RFID Child Monitoring System Using IoT

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Abstract: ***All over the world, the number of crimes against children is increasing day by day. Student tracking is im port ant to enhance security for children. At present time parents are worried about their children due to mishaps and missing of children.A children monitoring system is built using RFID (Radio-frequency identification), IoT components, and sensors. We can use artificial intelligence to recognise if the child's location has changed and communicate the current location, which is saved and connected to GOOGLE MAPS through GPS, also helps in sending photographs of the current situation. It will then be shared to the parents or guardian with cloud sharing and link sharing facilities. The system is integrated with the wireless technology and the cloud technology which includes advantages of both the technologies within the child safety device. An additional feature is auto police complaint and alert message to the neighboring parents, the system designed in a prototype that monitors the health condition of the child with the help of SPO2 and temperature sensor.***

Keywords—RFID, cloud, GPS, sensors

I. INTRODUCTION

The Internet of Things (IoT) is a network of interconnected, internet-connected items that can gather and transmit data without the need for human interaction across a wireless network. The Internet of Things (IoT) is a network of physical items, sometimes known as "things," that are outfitted with sensors and technology and connect to and exchange Radio data with other devices and systems via the Internet. RFID (radio frequency identification) is a mechanism that stores and retrieves records automatically over a long distance. The use of RFID tags and RFID readers necessitates the use of transponders. In order for RFID generation to work, an RFID reader and a tag must work together to some extent. RFID tags are radio-frequency identification and monitoring devices that can be attached to or embedded in a product, animal, or person. Tags can be inspected from a distance of several yards. The path of sight has at least a few portions. At the very least, the majority of RFID tags include components. An integrated circuit is a computer chip that can store and process data, modulate and demodulate radio frequency signals, and perform other tasks. The second component is the antenna, which is used to receive and transmit signals. Because crimes against children, such as kidnapping, harassment, and even severe school punishment, are on the rise at an alarming pace, the child surveillance device is essential for parents. A kid surveillance system will keep track of their child's whereabouts when they are not at home. If a youngster begins to cry, the system will alert the parents. In this monitoring system, GPS provides incredible capabilities in tracking positions, which aids in locating missing or lost children outside of a specific region. As a result, parents are no longer required to constantly monitor their children's movements; the system will notify them if their child leaves the set area. Not only would the gadget reveal the child's position, but it will also track their heart rate and SPO2 levels.

II. OBJECTIVES

The undertaking incorporates following the child development to and from school. A child's safety on his or her trip to and from school is crucial. Whatever is most important to their parents is significant to them. Despite the best precautions, children, due to their inability to protect themselves, may end up experiencing the same thing that puts their lives in jeopardy. The information of children is sent to their guardians. With a quantities of understudies driving a significant distance to the school, school administrators and parents recognized the need for enhanced measures to ensure the safety of the children.

- Guardians are restless about the kids' security. Performing a background check will allow you to overcome the security restriction.
- Checking framework involving RFID can offer extra security applications for youngsters. Anyway, the current frameworks are not

adequately strong to forestall the wrongdoing against kids.

III. LITERATURE SURVEY

"**IoT Based Smart School Bus monitoring and notification system"** In this paper They utilized SQLyog and Visual Studio to create a website and a mobile application that would allow parents and schools to follow the whereabouts of the school van as well as monitor youngsters using a fingerprint sensor and GPS module operated by a Node MCU micro-controller in this article. The basic identification in this present system is that they may keep track of their children and watch the vehicle using a website and application created by them.

"**Smart tracking system for school buses for ensuring child security using IoT implications and GPS Technology"** This article describes an android-based system that allows parents to track their children's whereabouts in real time via an IoT application. A bio-metric identification system is incorporated in the system to identify the child's existence. GPS technology may be used to follow the child's location. In addition, if the driver or bus worker has drunk alcohol or driven too fast, the bus's sensors will alert the school authorities.

"Transport safety mechanism of school children using IoT based smart system" The IoT brilliant transportation framework for a kids' school is introduced in this exploration review. The framework incorporates IR sensors to decide the quantity of understudies, a RFID CARD and a reader to read understudy information and monitor the participation and a MQ3 sensor to identify the liquor and guarantee the driver's well-being. It additionally incorporates a cell phone application for getting notice and messages. This framework utilizes things talk a public cloud designer.

IV. PROPOSED SYSTEM

We propose a simple three step idea where we have a monitoring device for the child when he is away from line of vision or surveillance of the parent.

Step 1: Ensure the device is attached/ along with the child when not in vision.

Step 2: Using IOT and cloud we monitor their:

1. Health Variables: SPO2; Heart Rate;
2. Location Tracking
3. Surrounding Image Tracking
4. Voice Announcements

Step 3: Raise a threat to the police and guardian and neighbors (Whichever necessary based on the situation)

Step 4: Gather a report and help trace the culprit/ save the child from any mishap.

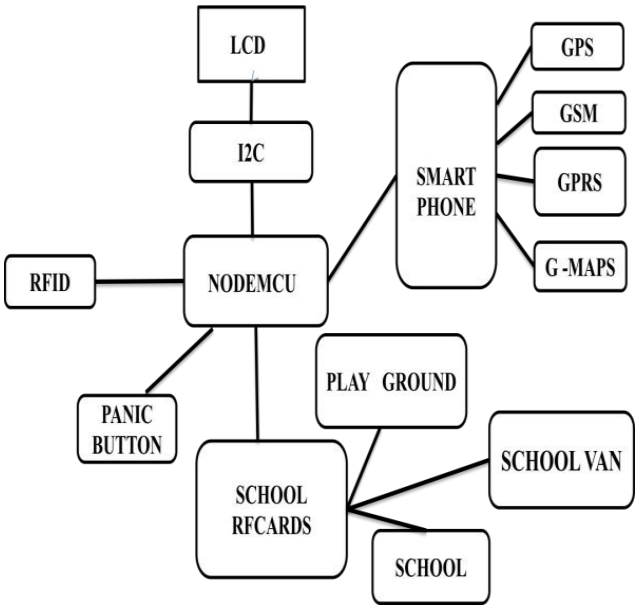

Figure 1 shows the proposed system's architecture.

A. Hardware Components

NODE MCU ESP8266: The Node MCU is an open supply platform primarily based totally on ESP8266 that lets in items to be connected and information transferred the use of a Wi-Fi protocol.

Figure.2 ESP8266 NODE MCU

Global Positioning System: The Global Positioning System, or GPS, is an organization of satellites that convey coded information consistently, permitting individuals to perceive spots on Earth by definitively deciding good ways from satellites. The satellites convey very low-power radio waves that permit anybody with a GPS collector to decide their area on the earth.

RF Reader: An RF Reader is the core of an RFID machine and is required for it to work. Readers, also

known as interrogators, are devices that send and receive radio waves in order to communicate with RFID tags.

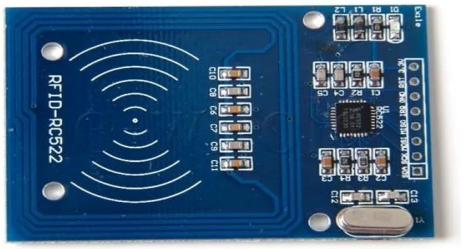

Figure.3 RF Reader/Scanner

RF Tag: Radio Frequency Identification (RFID) is a structure comprised of two parts: tags and a reader. The RFID tag reader is a gadget with no less than one getting wire that emanates radio waves and gets warnings from the RFID Tag.

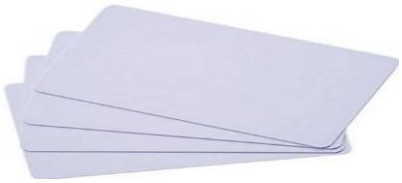

Figure.4 RF Tag/Card

LCD Display: LCD 16*2 is an electrical device that is used to display information and messages. It has 16 columns and 2 rows, as the name suggests, and can display 32 characters.

Figure.5 LCD Display

SPo2 & Heart Rate Sensor: A heartbeat oximeter is a light based gadget utilized due its effortlessness to quantify pulse (HR) and the blood vessel oxygen immersion (SpO2) as a level of the hemoglobin in blood.

Figure.6 SPo2 and Heart Rate Sensor

Smart Phone: Smartphone is used to receive message from the application regarding the child, which helps in monitoring and tracking location from school or when child is in trouble.

Figure.7 Smartphone

B. Software Components

Arduino IDE: The Arduino IDE (Integrated Development Area) is a piece of software that makes writing code easier for programmers. For drawing system codes, there are a variety of toolbar and menu options. This software creates a fresh built programme that the Arduino board may download.

Figure.8 Arduino IDE

V. WORKING SYSTEM

The GPS collector module that the child is wearing is continually getting signals from satellites. These satellites are positioned overhead and communicated information to Earth on specific RF frequencies consistently. GPS recipients are furnished with little PCs and receiving wires that get information directly from satellites and compute area and time. At the point when the IPROB button on the collector module is squeezed, the panic mode is actuated. Whenever the frenzy mode is initiated, the camera takes photos of the environmental elements, and the GPS module catches the understudy's position facilitates and sends them to the parent application and the authority numbers enrolled in the Child's application. These realities are kept in the server's data set prior to being shipped off the parent application and to the authority telephone numbers. There is additionally an element that permits the youngster to send an alarm message to the parent assuming the person feels compromised.

VI SOLUTION METHODOLOGY

This paper proposes an android-based answer for help guardians in following their kids continuously on account of a crisis. In this part, the theoretical model and its predictable working are tended to When the panic mode is activated, the camera takes photographs of the surroundings, and the GPS module captures the student's position coordinates and sends them to the parent application and the official numbers registered in the child application.

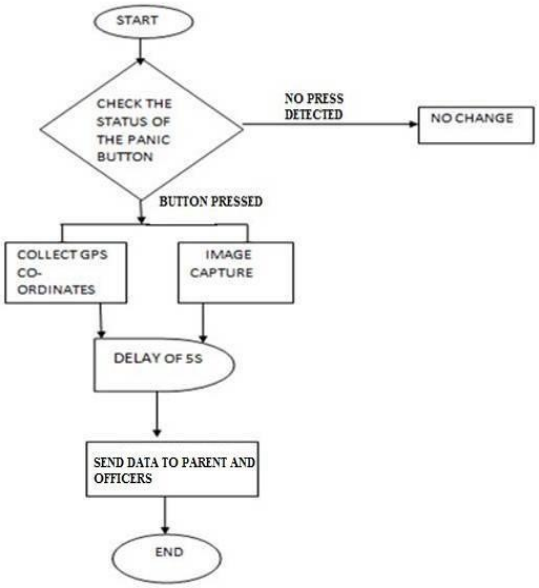

Figure..9 Flowchart

THE OVERALL PROCESS ALGORITHM:

- Initially, the IPROB button is not active.
- When the student feels any form of insecure emotions he/she will be able to press the IPROB button.
- So, here the status of the button is always checked.
- When the button is pressed, the GPS module and the camera module will turn on.
- The GPS organizes and the foundation picture of the student's environmental factors are caught inside a deferral of roughly five seconds.
- The data will be sent to the parent via a notification to the parent's app

VI. RESULTS

The child safety system is developed using IoT. Uses Node MCU and GSM Module.
The WIFI Module is linked to the components.

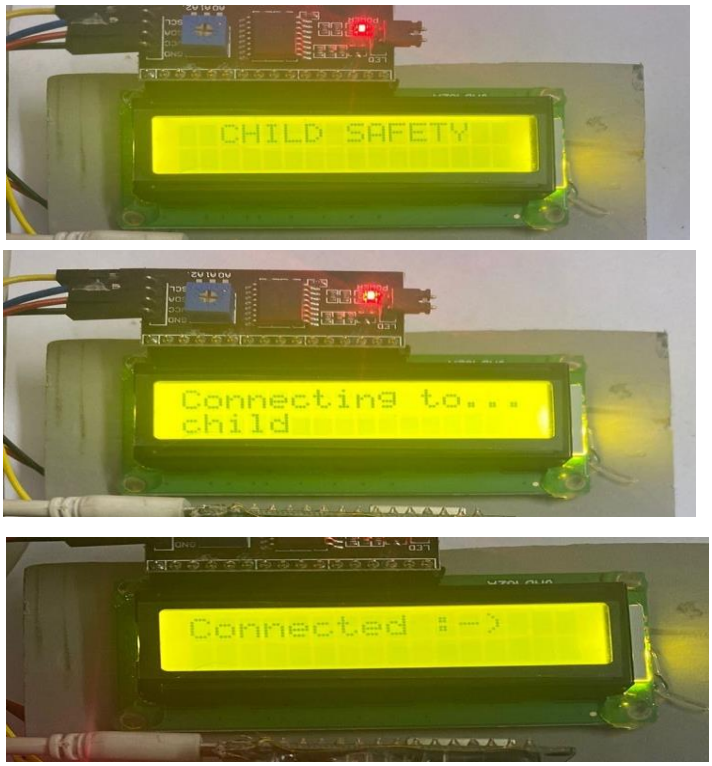

Figure.10

When the SPo2 & Heart Rate is sensed, the value will be displayed on the LCD. When threshold value is reached, the value will be displayed on LCD and message with voice automation will be sent to the guardian.

Figure.11

A guardian application homepage, where all the data which has been collected will be displayed.

Figure.12

Guardian or user inputs the child phone number to check the necessary information i.e., location, photographs of the surrounding, emergency information

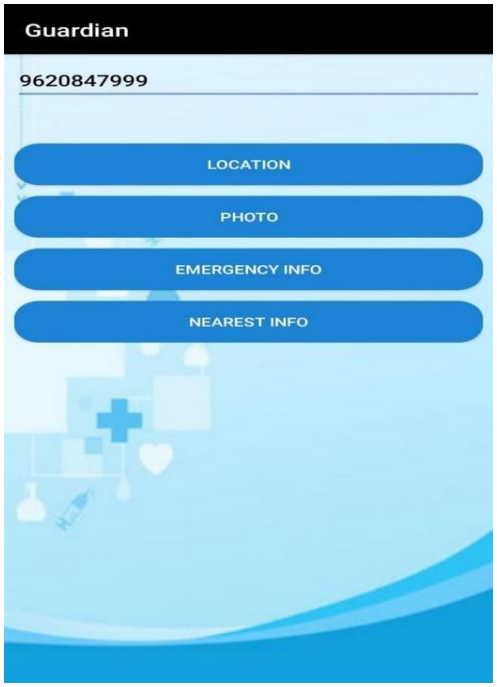

Figure.13

The link sent by the Cprob (child's application) contains the photographs

Figure.14

Guardian wants to know the child's location, and the location is sent by Cprob.

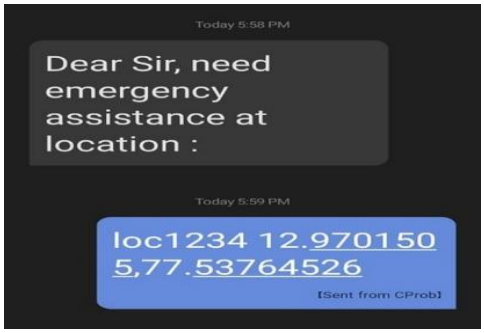

Figure.15

VII. CONCLUSION

The word Future looks like the word Children. As Dr. A.P.J Abdul Kalam's words "Young people are the future mainstays of one's country", the present kids are the upcoming young people, safeguarding their fantasies and life for a superior future is fundamental. Consequently, ach and every parent should manage their own young people, without letting them to fall into the faint universe of misuse which totally ruin them genuinely, intellectually and genuinely obliterating our future. Subsequently, considering the significance of our future, our task makes it simple for guardians to follow their youngsters and to outwardly screen them on customary premise, which causes them to guarantee the well-being of their kids and lessens the pace of episodes of kid misuse.

This executes the utilization of constant framework. The RF cards screens the youngsters' area while in School Van, School and Playground. On the off chance that the understudy overreacts or is in a difficult situation he/she presses the IPROB button, his/her GPS organizes and the trouble picture is shipped off the

predetermined application of the parent. The return data message shipped off the parent is an additional benefit so that regardless of whether the parent is disconnected, they will get instant message.

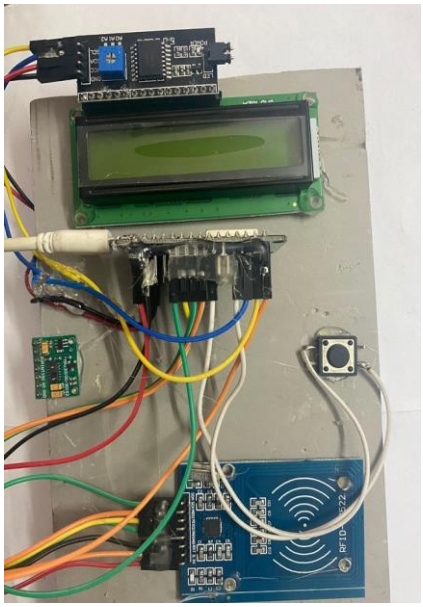

Figure.16

VII. FUTURE ENHANCEMENT

As far as size and accommodation, a belt can be consolidating coil-on-chip innovation might be best than utilizing an ID CARD. Even bio-metric fingerprint scanners are effective in tracking students, and in addition to the bus's location, school authorities can provide a route map to the destination, which will aid working parents to keep track for their children while in picking up their children on the way. Our proposed System is productive for a functioning model of school transport which will keep away from snatching of the youngsters and to keep up with or record the everyday participation of the understudies. In future this proposed technique can be upgraded by a more refined framework. The parts can be collected in the school ID or some other compact thing.

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