A Literature Survey on IoT Based Safety Gadget for Child Safety Monitoring and Notification

LITERATURE SURVEY-1

TEAM MEMBERS :

1. YAAKOBU STEPHIN.D [512419104007]
2. SUNIL KUMAR.S [510919205042]
3. PRASANTH.J [510919104029]
4. SURIYA [510919104044]

SURVEY- 1

1 J.Saranya and J.Selvakumar.— "Implementation of Children Tracking System on Android Mobile Terminals" Proposed in 2013 International conference and Signal Processing.

Recently all over the world in every 40 seconds child become missing or kidnapped. The increasing prevalence of children wandering has many parents very concerned. We have seen and read many stories about children who are kidnapped or not reaching homes. Most of the stories have had tragic endings. This paper focuses on implementing children tracking system for every child attending school. With more children getting lost, Sen. Charles Schumer (NY) has proposed that the federal government provide funding for tracking devices for Autistic children so they do not go missing. These proposed tracking devices can be worn as wrist watches, anklets or in icards. The child module include PIC 18F45K22 microcontroller, Global positioning system (GPS), Global system for mobile communication (GSM) and receiver include parents mobile phone.

Designing a child tracking system to assure parents that their child is safe from suspicious actions and happy in school environment. The information of child being missed is sent to respective parents mobile, if they move beyond the coverage area. Also, when child wants to convey that they are in danger than they will press a panic button given on their school i-card. Mobile terminals have wireless local area network(LAN) and Bluetooth device. It adopts Bluetooth communication among mobile terminals in every group to collect information and delivers to respective server using wireless LAN.

SURVEY- 2

2 Yuichiro MORI, Hideharu KOJIMA, Eitaro KOHNO,Shinji INOUE,Tomoyuki OHTA, and Yoshiaki KAKUDA, — "A Self-Configurable New Generation Children Tracking System based on Mobile Ad Hoc Networks Consisting of Android Mobile Terminals" proposed in 2011 tenth International symposium on Autonomous decentralized system.

Recently, all over the world, crime against children is increasing at higher rates and it is high time to offer safety support system for the children going to schools. This paper focuses on implementing children tracking system for every child attending school. However, the existing systems are not powerful enough to prevent the crime against children since these systems give information about the children group and not about each child resulting in low assurance about their child safety to parents and also does not concentrate on sensing the cry of the child and intimating the same to its parents. The proposed system includes a child module and two receiver modules for getting the information about the missed child on periodical basis. The child module includes ARM7 microcontroller (lpc 2378), Global positioning system (GPS), Global system for mobile communication (GSM), Voice playback circuit and the receiver module includes Android mobile device in parent's hand and the other as monitoring database in control room of the school. Finally, implementation results for the proposed system are provided in this paper.

Children Tracking system is widely used all over the world to assure parents that their wards are safe from suspicious actions and their kid is happy in school atmosphere without crying. The proposed system includes tracking the child's movement to and from school. The information pertaining to missed child is sent to control room of the school as well as to their respective parents, if they move beyond the coverage area. Not only the information about the child's whereabouts but also whether the child is crying is sent to parents through text message to their Android mobile device. System developed by Yuichiro MORI, et.al, uses "Autonomous Clustering technique" for managing groups of Android terminals attached to children in school.

Android terminals have wireless LAN and Bluetooth device. It adopts Bluetooth communication among Android mobile terminals in every cluster to collect information and cluster head delivers the same through tags to server at school using wireless LAN. It results in lack of individual attention towards the children. since the cluster head sends the information about the children group and not about each individual & also does not concentrate on child crying inside the school. It offers less security. Children tracking system is also developed based on mobile adhoc networks. System developed says that in GPS system and tag-based system, each parent cannot obtain group information on the vicinity of the child.

SURVEY- 3

3 Peng Wang, Zhiwen Zhao, ChongbinXu, Zushun Wu, Yi Luo, "Design and Implementation of the Low-Power tracking System Based on GPSGPRS Module" proposed in 2010 5th IEEE conference on Industrial Electronics and Applications.

The purpose of the research proposed in this paper is to develop a Low-Power Tracking System, which can meet the special needs of the security of a mobile device. The system contains two parts: the GPS terminal in the module receives the locating information of the tracked device, and the control center. This paper discusses both hardware and software design of the tracking system. In the end, the future research of the positioning and tracking system is discussed.

The GPS is a multiple-satellite based radio positioning system in which each GPS satellite transmits data that allows a user to precisely measure the distance from selected ones of the GPS satellites to his antenna and to compute position, velocity, and time parameters to a high degree of accuracy, using known triangulation techniques. The purpose is to track the location of a mobile device. With the advent of cellular communication and GPS positioning, objects may be tracked from just about anywhere.

SURVEY- 4

4 V.Ramya, P.Vijaya Kumar, B.Palaniappan, "A Novel Design of Tomoyuki Ohta, Shinji Inoue, Yoshiaki Kakuda, and Kenji Ishida, —An adaptive multihop clustering scheme for ad hoc networks with high mobility", IEICE Transactions on Fundamentals of Electronics, Communications and Computer Sciences (Special Issue on Multidimensional Mobile Information Networks), vol.E86-A, no.7, pp.1689-1697, 2003.

A clustering scheme for ad hoc networks is aimed at managing a number of mobile devices by utilizing hierarchical structure of the networks. In order to construct and maintain an effective hierarchical structure in ad hoc networks where mobile devices may move at high mobility, the following requirements must be satisfied. (1) The role of each mobile device for the hierarchical structure is adaptive to dynamic change of the topology of the ad hoc networks. The role of each mobile device should thus change autonomously based on the local information. (2) The overhead for management of the hierarchical structure is small. The number of mobile devices in each cluster should thus be almost equivalent. This paper proposes an adaptive multihop clustering scheme for highly mobile ad hoc networks. The results obtained by extensive simulation experiments show that the proposed scheme does not depend on mobility and node degree of mobile devices in the network, which satisfy the above requirements.

An ad hoc network is a collection of mobile devices with routing functions like routers in wired networks. When a mobile device communicates with another mobile device, data packets of the source mobile device are forwarded via other mobile devices. That is, mobile devices in ad hoc networks can communicate with each other without any aids of base stations like a cell phone system. Even if mobile devices move around in any directions and at any speeds in the network, they can communicate with each other if it is not away from the collection. This paper presents an adaptive clustering scheme for ad hoc networks, which divides a collection of mobile devices in the network into multiple clusters. A clustering scheme of ad hoc networks is aimed at managing a number of mobile devices by utilizing hierarchical structure of

the network and at efficiently assigning network resources such as a frequency. Many researchers work in clustering schemes for ad hoc networks. Based on them, many hierarchical routing protocols for ad hoc networks have been proposed so far.

SURVEY- 5

5 Reshma M. and Amruta K.M.— "Survey on Different Technologies of Child Tracking System" Proposed in 2010 International journal of computer technology.

The project entitled "Child Tracking System" is an application that allows parents to monitor their child's cell phone. All incoming and outgoing calls, texts and multimedia messages can be seen and interrupted by the parents, who can also monitor where their children are (through GPS), and access a history of where they've been and set up alerts if their children are going outside of approved geographical zones. The parent can also block calls or messages to specified numbers. Our aim is to develop an efficient and improved geographical asset tracking Solution and conserve valuable mobile resources by dynamically adapting the tracking scheme by means of context aware personalized route learning techniques. This system uses Android based mobile phones for the software to be run.

Cell phones make life more convenient. With one device, you can make calls, send text messages and take pictures and video. You can even check your email, surf the web and use GPS on many cell phones. This is why many children have cell phones. While cell phones are invaluable resources, they can sometimes be problematic and children can become the victims. It's time for you to step up and monitor your child's virtual life and his or her cell phone and internet use. Child Tracking System is an android application that help parents to monitor their child's cell phone activities. This software runs in a stealth mode so that your kids may not know it's there. Cell phone monitoring can not only help them avoid dangerous situations, but also can help you keep track of your children in other situations. You can use GPS tracking to make sure your kids are in safe places and make sure they are going to bed instead of texting or calling unwanted persons or surfing unwanted sites.

SURVEY- 6

6 A.Al-Mazloum, E. Omer, M. F. A. Abdullah— "GPS and SMS based children tracking system using smart phone". International Journal of Electrical, Robotics, Electronics and Communication Engineering Vol:7 No.2, 2013.

Recently many cases of missing children between ages 14 and 17 years are reported. Parents always worry about the possibility of kidnapping of their children. This paper proposes an Android based solution to aid parents to track their children in real time. Nowadays, most mobile phones are equipped with location services capabilities allowing us to get the device's geographic position in real time. The proposed solution takes the advantage of the location services provided by mobile phone since most of kids carry mobile phones. The mobile application use the GPS and SMS services found in Android mobile phones. It allows the parent to get their child's location on a real time map. The system consists of two sides, child side and parent side. A parent's device main duty is to send a request location SMS to the child's device to get the location of the child. On the other hand, the child's device main responsibility is to reply the GPS position to the parent's device upon request.

In today's world, over 80% of the world population, including children around the age of eight or seven, owns smart phones. This is due to many reasons. One of them is the remarkable features and capabilities that new smart phones offer especially Android based smart phones. With that many features, the need for resourceful applications rises. In our opinion, GPS offers outstanding capabilities in locating position and this can be used to develop resourceful application that helps in locating missing or lost children. Studies conducted by Cyber Travel Tips showed that in Malaysia, missing children are basically classified into two categories. The first category is disappearance, which includes running away from home. The other category is abduction or kidnapping. Statistics reveal that since 2004, a total of 5,996 children under the age of 18 went missing from their homes. Fortunately, around 4092 children returned home or found by the police. However, the other 1,904 children are still missing. Those children are boys and girls with ages between 14 years and 17 years. Moreover, when parents want to go family trip,

they always concern about their children’s safety. This worrying may affects negatively on the parent to enjoy their family trip. Even worst, parents can lose sight of their children and fear the possibly of kidnaping or worst for them.

SURVEY- 7

7 Saranya , J. Selvakumar, “Implementation of children tracking system on android mobile terminal”, International conference on communication and signal processing, April-2013,India.

Recently, all over the world crime against children is increasing at higher rates and it is high time to offer safety support system for the children going to schools. This paper focuses on implementing children tracking system for every child attending school. However, the existing systems are not powerful enough to prevent the crime against children since these systems give information about the children group and not about each child resulting in low assurance about their child safety to parents and also does not concentrate on sensing the cry of the child and intimating the same to its parents. The proposed system includes a child module and two receiver modules for getting the information about the missed child on periodical basis. The child module includes ARM7 microcontroller (1pc 2378) Global positioning system (GPS) Global system for mobile communication (GSM) Voice playback circuit and the receiver module includes, Android mobile device in parent's hand and the other as monitoring database in control room of the school. Finally, implementation results for the proposed system are provided in this paper.

SURVEY- 8

8 PankajVerma, J.S.Bhatia, "Design and development of GPS and GSM based tracking system with google map based monitoring", International journal of computer science engineering and applicationJune'2013.

GPS is one of the technologies that are used in a huge number of applications today. One of the applications is tracking your vehicle and keeps regular monitoring on them. This tracking system can inform you the location and route travelled by vehicle, and that information can be observed from any other remote location. It also includes the web application that provides you exact location of target. This system enables us to track target in any weather conditions. This system uses GPS and GSM technologies. The paper includes the hardware part which comprises of GPS, GSM, Atmega microcontroller MAX 232, 16x2 LCD and software part is used for interfacing all the required modules and a web application is also developed at the client side. Main objective is to design a system that can be easily installed and to provide platform for further enhancement.

In this urban life transportation is very common. A lot of mishappenings occur on the road every day. Therefore the need of security and monitoring is developed. To resolve such problems, a system is developed using GPS and GSM technologies and an application is introduced in this research work.

Various problems that we face:

1. In critical condition (when vehicle is stolen), one is confused what to do
2. If one has something expensive and he wants to check it regularly
3. To find the shortest path available

All these problems are overcome by the system. This system has Global Positioning System (GPS) which will receive the coordinates from the satellites among other critical information. Tracking system is very important in modern world. This can be useful in soldier monitoring, tracking of the theft

vehicle and various other applications. The system is microcontroller based that consists of a global positioning system (GPS) and global system for mobile communication (GSM). This project uses only one GPS device and a two way communication process is achieved using a GSM modem. GSM modem, provided with a SIM card uses the same communication process as we are using in regular phone. The system is not limited to find the location of the target but also calculates the distance travelled b/w two stations. This system is user friendly, easily installable, easily accessible and can be used for various other purposes. After installation system will locate target by the use of a Web application (HTML based application) in Google map. The system allows to track the target anytime and anywhere in any weather conditions.

SURVEY- 9

9 Lijun Jiang lim nan heo Lay Leong Loon “Integrated UWB and GPS Location Sensing System in Hospital Environment”, proposed in 2010 5th IEEE conference on Industrial Electronics and Applications.

This paper describes a design effort in a smart tracking prototype, in an attempt to provide real-time, mobile and seamlessly indoor/outdoor location tracking for medical staff, patient or instruments in hospital environment, by integrating GPS (Global Position System) with UWB (Ultra Wideband). Ultra Wideband (UWB) technology can locate a person or asset to the accuracy of centimeters. While UWB technology is becoming popular for indoor position tracking, GPS technology has been around for some time for use in outdoor position tracking with an accuracy of 1 to 100 meters depending on the type of equipment used. It is envisaged that it is possible to combine GPS with UWB to give accurate position regardless of where the person or object is in indoor or outdoor. In view of the strong need for indoor-outdoor tracking in many environments such as hospitals, we looked into the possibility of integrating UWB and GPS to provide the target with seamless indoor-outdoor navigation capability and have developed a prototype. The system structure and experimental results will be illustrated in this paper. To our knowledge, no same system is reported yet.

Location information is one of the most significant contexts in pervasive computing. The process of determining a location is called location sensing, or position location. One of the most well-known and widely spread commercial systems for location sensing in outdoor environments is the Global Positioning System (GPS). GPS or its differential complement DGPS, uses triangulation to compute position from signals sent by Satellites with an approximate error of 10m, which may be adequate for many open-air applications; however, this system does not work properly indoors due to its poor coverage of satellite signal for indoor environments.