Design and Prototype Implementation of Child Safety Using IoT

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Abstract- *Child safety and tracking is a major concern as a more number of crimes on children are reported nowadays .In this paper, a prototype children location monitoring system (CLMS) is implemented using Global Positioning System (GPS) and Global System for Mobile communication (GPS) technologies. This paper proposes a SMS based solution using GPS system to aid parents to track their children location in real time. The system is developed using PIC microcontroller programmed in C and interface with raspberry PI with temperature sensor, heart beat sensor and also GPS, GSM and digital camera.*

Keywords- IOT, GPS, GSM, sensors, serial camera

I. INTRODUCTION

The safety of children is potentially at risk from injuries as well as crime. in this system, the collected values from every sensor like temperature sensor, heart beat sensor and location value from GPS are used to detect the status of the child and alerts the respective guardians using GSM accordingly. You can check your email, surf the web and use GPS on many cell phones. This project is designed to be used by parents and aimed to help locating missing or lost children. 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. The solution to this problem is to design an IOT device, which senses the child's location and environment and during emergency, it should send the alert to the parents.

II. LITERATURE REVIEW

A. Smart girls security system

This system designed for providing security to women in the society so that they never face physical harassment. The system is designed by GSM shield (SIM 900A), alarm (APR 9600) , GPS, ATMega328 board, power supply unit and pressure sensors.

B. Mobile based women safety application

Many android based app has been developed for women and child security on the societies for providing emergency help. Some of them are VithU app, fight back app, stun gun app etc.

C. RFID-GSM imparted school children security system

The main aim of this system to provide safety for school children. In this system sensors like obstacle and range detection are placed on the front surface of the bus so that collision should be avoided on road.

III. PROPOSED SYSTEM

The location tracking of child identified by uses of GPS. When the child out of station of beyond her location (for example away from 10 km) the GSM automatically send the Information to monitor section with help of GPS. The camera will activate when abnormal motion or vibration is detected. The health information about particular child can be monitored with the help of IOT and GSM.

A. PIC controller

PIC is a family of modified Harvard architecture microcontrollers made by microchip technology, derived from the PIC1650 originally developed by general instruments microelectronics division. The name PIC initially referred to "peripheral interface controller " now it is 'PIC"

B. Liquid crystal display(LCD)

LCD stands for "liquid crystal display". LCD is a flat panel display technology commonly used in TVs and computer monitors. It is also used in screens for mobile devices, such as laptops, tablets, and smart phones. LCDs allowed displays to be much thinner than cathode ray tube technology. It is used as a display screen in calculators. The television is main application of LCD.

C. Heart beat sensor

The heart beat sensor is a pulse sensor. For every particular interval of time the pulse sensor value is stored in the cloud. The pulse rate and the BPM inversely proportional to each other. The pulse rate converted into beats per minute calculation the pulse rate value less than the 400 then automatically sent an SMS alert to parent mobile.

D. Raspberry pi

The raspberry pi is a low cost, credit card sized computer that plugs into a computer monitor or TV uses a standard keyboard and mouse. It is a capable of little device that enables people of all ages to program in languages like scratch and python .

E. Temperature sensor

For every 30 minutes the temperature sensor value is stored in the cloud for eg:3pm to 4pm hours temperature value is 46.39 degree Celsius it is above the threshold value eg:38 degree Celsius therefore automatically an SMS alert is send to the mobile and also MMS is send to parent mobile phone module which consist of an image indicating the surrounding area of the child.

F. Camera

A camera is an optical instrument used to record images. A serial camera is used for the purpose of taking snapshot of the area surrounding the child. A miniature TTL serial JPEG camera is used because it is the best one for the purpose of wearable type. The camera can snap the images of different sizes of pixels and those images are pre compressed into JPEG images.

G. Global positioning system(GPS)

Global positioning system is a space based navigation system that provides location information in terms of latitude and longitude anywhere on the earth by using satellite.

H. Global system for mobile communication (GSM)

Global system for mobile communication is a globally accepted standard for digital cellular communication. GSM modem is a wireless modem that works with a GSM wireless network.

I.   Accelerometer

Is an electro mechanical device used to measure acceleration forces. Such forces may be static like the

continuous force of gravity. Acceleration is an measurement of the change in velocity or speed divided by time.

J.   Camera

The camera is an optical instrument used to record images. The jpeg camera is used in the system. JPEG stands for "joint photographic experts group". JPEG is a popular image file format it is commonly used for digital cameras to store photos.JPEG image compression algorithm is always lossy, which means that we don't store full data from an original image.

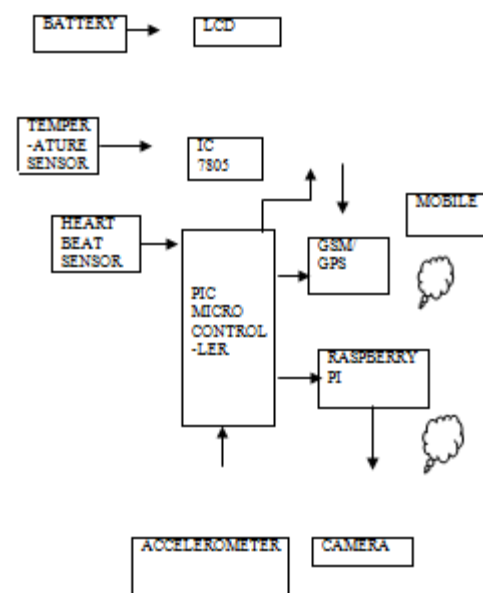## IV. DESIGN AND PROTOTYPE IMPLEMENTATION

FIG: BLOCK DIAGRAM OF PROPOSED SYSTEM

V. CONCLUSION

In this paper, a android based children tracking system is developed which overcomes the drawbacks of kidnapping. This paper is help the parents to monitor their children. If any abnormal values are read by the sensor then an SMS is sent to the parents mobile and an MMS indicating an image captured by the serial camera is also sent.

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