

## **1.CHILD WEARABLE SAFETY MONTORING DEVICES:**

Name of the author: Asghar Pasha, Bi Bi Khatija,M.Shaista Tarannum, K. R. Harris, Nida Sayedi, Aseema Sultana.

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### **OBJECTIVE OF THE PROJECT:**

In this busy world parents have no much time to take care of their babies and women have no much time to take care about themselves so, the world is moving towards smart technology through internet of things. In our project we are implementing and developing adults and child security using IoT [6]. Here, we mainly concentrate on temperature, heartbeat, crying, alerting guardians through smart phone using IoT with the help of raspberry Pi. All IoT sensors have analogue ports and they give output as Analog. In order to interface analog values to raspberry Pi Analog to Digital conversion is used. Analog to Digital is a modulation and demodulation process. The different sensors used are Temperature sensor, Heartbeat sensor, Accelerometer and sound sensor. Temperature sensor give values in terms of voltage to IC as 0.35 etc. Heartbeat sensor gives values in terms of pulse PIC microcontroller act as a counter to count Heartbeat rate. Sound sensor gives analog values. Some threshold is set whenever the external value crosses the threshold. It will detect as child/ women is crying. Accelerometer detects position depending on the coordinates. It gives result in form of X, Y and Z values. All these values from various sensors are analog values, they cannot be interfaced directly with Raspberry pi. So, Analog to Digital microcontroller is used i.e. PIC 16F877A that converts analogue values to digital form. All these values from various sensors are sent to PIC microcontroller that does all A-D conversions. Finally, the converted values/information are sent by serial communication by single wire to Raspberry pi3. Raspberry pi3 collects all data from PIC controller and upload it to server. Server used is thing speak cloud. That could be used to

monitor health and safety of child/women. The device has two modes. Child mode and women mode. One can easily set the mode to 0 or 1. 0 is child mode and 1 is women mode. The system has lithium ion battery which is used for power supply with minimum discharge rate. It also has pi camera that is used to capture image of the people in front or the situation. There is an emergency switch which can be pressed manually either by child or women. When an emergency switch is pressed buzzer is activated which is used to alert nearby people so that they can come to the child/women rescue. Depending on the conditions set parents/guardian are notified via SMS and e-mail. SMS through Twilio could be sent along with details of temperature. Heartbeat rate and position of the ward. Email is also sent simultaneously along with the images and other data. Location is also sent in both SMS and e-mail with longitude and latitude values to parent/guardian.

## **2. RFID based System for School Children Transportation Safety Enhancement**

Name of the author: Mansi Kashyap.

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### **OBJECTIVE OF THE PROJECT:**

#### **A. RFID based System for School Children Transportation Safety Enhancement**

In this paper author had presented a device to monitor pick-up and drop-off of kid to enhance the well-being during daily transportation from school and to school. In this system there are two main units, abus unit, and a school unit. The bus unit is the system which is used to determine when a child is boarding or leaving the bus. The information from bus unit is then sent to the school system that identifies the students that haven't board or leave the bus. It then issues an alert message. In this paper author has a developed a web-based and database-driven application for controlling of the device. This application provides beneficial details about the children to caregiver's personnel.

## **B. Smart IoT Device for Child Safety and Tracking**

It provides guardians with the real-time tracking of location, UV radiation index, surrounding temperature, and SOS light with a Distress alarm buzzer for their kids to make people near child to know that child is in panic. It provides feature to locate their kid or alert bystanders so that they can act to comfort the child or rescue the child. In this device they have used Thing Speak, Micro Electro Mechanical Systems (MEMS), Node MCU, GPS, GSM and Various sensors. This device gives the result for the parent in two different ways. The first one is they get an alert message (SMS) for the registered phone number. The next one is they receive a graphical representation which shows the Latitude, Longitude, MEMS Sensor and Vibration sensor of the child's activities through "Thing Speak". The disadvantage of this device that to use this device there must be efficient flow of internet connection and it must be fullest. Then only it gives the outputs at the earliest otherwise it takes time for the result.

## **C. Child Safety Wearable Device**

This project focuses communication mode to be in SMS text form using GSM. The parent will send a key word in form of SMS "SOS", "BUZZ", "LOCATION", "TEMPERATURE" etc., to the devices. The device will reply back the real time accurate location of the child and will also provide the surrounding temperature, or any of the data asked by the parents. It helps parents to keep track if the temperature around their kid is not proper for their kid. The secondary idea implemented was distress alarm buzzer and a bright SOS Light on the device that can be activated by the guardians via sending the keywords in the SMS. Parents can text the keywords to ON the SOS signal brightly and can also send the keyword to sound an alarm which a people near child or bystander can instantly help the child's till the parents arrive. People around could also contact the parents and help them to reunite child with his or her parents. Hence this project provides parents a sense of protection for their kid in today's unsafe environment. The drawback of this system is that parent have

to remember the keywords.

#### **D. A Smart Security for Child Safety**

Child tracking is mainly based on two units GPS watch and Android monitoring unit. This wearable device unit consist of a GPS receiver, Flexi Force Sensor, Temperature Sensor and MEMS accelerometer. This security Wearable Device will keep the child safe. The parent will get the continuous update about their child temperature and various other factors, so that they not afraid about their child well-being when they are not with their kid. This would create some fear in the persons mind who are involved in child trafficking and harassment. As a well-known proverb "Prevention is better than cure", this application will act as a prevention for the child safety from harassment and kidnapping.

### **3. Child A Self-Configurable New Generation Children Tracking**

#### **System:**

Name of the author: S. Deepa, S. Dinesh Kumar, P. Prasanth

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#### **OBJECTIVE OF THE PROJECT:**

The basic operation of the proposed child tracking system is that when a violation of child safe is detected, a specific sensor in child module will produce a signal. This signal will be sent from these sensors and GPS to microcontroller then through transmitter to parent module. The parent module will take the decision and start the violation handling procedure. the operation of the child tracking system requires certain hardware between child model and parent one. This includes a certain driving circuit that activates the sensors. The main hardware parts of child tracking system are; sensor driving circuits, GPS, PIC, Transceiver, Buzzer, LCD and Keypad. 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, we propose a new generation children. Tracking system which is based on experiences and findings of the field experiments for Hiroshima City Children Tracking System. Our proposed system consists of Android terminals which has Wireless LAN device and Bluetooth device with the ad hoc communication function. Our system manages groups of Android terminals using Autonomous Clustering technique. Challenges with gathering data techniques using mobile and unexpected environment (mobile context), as well as, the privacy issues on gathering personal information from a third party applications.