SURVEY OF CHILD TRACKING SYSTEMS

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Abstract: In the recent years, crime against children is increased at a higher rate. It is the need of the hour to offer safety support for children going to school and also the mentally challenged special children. There are some solutions available in order to reduce this increased crime. Some systems allow parents to monitor their children through cell phone tracking. In some systems, not only transmits the longitude and latitude coordinates to the cell phone but also sets off an alarm indicating the crossing of the periphery. However the existing systems provided various services like panic button, Autonomous Clustering technique, vehicle tracking, voice playback circuit etc. But there is no way of communication between parent and teacher. There is a need to design a new system which will minimize all the drawbacks of existing systems.

Keywords: GPS, GSM, Micro-controller, Android Application

I. INTRODUCTION

Safety concern is at alarming issue these days. Various suspicious acts like child abuse, kidnapping, lost children etc. are increasing day by day. The smart wearable helps to keep track of our beloved ones. The child tracking system is widely used over the globe to ensure parents that their child is safe in the school atmosphere. The movement of child can be tracked using tracking kit from home to school. The tracking kit composed of GPS, GSM, Micro-controller. The safe route can be saved in Android application by parents. The tracking kit which is embedded in wearable is connected to parents via notification which is sent to the parents mobile phone when child goes beyond safe route. The tracking kit can be installed in all kind of wearables such as shoes, ID card, school bag, compass box, etc. which are used by children. The wearables should be such that it can be changed or replace with another one. The wearable should be placed in such a way that the kidnapper should not realize the system. Thus, it is essential to find suitable means to protect child against increased crime and providing the best system to track child during their residence outside the homes.

II. LITERATURE SURVEY

In the past decades, various tracking systems had been introduced and these systems are commonly implemented in the form of child or vehicle tracking. The existing system uses “Autonomous Clustering technique” for managing groups of Android mobile terminals attached to children in school. Android terminals consist of wireless LAN and Bluetooth device. It takes on Bluetooth communication among Android mobile terminals in every cluster to gather information and cluster head gives the same through tags to server at school using wireless LAN. It leads to lack of individual attention towards the children as the cluster head sends the information about the children group and not about each individual & also does not concentrate on the crying child inside the school. It offers less security. Some systems implemented vehicle tracking using GPS/GSM and track the vehicle on Google Map and also provided shortest distance to reach destination in minimum time. While some systems used a simple web server approach along with SMS to solve the problem. A client can either send his location to other clients directly by SMS or share it by sending it to the web server’s database via Internet. Clients can view their locations on the Google maps. The purpose of this application is to enable the user to share his location with their friends. Some of the systems provide facility of panic button. When child feels that he is in danger ,he can press the panic button to convey the information to parents. Some systems can sense the cry of child using voice playback circuit. All this work can be considered while designing a new tracking system to overcome all the drawbacks of existing systems and extra functionality can be added to the existing system.

III. EXISTING SYSTEM

The existing system consist of two modules, child module and parent module .The child module consist of ARM7 micro-controller, GPS-GSM and voice playback circuit. The parent module consist of cell phone where data is send. The information about the missing child is also send to the control room of the school.

Fig 3.1 Block diagram of existing system

Not only the information about the child location but also whether the child is crying is send to parents through text message on their mobile device. With the help of voice playback circuit it is possible to know whether the kid is happy in school atmosphere without crying. The position of the moving child is tracked by the GPS and is send to the
ARM7 micro-controller. The micro-controller then forwards the Latitude and longitude to the GSM board. The GSM in return sends the location of the moving child to the parents. When the child cries, the voice playback circuit is automatically started by the micro-controller and information about respective child is forwarded in terms of text message to the parents.

IV. PROPOSED SYSTEM DESIGN
The conceptual design of child tracking system is consist of two modules, child module and parent module. The child module acts as transmitter whereas the parent module acts like receiver. The child module includes Micro-controller, GSM, and GPS modules. The parent module includes android phone. The position of the child is tracked by the GPS and sent to micro-controller. The micro-controller then forwards the latitude and longitude to the GSM board. The GSM in return will send the position of the moving child to the receivers.

Fig 4.1Block Diagram of system

The safe route is set by parents. Initially, a test path is considered and samples points can be selected by parent using android app. These sample points are saved into database with their corresponding latitude and longitude. The Fig 3.2 shows the procedure of setting safe route. The point (x,y) is a sample point while (x1,y1) and (x2,y2) are considered by incrementing and decrementing the latitude and longitude of (x,y). The distance between (x1,y1) and (x2,y2) is considered as a safe route. If child goes beyond safe route then the notification will be sent to parents mobile phone.

Fig 4.2 Setting Safe Route

An additional module i.e. teacher module can be added for the communication between parent and teacher. The teacher can send the details regarding attendance, homework, extra lectures, extra activity, parents meeting, etc. to parents.

V. CONCLUSION
The existing systems provided various services like panic button, voice playback circuit etc. But there is no way of communication between parent and teacher. So, there is a need to design a new system which will minimize all the drawbacks of existing systems. Along with the proposed system, extra services can be added such as teacher module which will provide a way of communication between parents and teachers. The Android App can be designed in such a way that multiple children can be tracked at the same time.

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