IMPLEMENTATION OF CHILDREN TRACKING SYSTEM ON ANDROID MOBILE TERMINALS

Yuvraj Rathod[1], Manoj Dighole[2], Ritu Sharma[3]

[1,2] Students, Department Electronics and telecommunication, Atharva College of Engineering Mumbai
[3]Assistant prof, Department Electronics and telecommunication, Atharva College of Engineering Mumbai

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Abstract: *Recently in all over the world in every 40 seconds child becomes missing or kidnapped. The increasing prevalence of children wandering has many parents very concerned. We have to see and read many stories about children's or students who are kidnapped or not reaching homes. Most of the stories have had tragic endings. This paper focuses on implementing children tracking location system for every child attending school.*

Nowadays more children getting lost, Sen. Charles Schumer 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 I -cards. The child module include ARDUINO, Global positioning system , Global system for mobile communication and receiver include parents mobile phone. It is very useful for women safety.

Index Terms:- Global Positioning System (GPS), Short Messaging Service(SMS),Global System for Mobile Communications(GSM),Network Services.

I. INTRODUCTION :

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.
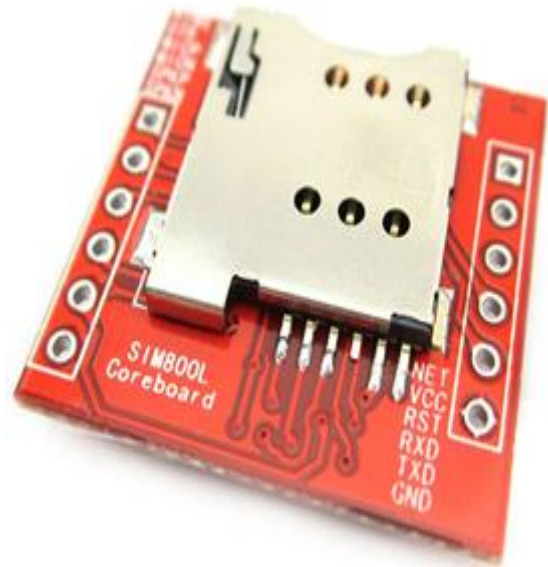
Mobile terminals have wireless local area network (LAN) and Bluetooth device. It adopts bluetooth communication among mobile terminals in every group to collect information and delivers to respective server using wireless LAN.

- Architecture of system shown in figure

II. EXSTING SYSTEM

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 results in lack of individual attention towards the children. It offers less security [2]. Studies conducted by Cyber Travel Tips [3], showed that in Malaysia, missing children are basically classified into two categories. The first category is disappearance, which includes running away from home. Children tracking system is also developed on mobile ad hoc networks. System developed in [4] says that in GPS system and tag based system, each parent cannot obtain group information on the vicinity of the child. A self-configurable new generation children tracking system. Hiroshima City Children Tracking System is a safety support system for children based on ad hoc network technologies. Field experiments have been conducted in cooperation with an elementary school in Hiroshima. In this paper, propose a new generation children tracking system which is based on experiences and findings of the field experiments for Hiroshima children tracking system [5]. Existing technologies, however, are not powerful to prevent crimes against children

and helpful parent's since it is difficult to take information of children as a group.

III. HARDWARE SYSTEM DESIGN

A.   Arduino Microcontroller Board

Arduino Uno is a microcontroller board based on the ATmega328P. It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz quartz crystal, 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. It needs low power of 5V for functioning thus suiting for this project. The embedded microcontroller has the knowledge to give AT commands to initiate and send the child information message to mobile phone through GSM module.

For those of you who are using an ATmega328 with the Arduino Bootloader code on your own circuit board here is the pinout details which shows the chip pin numbers and the associated Arduino pins

- **Arduino ATmega328 Pinout**

Port B has pins **B0 to B5**

Port C has pins **C0 to C5**

Port D has Pins **D0 to D7**

- **Arduino ATmega328 TQFP Pinout**

A. GPS (NEO-6M) Module :

The Global Positioning System (GPS) is a satellite-based navigation system made up of at least 24 satellites. GPS works in any weather conditions, anywhere in the world, 24 hours a day, with no subscription fees or setup charges.

GPS satellites circle the Earth twice a day in a precise orbit. Each satellite transmits a unique signal and orbital parameters that allow GPS devices to decode and compute the precise location of the satellite. GPS receivers use this information and trilateration to calculate a user's exact location. Essentially, the GPS receiver measures the distance to each satellite by the amount of time it takes to receive a transmitted signal. With distance measurements from a few more satellites, the receiver can determine a user's position and display it.

To calculate your 2-D position (latitude and longitude) and track movement, a GPS receiver must be locked on to the signal of at least 3 satellites. With 4 or more satellites in view, the receiver can determine your 3-D position (latitude, longitude and altitude). Generally, a GPS receiver will track 8 or more satellites, but that depends on the time of day and where you are on the earth.

B. GSM (SIM800L)

SIM 800 support Quad-band 850/900/1800 etc., it can transmit SMS, voice and data information with low power consumption. With tiny size of 24*24*3mm, it can fit into slim or less place and compact demands of customer design. Featuring Bluetooth and Embedded AT, it allows total more cost savings and fast time- to -market for customer applications develop embedded applications. Like SMS control, Data transfer, alerts, sensors, reliable for 24x7 operation. Status is indicated by LED or screen and its simple with low cost.

C. Features Of GSM (SIM800L)

- Quad-band 850/900/1800Mhz.

- Connect onto any global GSM network with any 2G SIM (in the USA, T- Mobile is suggested)

- Make and receive voice calls using a headset or an external 8 speaker and electret microphone

- Send and receive SMS messages

- Send and receive GPRS data (TCP/IP, HTTP, etc..)

- Scan and receive FM radio broadcasts

- Lead out buzzer and vibrational motor control port

- AT command interface with "auto baud" detection

A. PANIC BUTTON

Whenever the child feels that he is in danger the press the panic button. By pressing the panic button the message get forwarded to parents mobile and detect the location of child.

IV. SOFTWARE SYSTEM DESIGN

Arduino Software (IDE) :

The open-source Arduino Software (IDE) makes it easy to write the code and upload it to the board. It runs on the Windows, Mac,ios, and Linux. The environment is written in Java and based on the Processing and other open-source software.

F. OUTPUT AND DESIGN IMPLEMENTATION

Child module with the help of which child press the panic button and Arduino ATmega325 microcontroller gets on and send signal to GPS.

V. ADVANTAGES

1. Application automatically operates location requests without user interaction because at that time child not have knowledge to update his location at map.

2. That application uses SMS when internet connectivity is not available. The system requires location and telephony services.

3. It can be used at indoors where GPS satellites connectivity is not available. At that time it can uses network provides for location services.

VI. CONCLUSION AND FUTURE WORK

In the conclusion of project was designed for the locating missing children. This project was given depth information about child tracking system with the help of two components such as GPS and GSM telephony services the application is built in. Finally for this application has room for the enhancement. Emergency alerts such features can be added to enhance system. The proposed system will be improved in the later work.

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BIOGRAPHIES:

Yuvraj Rathod is a student of 8th semester in Department of EXTC, Atharva college of engg. Malad . He is working on the project titled implementation of children tracking system on android mobile terminal. This paper is the outcome of the application being developed.

Manoj Dighole is a student of 8th semester in Department of EXTC, Atharva college of engg. Malad . He is working on the project titled implementation of children tracking system on android mobile terminal. This paper is the outcome of the application being developed.