Android Based Children Tracking System

Rita H. Pawade, Dr. Arun N. Gaikwad

Abstract— **In this paper children tracking system based on android terminals is proposed. Recently, all over the world crime against the children in the age of 14 to 17 years is more popular. Parent's always worry about their children whenever they are outside from the home. In this paper, the proposed system consists of two sides out of them one is parent module and another is the child module. The child module consists of ARM7microcontroller (LPC 2148), GPS(Global Positioning System), GSM(Global System for Mobile Communication) and voice chip where the parent module consists of android mobile phone. This paper gives the information about missing child from school campus. There are two android mobile phones for the safety of the both module. The system tracking the child from source to destination i.e. from home to school or anywhere.**

Keywords-ARM based children tracking system, arm7microcontroller, GSM, GPS and android mobile phone.

I. INTRODUCTION

Children tracking system is widely used all over the world to assure their parent's that their wards are safe from suspicious actions in today's world over 80% of the world population in the age of seven or eight owns smart phone [1]. The proposed system includes tracking the child movements outside from the home. This is due to reason one of them is the remarkable features and capabilities that new smart phone offers especially android based smart phones. GPS offers outstanding capabilities in locating positions and this can be used to developed resourceful application that helps in locating missing or lost children. This project is designed to be used by parents and aimed to help locating missing or lost children. It takes advantages of the fact that many of today's children bring smart phone which is convenient for this kind of situation. In this paper GPS is combined with one of the basic service of a smart phone which is GSM more specifically SMS in one system.

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. PROPOSED SYSTEM

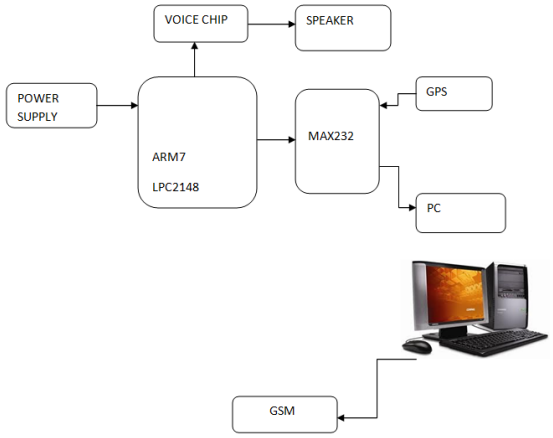

Fig.1. Block Diagram of the Proposed System

This section describes the conceptual design of a children (Fig. 1). The children information is transmitted and received using GSM technology. The child module acts as a transmitter which includes ARM7 microcontroller (lpc 2148), GSM module, GPS module and voice chip as well as android mobile phone. The receiver module includes Android mobile phone and monitoring database. The position of the moving child is tracked by is tracked by GPS and is sent to ARM7 microcontroller. This controller forwards the GPS data (latitude and longitude) to GSM board. GSM will in turn send the position of the moving child to two receivers. It allows the parent to get their child's location.

IV. HARDWARE SYSTEM DESIGN

A. ARM Processor

The LPC2141/2/4/6/8 microcontrollers are based on a 32/16 bit ARM7TDMI-S CPU with real-time emulation and embedded trace support, that combines the microcontroller with embedded high speed flash memory ranging from 32 kB to 512 kB. 128-bit wide memory interface and unique accelerator architecture enable 32-bit code execution at the maximum clock rate. For critical code size applications, the alternative 16-bit Thumb mode reduces code by more than

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30 % with minimal performance penalty. Due to their tiny size and low power consumption, LPC2141/2/4/6/8 are ideal for applications. The ARM7TDMI-S offers high performance and very low power consumption. The ARM architecture is based on Reduced Instruction Set Computer (RISC) principles, and the instruction set and related decode mechanism are much simpler than those of micro-programmed Complex Instruction Set Computers.

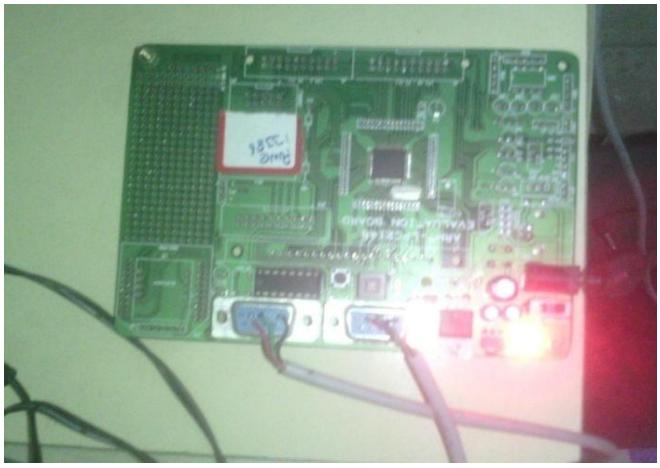

Fig.2. Embedded Control Unit

B.GSM Modem

Global system for mobile communication (GSM) is a globally accepted standard for digital cellular communication. A GSM modem is a wireless modem that works with a GSM wireless network. The Techniques GSM SMS is handled main role in this system. GSM SMS messaging can handle large number of transaction in a very short time. This one GSM connection is enough to handle hundreds of transaction.

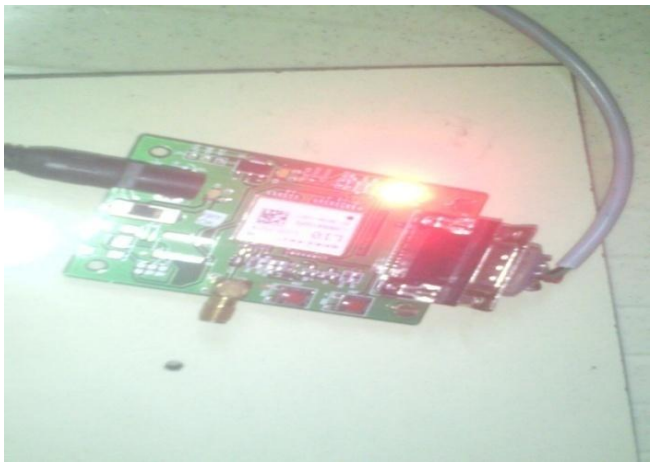

Fig.3. GSM Modem

C. GPS Module

GPS is a multiple- satellite based radio positioning system which each GPS satellite transmits data that allows to precisely measure the distance from the selected satellite. The Global Positioning System(GPS) is a space-based satellite navigation system that provides location and time information in all weather conditions, anywhere o or near the earth.

Fig.4. GPS module

D. Voice Chip

The voice chip has the following features:

1) Single chip, high quality voice recording and playback solution.
2) User friendly, easy to use operation.
3) Non – volatile – flash memory technology, no battery backup is required.
4) Can record voice with the help of on- board microphone or via any audio input.

V.SOFTWARE SYSTEM DESIGN

A. Embedded C

Embedded C is High-level language programming has long been in use for embedded-systems development. Embedded C is not part of the C language as such. Rather, it is a C language extension that is the subject of a technical report by the ISO working group named "Extensions for the Programming Language C to Support Embedded Processors".

B. Keil C

Keil software is the leading vendor for 8/16-bit development tools. The keil C51 compiler is the de facto industry standard and supports more than 500 current 8051 device variants. Now, keil software offers development tools for ARM.

C.Eclipse

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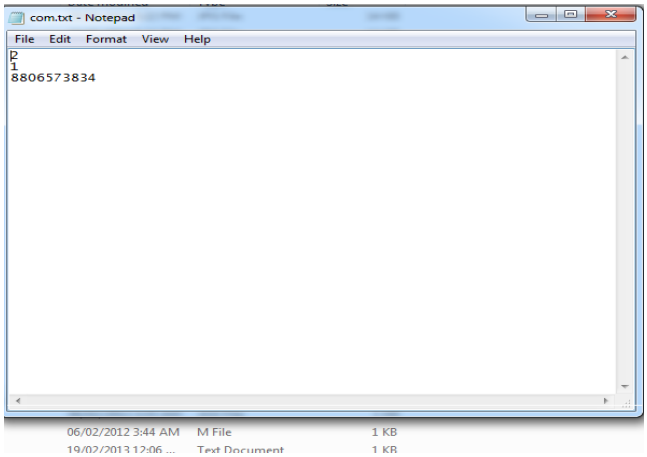
Application in android mobile device is created using Eclipse software. It is flexible and provides compatibility to create new application in android mobile device. Java language is preferred as the basic platform for application creation. In this project application named "MAIN" is created using ECLIPSE which enables the parents at receiving to visually see the the place in Google map corresponding to the position of their child at the transmitting end.

D. Visual Basic and My sql

Visual basic is used for coding for sending the message of missing child to parent's. SQL is used for the creation of monitoring database at school end. This database includes all basic parameters to be known at the receiving end. (control room of the school). Parameters includes child details (ID no., Name, Phone number, Current position, etc.). It is used to update the location of the child at every possible minute.

VI. EXPERIMENTAL RESULT



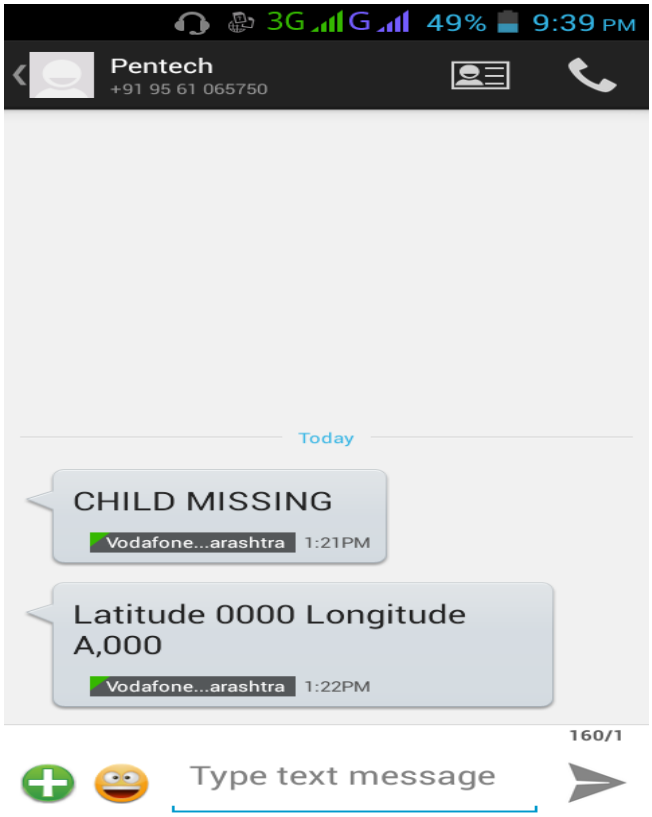


Fig. 5. ARM OUTPUT

Fig. 6. 'MAIN' Application

The above figure shows the "MAIN" application created in the parent's android mobile phone. By creating apk file the above image is displayed in the phone. When button tab is pressed it leads to GMAP indicating the place.

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Fig.7. Tracking Device

Above figure shows to track the device before creating Google map.

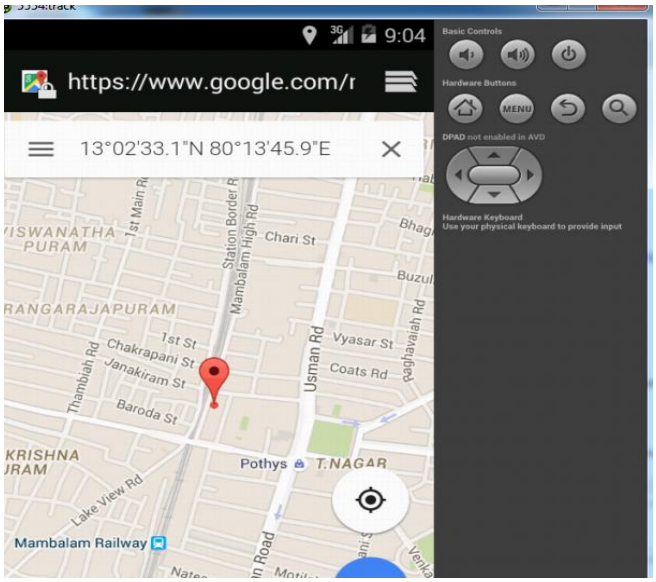

Fig. 8. Google map

Above figure shows GMAP output obtained at the receiving end (parent android mobile device). It shows the pointer indicating the current location (place of the missed child).

Fig. 9. Overall View of System

VII. CONCLUSION

In this paper, a new android based children tracking system is developed which overcomes the drawbacks of kidnapping. It is primarily focuses on tracking a child's position and its location is sent to parent and control room. It can be extended to perform by reducing the size of the child module. It can be extended by placing voice recognizing sensors which senses cry of all the children inside the school and sends the message to parent's.

VIII.CONCLUSION

In this paper, a new android based children tracking system is developed which overcomes the drawbacks of kidnapping. It is primarily focuses on tracking a child's position and its location is sent to parent and control room. It can be extended to perform by reducing the size of the child module. It can be extended by placing voice recognizing sensors which senses cry of all the children inside the school and sends the message to parent's.

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