Retraction

Retraction: Receiver System Based Student Tracking System using IoT (J. Phys.: Conf. Ser. 1916 012020)

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This article (and all articles in the proceedings volume relating to the same conference) has been retracted by IOP Publishing following an extensive investigation in line with the COPE guidelines. This investigation has uncovered evidence of systematic manipulation of the publication process and considerable citation manipulation.

IOP Publishing respectfully requests that readers consider all work within this volume potentially unreliable, as the volume has not been through a credible peer review process.

IOP Publishing regrets that our usual quality checks did not identify these issues before publication, and have since put additional measures in place to try to prevent these issues from reoccurring. IOP Publishing wishes to credit anonymous whistleblowers and the Problematic Paper Screener [1] for bringing some of the above issues to our attention, prompting us to investigate further.

[1] Cabanac G, Labbé C and Magazinov A 2021 arXiv:2107.06751v1

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Receiver System Based Student Tracking System using IoT

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Abstract. Our work is a result of an insight to a specific problem faced by kindergarten children or kids under 12 years when they are at school and in their everyday life. The ultimate goal of this project is to plan the blue print and related work of RF based Student Tracking System. By using the in and out monitoring records that helps to create the suitable place or environment which helps in maintaining their safety. The proposed system notifies the parents when they enter and leave the school via mobile text messages with the help of GSM. The system uses fingerprint verification as a part for locking and unlocking the student band which is worn by each and every student. Therefore, with the help of the proposed system safety of the kindergarten children or kids under 12 years (i.e) school student’s is enhanced. The testing is done and the appropriate result is obtained which is used to calculate the intended method.

Keywords: Transmitter system, Finger print sensor, Internet of Things (IoT), Receiver system, Gps Module.

1. INTRODUCTION
The Advanced technologies like Internet of Things take part in a major role in the advancement of innovative technologies in today's world, and helps to build and incorporate different concepts. The definition of IOT is used in an advanced and practical way here. [1] Now a days IOT becomes important as considering an device that can express by them high-tech becomes something over and above the device by themself. IOT makes the physical world as an one big information system. The role of IOT in our proposal "RF based Student Tracking System" is huge.

Security and health are the biggest threats faced in today's world by the children or school students. Statistical study says that every year about 50,000 children are missing, of which 42 per cent are not identified. An article published in India says that a child is missing in every eight minutes a data released by the national office for criminal records. [2] There are several problems that may present.

This proposed system which is used to monitor the students and ensure the safety and make the parents easy to look after their children while travelling to school in more protected and secured manner with respect to security. This project through its in and out recordings with addition to its security measures it
make an suitable place that makes the student protected and create positive energy among the parents and their children [3].

This proposed system has ability to track and monitor the students and by using the RFID tag it records the unique details of the student and exchange the data with RFID reader in the form of radio waves and that will send the information to micro-controller. [4-7] This system also uses finger print sensor to send the details. When the children get into the school, their parents will get notification through a GSM module connected with the watch like system in Student’s hand.

System uses RF technology to track the student. Radio frequency (RF) is a technology that transmits data using radio waves from an RF tag attached to an object by the reader for tracking and identifying objects. RF system contains two main components: the reader and the tags. The tag is usually attached to the objects to be monitored and carries information in a microchip. The reader on the other hand detects tags that are within it frequency limit and writes to or read from the tags.

Figure 1 shows the fingerprint sensor is also attached for efficient working along with Biometrics. In later years, fingerprints are used to identify everyone uniquely because everyone has unique fingerprint and identity. Which is used as unique person identifier in early 20th century. [8-13] This plays major part for human beings because no one has same fingerprint in this world so that only it is used for security proposes and related applications. Henry classes which is classified into five classes.

By using the above concepts in this proposed system we build a solution which helps parents to monitor and track their children to ensure safety and security. This student tracking system helps parents to get notified by messages through Gps and fingerprint sensor while their children enter and exit the school. By using this method we can improve the image quality of fingerprint without the need of adjustment rate.

2. LITERATURE SURVEY

- Al-Mazloum, Rohit N., Bhoi and friends in the year 2015 proposed a work to find the children or youngsters who is missing and lost.
- The major associated work concerning the matter deliberated by this project is showed in this section. The author Saranya in her proposed system which monitor and traces the children using child module and which sends the information to the microcontroller and mobile phones. The disadvantages of this system is that the child module is not appropriate for youngsters and this proposed system is very costly.
- The authors K. Li & X. Li, “Finding nemo: Finding your lost child in crowds via mobile crowd sensing,” presented in the year 2014 in IEEE Conference on Mobile Ad Hoc and Sensor Systems.
- The authors Gupta A & Harit V “Child safety tracking management system by using gps ,geofencing android application : Analysis” in the year 2016 in 2nd International Conference on Computational Intelligence Communication Technology in Feb 2016.
3. RELATED WORKS

“Letstrack personal” is an established system of our proposed system where it is an innovative GPS tracking device by Letstrack limited. In this existing system we need to connect the device to the Letstrack app which in turn lets you track your loved ones instantly. It is not in the wearable form and cannot handled by the small kids it remains only handy for the people above 12 years could be placed in a bag or fasten to a child’s belt.

And there is also an another existing system which is in wearable form as like the band but it does not exist in a secured way (i.e) the children can remove it from their hand whenever they want where it will not satisfy parents and the children’s safety to the full. Figure 2 shows the existing system uses RFID to track the children’s safety.

![Figure 2. Existing system](Image)

4. PROPOSED ARCHITECTURE

4.1. TRANSMITTER MODULE:
Transmitter consists of Arduino, GSM, Trigger Pin, RF transmitter and a fingerprint sensor. The transmitter transmits the radio frequency signal at a particular range continously. The signal transmitted will be received by the microcontroller and the controller sends it to the receiver when the both transmitter and receiver are in the range. The transmitted signal is then received by the receiver which is present in the school campus gate. When the receiver receives the signal the controller in the transmitter side identifies that the signal is received in the receiver side and alerts the parents with the notification SMS generated by GSM attached in the transmitter side. The alert is sent to the parents notifying about their child’s presence.

4.2. RECEIVER MODULE:
Receiver end consists of LCD display, GSM, Arduino and a RF receiver. The receiver receives the signal with the help of controller when the transmitter comes nearer to it. When the student tries to get out of the campus the RF signal again gets sync and the GSM in the receiver side sends alert to the parents notifying that the student as left the school. It also displays the result in the LCD display.
4.3. FINGERPRINT SENSOR AND TRIGGER MODULE:

In this module there is a trigger pin where it implies the working of locking and unlocking the band in the Student’s hand. The Fingerprint sensor is attached in the project which helps the parents to lock the band in the Student’s hand. The fingerprint of the parents is mandatory in our system to remove or to wear the band in the Student’s hand. This facility makes the project efficient as that no one can remove the band from the student’s hand unnecessarily. Here the trigger pin acts as the locking part and when anyone tries to pull it with the mismatching fingerprint then it sends the alert to the parents notifying the activity and so that the parents can take respective actions. In case of correct match of fingerprint no alert is sent and it means that the parents are removing the band from the student’s hand.

5. PROPOSED SYSTEM

The proposed system uses fingerprint sensor for unique identification of the band. The parent keeps their fingerprint on the band and then locks the band on their child’s hand before he or she leaves the home. Once the student get into the a notification with message is triggered to the parents that their child has been entered the school campus. Also when he or she exits the school campus a notification is triggered to the parents that their children has went out of the school campus. In any case, if a student tries to remove the band alert notification is triggered to the parents immediately so their parents and school management can take necessary actions immediately to protect the child. This can be more helpful when the children has been kidnapped and parents can take appropriate actions regarding this. With this system parents can monitor their child at their places.

6. WORKING OF THE MODULE

- Start the project by powering up the controller.
- Upload the program to both the transmitter side and receiver side using Arduino IDE.
- Store the fingerprint of the parent in the fingerprint sensor.
- It helps to identify if any unauthorized person other than the parent is trying to unlock the band, fingerprint not matched message will be displayed on the serial monitor as that they cannot proceed the final process.
- If a student tries to remove the band without authorized parent fingerprint then the notification will be triggered and also will be displayed in the serial monitor
- If a student entered the school campus, then “In campus” message will be sent to the parent and also “Student present” will be displayed on the LCD display.
- If a student leaves the school campus, then “Out of campus” message will be sent to the parent and in LCD display a message will be showing that the “student is absent”.
Figure 3. System Architecture

Figure 3 shows the system architecture. The architecture consists of two main modules they are:

- Transmitter Side
- Receiver Side

The transmitter side is present on the student band and the receiver side is present on the campus gate in figure 4-6.

7. RESULTS AND DISCUSSIONS

Figure 4. Prototype of RF based student tracking system
8. FUTURE ENHANCEMENTS
The future enhancements or advancements expected to be implemented in our project are:

- The above discussed idea can be made even more effective and to work with accuracy using RFID tags.
- The additional facilities like smart bus tracking can also be added to it (i.e) The smart bus tracking system helps the parents as well as the school management to exactly identify the location of the child which will ensure their safety.
- By combining this concept with our idea they can track their kids continuously from home to school and vice versa. Therefore on the whole the safety of the children can be monitored or tracked easily.
- Attendance monitoring process can also be added to this project by providing facilities like automatic updation of attendance in the school management’s server instead of updating it manually. It can also help them in generating the annual or monthly reports.

9. CONCLUSION
In today’s world there is no safety for children. Reports are getting filed for kidnapping and child abuse cases in large manner. Considering this our proposed system will be more appropriate in tracking and monitoring the students in daily basis. By using the emerging technologies like IOT we are sending the messages to the parents through mobile phones.

Our proposing system does not require any parents or guardians to overseeing their children while travelling to school. In our research paper, a new technique has been proposed along with the existing ideas to protect children (i.e) the Fingerprint authentication of the parents that might be tracking the entering and leaving actions of their child in school. So this will help the parents to feel easy and secured about their during their in hours at school. By using this method we can improve the image quality of fingerprint without the need of adjustment rate.

This system also makes use of affordable components such as RF, Arduino, GSM, LCD display and fingerprint sensor. This approach will helps in cost reduction, easily portable and it is mini size. Provisional practices has been carried out carefully. Our proposed system can also be used by wide range of people in an easy manner and it contributes in any kind of application. This will make an major part in our daily life so that it will be more easier and affordable.

Our system will be an efficient, user friendly and safer device to provide safety for the school going students. Our motto is to protect our future generations from the unnecessary activities and to make them and their parents to be in the comfort level.

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