LITERATURE SURVEY ON

IoT BASED SAFETY GADGET FOR CHILD MONITORING AND NOTIFICATION

Paper 1: An IoT-based System for Child Tracking in Day care

Publication year: May 2018

Author name: Shabna Siraj

Journal name: Lul ea University of Technology

Summary: In this paper, to build a system which can be useful for preschool staff taking the children on a field trip. It will developed as an android user tracking application with beacon technology being implemented**.** This also presents Artic prototype system to track children on such field trips with BLE technology. Finally, a user study was conducted to analyze the user experience of the system developed.

Methodology used: Information system (IS) research is a system development research methodology which is presented from a methodological perspective [51]. **Basic and applied research** and **Scientific and engineering research.**

Conclusion: The research work is recommended to be implemented in daycare when children are out on field trips. During the field trips, the teacher in charge gives out a set of instructions about safety and staying within the group. Children are not only taken on field trips where is less populated area, but also to crowded places like museums and parks. To avoid them getting mixed with the crowd or drifting

away to unsafe zones without supervision, ARCTIC the system implemented can be used.

Paper 2: RFID-based System for School Children Transportation Safety Enhancement

Publication year: February 2015

Author name: Anwaar Al-Lawati, Shaikha Al-Jahdhami, Asma Al-Belushi, Dalal Al-Adawi, Medhat Awadalla and Dawood Al-Abri.

Journal name: Department of Electrical and Computer Engineering, Sultan Qaboos University

Summary: This paper presents a system to monitor pickup/drop-off of school children to enhance the safety of children during the daily transportation from and to school. The system consists of two main units, a bus unit and a school unit. The bus unit the system is used to detect when a child boards or leaves the bus. This information is communicated to the school unit that identifies which of the children did not board or leave the bus and issues an alert message accordingly. The system has a developed web-based database-driven application that facilities its management and provides useful information about the children to authorized personal. A complete prototype of the proposed system was implemented and tested to validate the system functionality. The results show that the system is promising for daily transportation safety.

Methodology used: Bus Unit, Microcontroller (At mega 32), 4.1.3 GSM Modem, Web-based , School Unit, Application and Database, Receiving the Data from the Bus Unit, SMS Notifications, The system Integration Test.

Conclusion: This paper presented an RFID-based system that aims at enhancing the safety of children during the daily bus trip to and from the school. RFID-based detection unit located inside the bus detects the RFID tags worn by the children. It then sends, via a GSM modem, the relevant data to the system database server. The system checks and detects which child did not board or leave the bus and issues an alert message to this effect. In addition, the system checks the children attendance and updates the database. The parents can log into system website and monitor the details of their children.

Paper 3: IoT-BBMS: Internet of Things-Based Baby Monitoring System for Smart Cradle.

Publication year: July 12, 2019

Author name: WAHEB A. JABBAR 1,2, (Senior Member, IEEE), HIEW KUET SHANG1 , SAIDATUL N. I. S. HAMID1 , AKRAM A. ALMOHAMMEDI 3 , ROSHAHLIZA M. RAMLI1 , (Member, IEEE), AND MOHAMMED A. H. ALI 4 , (Member, IEEE).

Summary: In this paper. The current number of working mothers has greatly increased. Subsequently, baby care has become a daily challenge for many families. Thus, most parents send their babies to their grandparents' house or to baby care houses. However, the parents cannot continuously monitor their babies' conditions either in normal or abnormal situations. Therefore, an Internet of Things-based Baby Monitoring System (IoT-BBMS) is proposed as an efficient and low-cost IoT-based system for monitoring in real time. In the designed system, Node Micro-Controller Unit (Node MCU) Controller Board is exploited to gather the data read by the sensors and uploaded via Wi-Fi to the AdaFruit MQTT server. The proposed system prototype is fabricated and tested to prove its effectiveness in terms of cost and simplicity and to ensure safe operation to enable the baby-parenting anywhere and anytime through the network. Finally, the baby monitoring system is proven to work effectively in monitoring the baby's situation and surrounding conditions according to the prototype.

Methodology used: Background and related Works, Design and fabrication of Smart cradle, Research Methodology, Baby Cradle Fabrication, Developing IOT-BBMS system**.**

Conclusion: A smart cradle with a baby monitoring system over IoT has been designed and fabricated to monitor a baby's vital parameters, such as crying condition, humidity, and ambient temperature. NodeMCU was used as the main controller board in the project's circuit design, because it had a built-in Wi-Fi module, which enabled the implementation of IoT concept in the developed system. The demand of IoT was achieved by using the NodeMCU due to its simplicity and open-source nature. Red meranti wood was used as the material to build the baby's cradle, because of its general use in woodworks and due to its workability. Improvements were made during the enhancement phases to ensure that the research outcomes achieved the objectives.

Paper 4: IoT Based Smart Security and Safety System for Women and Children

Publication year: 30 March 2020

Author name: K. Srinivasan, T. Navaneetha , R. Nivetha , K. Mithun Sugadev Journal name: International Journal of Engineering Research & Technology (IJERT).

Summary: Safety of women in India has become a major issue not. According to the National Crime Records Bureau, in 2016 the sexual harassment is increased by 82% compared with the previous years. Across all cases, 95% of rapists were not strangers but family, friends and neighborship the wake of recent rape and murder of young women, much of the public speak about it has been confined to outrage, punishment and tougher laws. Each and every day women and children are being abused or molestered around the world.

Methodology Used: GSM, GPS, Electric Shock, IoT, Safety System.

Conclusion: Nowadays not only women but children also get molested. In order to provide security and to ensure their safety a system has been proposed in this paper. Many researchers have been working in this area and have developed different technologies. Using these technologies, a self - defence device is proposed in this paper by adding new feature thereby making it more secure. This paper describes the basic design concept and functionality along with the expected outcomes.

Paper 5: IOT based Smart School Bus Monitoring and Notification System

Publication year: 19 Mar 2020

Author name: Keerthana M S, Samyama S, Raghavendra M

Journal name: International Journal of Engineering Research & Technology (IJERT).

Summary: This system describes a school bus display that is low price and tracks varied parameters like students aboard, adherence to route and schedule, location, speed and different data necessary for school and parents. Notification system helps to confirm individual safety of wards and additionally wastage of your time whereas students await delayed buses are self-addressed during this system with the assistance of real time observation. Moreover, instructional boards like CBSE have started advocating the need for varsity bus observation systems.

Methodology Used: Fingerprint sensor, GPS Module, Arduino, Node MCU, Android application.

Conclusion: The school bus app could be a person friendly tool for parents to visualize their wards and school management to observe the drivers. In summary, this task has made a school bus protection device that has comprehensive protection to the commute. The device has real time following, student identification,delays, and scholar absence.

Paper 6: IoT Based Smart Gadget for Child Safety and Tracking

Publication year: 20 June-2020

Author name: N. Manjunatha, H. M. Jayashree, N. Komal, K. Nayana.

Journal name: International Journal of Engineering Research & Technology (IJERT).

Summary: Android application can be used to track the current location of safety gadget using its location coordinates on parental phone android app and also via SMS request from parent phone to safety gadget. Panic alert system is used during panic situations and automatic SMS alert and phone call is triggered from safety gadget to the parental phone seeking for help and also monitored for plug and unplug from hand, as soon the gadget is unplugged from hand a SMS is triggered to parental phone and the alert parameter is also updated to the cloud.

Methodology Used: GPS, GSM, Sensor, Mobile communications, Smart phone.

Conclusion: The system also consists of Wi-Fi module used to implement IoT and send all the monitored parameters to the cloud for android app monitoring on parental phone. Panic alert system is used during panic situations alerts are sent to the parental phone, seeking for help also the alert parameters are updated to the cloud. Boundary monitoring system is implemented on safety gadget with the help of BEACON technology, as soon as the safety gadget moves far away from the BLE listener gadget an alert is provided to itself.

Paper 7: Child safety monitoring system based on IoT

Publication year: May – June 2019

Author name: Khushalsing Rajput

Journal name: Journal of Emerging Technologies and Innovative Research (JETIR)

Summary: This paper focuses on implementing children tracking system for every child attending school. Today, technology is growing rapidly and providing all essential and effective solution for every requirement. The major advantage of this wearable over another wearable is that it can be used in any cell phone and doesn't necessarily require an expensive smartphone and not a very tech savvy individual to operate. Therefore, the focus of this paper is to have an SMS text enabled communication medium between the child's wearable and the parent as the environment for GSM mobile communication is almost present everywhere.

Methodology used: IOT, GPS, GSM

Conclusion: The System proposed in this paper is to ensure safety of children and increase their confidence. Many researchers are working in this area and have developed different technologies to help the children. The solution represented in this paper takes the advantage of smart phones which offers rich features like Google maps, SMS, etc. The child safety device is capable of acting as a smart IOT device. It provides parents with real-time location, surrounding temperature, UV radiation index along with alarm buzzer for their child's surroundings and the ability to locate their child. This paper describes the basic design concept and functionality along with the expected outcomes.

Paper 8: Child monitoring system

Publication year: March 2019

Author name: S. Deepa, S. Dinesh Kumar, P. Prasanth

Journal name: International Journal of Engineering Science and Computing

Summary: Eventually mobile phones cause major allegations on our society. Many teens (especially girls) must be noticed by their own parents, it's our duty. But sometimes children's are arguing with their parents for watching their steps, to overcome these issues, we need to watch them through online. After considering all these factors we implemented the system "Mobile Activity Monitoring System Using Android Spy" This system is implemented for tracking the daily activity of the users with their android mobiles. We have a solution for monitoring their child activities through mobile phone without their knowledge. We can see their recent activities like Messaging, Call logs, Contacts, Location.

Methodology used: portable digital displays (PDAs), location-based services (LBs) like GPS or global system for mobile (GSM) network

Conclusion: Accordingly, the project concluded some of the main research challenges when researching this area including the difficulty on maintain privacy and providing normal and clear data while using mobile devices. Furthermore, the project included the implantation of the monitoring system called Time's Up application, which will help guardians to control and evaluate their kids use of mobile devices. The analysis, design, and implementation for the proposed system, Time's Up, are included.

Paper 9: Smart IoT Device for child safety and tracking

Publication year: 8 June, 2019

Author name: M Nandini Priyanka, S Murugan, K N H Srinivas,T D S Sarveswararao, E Kusuma Kumari.

Journal name: International Journal of Innovative Technology and Exploring Engineering (IJITEE).

Summary: Child safety and tracking is a major concern as the more number of crimes on children are reported nowadays. With this motivation, a smart IoT device for child safety and tracking is developed to help the parents to locate and monitor their children. The system is developed using LinkIt ONE board programmed in embedded C and interfaced with temperature, heartbeat, touch sensors and also GPS, GSM & digital camera modules. The novelty of the work is that the system automatically alerts the parent/caretaker by sending SMS, when immediate attention is required for the child during emergency. The parameters such as touch, temperature &heartbeat of the child are used for parametric analysis and results are plotted for the same. The above system ensures the safety and tracking of children.

Methodology used: GPS, GPRS, Sensors, Serial camera, LinkIt ONE board.

Conclusion: This research demonstrates Smart IoT device for child safety and tracking helping the parents to locate and monitor their children. If any abnormal values are read by the sensor, then an SMS is sent to the parents mobile and an MMS indicating an image captured by the serial camera is also sent. The future scope of the work is to implement the IoT device which ensures the complete solution for child safety problems.

Paper 10: IoT-based Child Security Monitoring System

Publication year: May 2021

Author name: Lai Yi Heng

Journal name: Atlantis Highlights in Computer Sciences

Summary: Nowadays, crime rate associated with children keeps increasing due to which draws peoples' attention regarding child safety. This research is conducted to propose a child security smart band utilizing IoT technology. Online questionnaire and semi-structured interview are methodologies used to collect data. The online questionnaire gains feedbacks by sending questions electronically, where answers need to be submitted online. In the semi structured interview, researcher meets and asks respondents some predetermined questions while other being asked are not planned in advanced. Through information obtained, a smart band have been proposed to monitor the safety of children.

Methodology used: GPS, GSM, IoT device, Smart band.

Conclusion: The System proposed in this paper is to ensure safety of children and increase their confidence. Many researchers are working in this area and have developed different technologies to help the children. The solution represented in this paper takes the advantage of smart phones which offers rich features like Google maps, SMS, etc. The child safety device is capable of acting as a smart IOT device. It provides parents with real-time location, surrounding temperature, UV radiation index along with alarm buzzer for their child's surroundings and the ability to locate their child. This paper describes the basic design concept and functionality along with the expected outcomes.

Paper 11: IoT Enabled Children Safety System

Publication year: Jan 2020

Author name: Mr.Vinod Mane, Durgesh Musale, Rohan Joshi, Aditya Toney, Anand Pande, Shashank Kohade

Journal name: International Research Journal of Engineering and Technology (IRJET).

Summary: In this paper, with the rising statistics of traffic accidents and child abduction, there is a need for a robust system that enables constant tracking for a specific child by there're specific parent who are on their way commuting from and to schools. These things are possible with the help of emerging of Internet of Things (IoT) technology, in addition to Radio Frequency Identification (RFID), developing such system becomes feasible. This system provides complete visibility children tracking. In this paper, we propose a complete low cost design and implementation of an IoT based system that allows schools, parents and authority to track the movement of the children during their presence in the school bus, which guarantees comfort for parents

and safety for children. The system is based on, a low cost Nano RFID reader and a GPRS module both interfaced with Arduino microcontroller.

Methodology used: GPS, GPRS, Sensors, Serial camera, RFID

Conclusion: This research demonstrates Smart IoT device for child safety and tracking helping the parents to locate and monitor their children. If any abnormal values are read by the sensor, then an SMS is sent to the parents mobile and an MMS indicating an image captured by the serial camera is also sent. The future scope of the work is to implement the IoT device which ensures the complete solution for child safety problems.

Paper 12: Child Safety Monitoring System Based on IoT

Publication year: January 2019

Author name: N. Senthamilarasi, N.Divya Bharathi, D.Ezhilarasi, R.B.Sangavi

Journal name: International Conference on Physics and Photonics Processes in Nano Sciences.

Summary: In this paper, the overall percentage of child abusements filed nowadays in the world is about 80%, out of which 74% are girl children and the rest are boys. For every 40 seconds, a child goes missing in this world. Children are the backbone of one's nation, if the future of children was affected, it would impact the entire growth of that nation. These innocent children are not responsible for what happens to them. So, parents are responsible for taking care of their own children. In this system, the collected values from every sensor like temperature sensor, pulse rate detection sensor, metal detection sensor, and the location value from GPS are used to detect the status of the child and alerts the respective guardians using GSM accordingly.

Methodology used: Temperature sensor, Pulse sensor, GPS, GSM, Web camera, Raspberry pi microprocessor.

Conclusion: Today's children are tomorrow's youngsters, preserving their dreams and life for a better future is necessary. Therefore, each and every parent should take care of their own children, without letting them to fall into the dark world of abusements, which entirely ruin them physically, mentally and emotionally destroying our future. Hence, considering the importance of our future, our project makes it easy for parents to track their children and to visually monitor them on regular basis, which makes them ensure the safety of their children and reduces the rate of incidents of child abuse.