Implementation of Child Tracking System Using Mobile Terminals

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Abstract: Many cases of missing children are reported. Parents always worry about the possibility of kidnapping of their children. Now a day both parent are working outside for their respective job, so because of this no one is with their child who can keep observation like whether child is coming safely from school or not, whether child is happy at school atmosphere or not etc.

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 tragic endings. In this project focuses on implementing children tracking system for every child attending school.

In the proposed system, if child press the panic button on his watch, the message will be send on parent’s mobile along with the location of the child in terms of latitude, longitude and location.

Parents can be creating a profile in android app. In this app, parent can be adding contacts and location. After that parent can be seeing the list of previous add contacts and location. After message are arrive in the message box on parents android app then parents click on the message and seeing the current location of child on Google MAP.

These proposed tracking devices can be worn as wrist watches, anklets or in i-cards. So this system will help to find out missing child and girls safety.


1. Introduction

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 where about but also whether the child is crying is sent to parents through text message to their Android mobile device. Android terminals have internet and GPS, GSM, SIM card.

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With more children getting lost, Sen. A tracking devices for Autistic children is proposed so they do not go missing. These proposed tracking devices can be worn as wrist watches, anklets.

Children tracking system is also developed based on mobile networks. System developed in says that in GPS system and tag based system, each parent cannot obtain group information on the vicinity of the child. Through field experiments, it is confirmed that, as long as children walked at normal speed on the predetermined way to and back from school, the system could provide location and group information of children to their parents.

These proposed tracking devices can be worn as wrist watches, anklets or in i-cards. The child module include Arduino UNO kit, Global positioning system (GPS), Global system for mobile communication (GSM), SIM card, internet and receiver include parents mobile phone.

2. Literature survey

Yuichiro Mori, Hideharu KOJIMA, Eitaro KOHNO, Shinji INOUE, Tomoyuki OHTA, and Yoshiaki KAKUDA has published paper titled “A Self-Configurable New Generation Children Tracking System based on Mobile Ad Hoc Networks consisting of Android Mobile Terminals.” which explains Autonomous Clustering technique” for managing groups of Android terminals attached to children in school. In this paper, they propose a new generation children tracking system which is based on experiences and findings of the field experiments for Hiroshima City Children Tracking System. Our proposed
system consists of Android terminals which have Wireless LAN device and Bluetooth device with the ad hoc function. Our system manages groups of Android terminals using Autonomous Clustering technique. In this paper, we show the system requirements for our children tracking system and describe the implementation features to satisfy the system requirements. Finally, we provide some preliminary implemented results for our proposed system.

Eitaro Kohno, Tomoyuki Ohta, Yoshiaki KAKUDA, Shinji Inoue and Yusuke Akiyama have published a paper titled “Performance Improvement of Hiroshima City Children Tracking System by Correction of Wrong Registrations on School Routes.” Which explains the system can provide group information of children on the way to and back from school. It is easy for parents to know their safety level. This paper proposes a new technology for children tracking system based on mobile ad hoc networks and describes outline of children tracking system in Hiroshima City. The field experiments using the children tracking system have been performed and the effectiveness of the system is shown by data analysis for the experimental results.

Lijun Jiang, Lim Nam Hoe, LayLeong Loon have published a paper titled “Integrated UWB and GPS Location Sensing System in Hospital Environment.” 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.

Atsushi Ito, Yoshiaki Kakuda, Tomoyuki Ohta and Shinji Inoue have published a paper titled “New Safety Support System for Children on School Routes Using Mobile Ad Hoc Networks.” One of the most important duties of government is to maintain safety. For this paper, developed a new safety support system for children on school routes by using a mobile ad hoc network constructed from mobile phones with the Bluetooth function. The support system provided good performance and accuracy in maintaining the safety of students on the way to school. The basic idea of the safety support system is the grouping of children and volunteers using a mobile ad hoc network. In this paper, we present an outline of this system and evaluate the performance of grouping and the effectiveness of our approach.

3. System Design

Designing a child tracking system to assure parents that their child is safe from suspicious actions. 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 internet. It adopts message from child and delivers to respect parent android mobile using internet.

![Figure1. Architecture of child tracking system](image)

There are many component of this architecture which are following:

- 3.1 Power supply
- 3.2 Arduino UNO KIT
- 3.3 Panic button
- 3.4 GPS
- 3.5 GSM

3.1 Power supply

Power supply is a single supply voltage 5V. In some cases, the ripple in a transmitting burst may causes voltage drops when current consumption rises to typical peaks of 2A. To the power supply must be able to provide sufficient current up to 2A.
3.2 Arduino UNO KIT
The Arduino Uno is a microcontroller board based on the ATmega328. It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz crystal oscillator, a USB connection, a power jack, an ICSP header, and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with a AC-to-DC adapter or battery to get started. Instead, it features the Atmega8U2 programmed as a USB-to-serial converter.
"Uno" means one in Italian and is named to mark the upcoming release of Arduino 1.0. The Uno and version 1.0 will be the reference versions of Arduino, moving forward. The Uno is the latest in a series of USB.

3.3 Panic Button
This panic button can be attached to hardware module. If the child can be click on the panic button then message will be send to parents mobile phone.

3.4 GPS,GSM
Using GPS, track the child location after receiving the message. And also using GSM, sending and receiving message.

4 Hardware design
The following figure shows the block diagram of Arduino UNO KIT:
- The power supply
- RJ45
- The CT sensor circuit
- The Clamp connector
- The Ethernet shield

4. Result and Discussion

In above Arduino KIT, when press the panic button by child using internet and SIM card message will be send on parents mobile App.
In Above fig4.3, In this message Latitude and longitude number, date and time, SIM card number through that message are come.

In Above fig4.4, when parent will be click on message then Google Map will be open and find the location of child.

5. Conclusion
In this project implementation we were testing the Arduino kit, creating the lost and found App integrating hardware with app. We implemented this project for child, girls and women safety.

Reference


