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Child in safety with localization awareness

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ABSTRACT

Aiming at increasing security to children, this paper implements safety to the children by using a safety monitoring system using our android mobile phones. In particular, a feeling of insecurity will be among the minds of the parents when the child is being alone. In fact nowadays, child kidnapping is happening frequently and that too it is too common among girl child. This system helps the children to be safe and monitors the child's daily environment. This system allows sending the child location along the photos and videos to the parent mobile by means of GPS (Global Positioning System) and GSM module (Global Space for Mobile communication).

Keywords— Safety monitoring of the child, Mobile communication, RFID module, GPS module, GSM module, Raspberry Pi, Raspbian Jessie, Python programming

1. INTRODUCTION

In India with the rapid development of population and urbanization, that too in the cities the population have been increased so rapidly. So there is a huge challenge to the safety of children because of the many building structures, large construction of buildings, large number of vehicles etc. and in most of the families the parents will not have time to take care of their children all the time due to office works etc. so there is a need for a child monitoring system mainly in cities. This technology can be easily used by people to safeguard their children. Most of the mobile phones in the modern world have access to the internet and they support the sharing of data and files between people. In this technology different types of modules are used such as GPS module, GSM module and RFID module. The GPS activator and GSM module can be left to the guardian of the child to activate and to receive the child location, position and activity states, which helps to ensure the safety of children in daily life.

2. EXISTING SYSTEM

In the existing system, there are some of the technologies are used to safeguard the child. But most of the technologies have

complex hardware systems consisting of two ATMEL AT89S52 Microcontroller, RFID reader, GSM module and it has been divided into three units controlled by a common ACM (Automatic Child Monitoring Machine). Since this technology is complex and most of the parents cannot able to access it. There are some other existing systems in which short range of security is given and in some systems, GPS and GSM modules are used and adding this web camera is used for capturing the environment but unauthorized people can also capture this system.

3. PROPOSED SYSTEM

This system is provided with a GPS module (Global Positioning System) and RFID reader (Radio Frequency Identification Device) carried by the child to school and to various places. GPS activator and GSM module (Global Space for Mobile Communication) is carried by the parent to activate the child location and to receive data and files, images of the child to the mobile of the parent via cloud server as most of the mobile support exchanging of data among people. The web camera is being brought by the child to send live photos and videos of the environment surrounding the child. In RFID reader we can store nearly some of the places where the child will use to go in daily routine like school, home, tuition, like that and if the child went away from these inbuilt saved regions, a warning information will be sent to the guardian of the child and the parent can see the environment of the child by using the GSM module and can receive live images, videos, data etc.

4. BLOCK DIAGRAM

The block diagram of the proposed system is shown in figure 1.

4.1 Description

In this system, Raspberry Pi acts as a main primary unit. Raspberry Pi is a single board computer. It can be used as a proper desktop computer. The 16GB memory card is used and this acts as a hard drive. A 5V Power supply is required for the Raspberry Pi. In this technology, python programming is used .camera and GPS activator acts as input units. GSM module, RFID reader acts as output units. The controller and the mobile

is connected to the internet cloud server acts as an intermediate unit to exchange information and data between child and parents mobile.

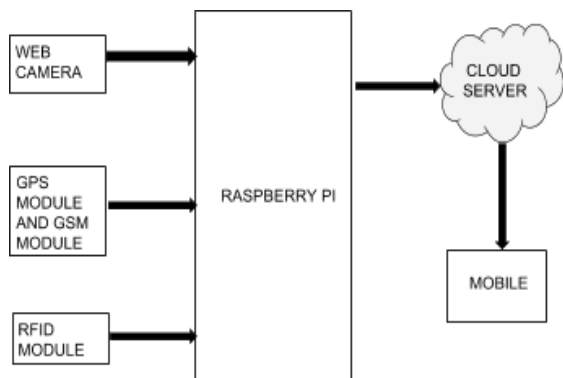


Fig. 1: Block diagram

4.1.1 GPS module: GPS is a multiple-satellite based radio positioning system in which each GPS satellite transmits data that allows the user to measure the distance from the selected satellite, velocity, high parameters to a high degree of accuracy. GPS delivers with high sensitivity and accuracy with low power consumption.



Fig. 2: GPS module

4.1.2 GSM module: The advantages of GSM is its international roaming capability in over 100 countries, improved battery life, efficient use of advanced spectrum features such as short messaging and caller id, high stability mobile fax and data up to 9600 baud. The GSM module used in this technology is SIM300 which offers all the features mentioned above and serve as a medium between transmitter and receiver.



Fig. 3: GSM Module

4.1.3 RFID reader and tags: Radio Frequency Identification Device is the wireless use of electromagnetic fields to transfer data. The tags contain electronically stored information. Some

tags are powered by electromagnetic induction from a magnetic field produced near the reader. RFID is one method for Automatic Identification and Data Capture (AIDC).



Fig. 4: RFID reader and tags

4.1.4 Raspberry Pi: Raspberry Pi is a series of single small board computers developed in the United Kingdom to promote the teaching of basic computer science in schools and in developing countries. The pi can run the official Raspbian OS, Ubuntu Mate. It can also run on Windows 10 IOT core. The raspberry pi looks like a motherboard, with mounted chips and ports exposed, but it has all the components that you need to connect to input, output, storage devices and starts computing.



Fig. 5: Raspberry Pi

5. FLOWCHART

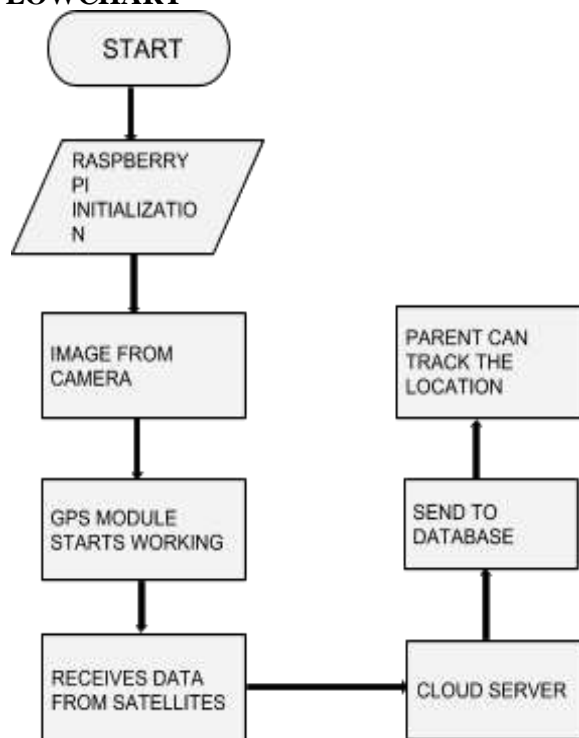


Fig. 6: Child monitoring system flowchart

6. OUTPUT AND RESULT

The camera, various types of modules, RFID reader and tags are integrated into the board.



Fig. 7: Interface on phones

In the above diagram, we can see the child location, longitude, latitude from the parent mobile through the cloud server connected to the mobile. If any problem occurs to the child, an alert message will be indicated to the mobile of the parent, so the parent can view the location and the position of the child immediately. The following diagram shows the output of this monitoring system.



Fig. 8: hardware setup

The advantages of this child monitoring system are that it easily tracks the child without the help of complex advanced systems. The cost is low and so it is efficient for all the families to use it. The main disadvantage is that for a child privacy will not be

there. That too being a girl child privacy is more important and that will not be there in this system.

7. CONCLUSION

Child kidnapping happens often in the cities for the sake of money. By taking proper action we can reduce this child kidnapping and child harassment. This paper developed a system which can improve children safety. By using this system we can reduce child kidnapping and due to its low cost and efficiency parents can easily use this system without any fear.

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