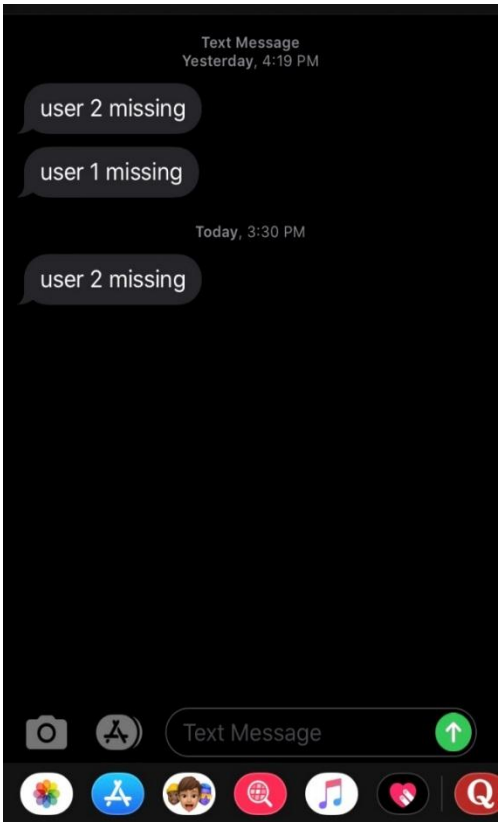

Fig 7

DOI 10.17148/IJIREEICE.2020.8517

IJIREEICE

ISSN (Online) 2321-2004
ISSN (Print) 2321-5526

International Journal of Innovative Research in
Electrical, Electronics, Instrumentation and Control Engineering

Vol. 8, Issue 5, May 2020

VI. CONCLUSION

We developed an Android application for student tracking. It was with the use of wireless technologies like Bluetooth and some good platforms like android studio. With the help of this application parents and staff need not worry about their child. Its implementation is done in a very cost effective way as it only needs mobile's bluetooth and Internet connection. This might not be 100% efficient as it depends on the speed of the mobile and the connectivity of the bluetooth. This would be a great relief for the parents who are really worried about their child's safety. Some of the future enhancements that could be brought in this system are Fingerprint Scanner, RFID Tags.

REFERENCES

[1] An Android Application for School Bus Tracking and Student Monitoring System Jisha R C, Mathews P Mathews, Sidharth P Kini, Vineeth Kumar, Harisankar U V, Shilpa M
[2] IoT based smart school bus monitoring and notification system Published in: 2017 IEEE Region 10 Humanitarian Technology Conference (R10-HTC) Judy Thyparampil Raj, Jairam Sankar
[3] An automated student attendance tracking system based on voiceprint and location S. Yang, Y. Song, H. Ren, X. Huang Published in: 2016 11th International Conference on Computer Science & Education (ICCSE), Nagoya.
[4] A GPS-track-based method for automatically generating road-network vector map Kong Qing-jie, Shi Wen-huan, Liu Yun-cai Published in: Proceedings of the 31st Chinese Control Conference
[5] SWAG Demo: Smart Watch Assisted Gesture Interaction for Mixed Reality Head-Mounted Display Pub in: 2018 IEEE International Symposium on Mixed & Augmented Reality Adjunct (ISMAR-Adjunct) Hyung-il Kim, Juyoung Lee, Hui-Shyong Yeo, Aaron Quigle, Woontack Woo
[6] The web is watching you: A comprehensive review of web-tracking techniques and countermeasures Published in: Logic Journal of the IGPL (Volume: 25 , Issue: 1 , Feb. 2017) Iskander Sanchez-Rola, Xabier Ugarte-Pedrero, Igor Santos, Pablo G. Bringas
[7] Road watch radar system development Jung S. Jung, Chul H. Jung, Jung Kim, Young K. Kwag Published in: 2013 Asia-Pacific Microwave Conference Proceedings (APMC)
[8] GPS receiver tracking loop design based on a Kalman filtering Approach Yuhong Yang, Junchuan Zhou, Otmar Loffeld Published in: Proceedings ELMAR-2012 (12-14 Sept. 2012)
[9] Watch What You Wear: Preliminary Forensic Analysis of Smart Watches Ibrahim Baggili, Jeff Oduro, Kyle Anthony, Frank Breitinge,Glenn McGee Published in: 2015 10th International Conference on Availability, Reliability and Security
[10] Self M2M based wearable watch platform for collecting personal activity in real-time Kyung Chun Lee, Ki Eun Seong, Soon Ju KanG Published in: 2014 International Conference on Big Data and Smart Computing (BIGCOMP)