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Design and implementation of child safety monitoring system

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IV- YEAR/DEPARTMENT OF ECE

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***Abstract:*New hybrid approach of security application of child and measure the quantity of oxygen in present time there is a drastic increase in number of kidnapping and road accident cases. In existing system, SMS based solution using GPS system to aid parents to track their children location in real time.Nowadays, most mobile phones are equipped with location services capabilities allowing us to get the device's geographic position in real time. The proposed system approach simultaneously acquires GPS and GSM based systems are used to track the location of Childand health monitoring temperatureheartbeat,pressure,O2level,etc…**

***Keywords:*Child security, Health monitoring, GPS, Zigbee**.

I. INTRODUCTION

In present time there is a drastic increase in number of kidnapping cases. we implemented this embedded concept in the project. By the study of missing kids in 2004, There are of aggregate 5996 Childs are absent, Out of these exclusive 4092 kids found by police. However 1904 youngsters are missed.GPS comprises of a system of 24 satellites in 6 distinctive 12-hour orbital ways dispersed so that no less than five are in perspective from each point on the globe.Short Messaging Service (SMS) is a component accessible on all cellular telephones which permits a little content to be sent message. In view of this if kid is captured or he/she is moved outside of characterize zone then ready message will be sent to separate guardian's enrolled number.

The ChildGuard system is structured into three parts and provides two main functions Using the region safety feature, a guardian can be alerted if a child moves beyond a certain region. The Child Guard system is structured and provides two main function. With the rapid development of urbanization and industrialization in China, the resident population inthe countryside has gradually decreased, anda significant number of children are now living in or near cities. parents and guardians thus need ways to better monitor their children but typical security measures focus on preventing theft or other illegal action and aren't well suited for monitoring children for example, two typical measures include hiring manned guards or using video surveillance, but guards aren't practical or affordable when it comes to monitoring children and video surveillance systems usually blind zone. Furthermore, parents and guardians don't have permission to access surveillance videos to monitor their children. Child guard is asecurity method for monitoring children that uses ubiquitous computing devices such as wearable device or smart phone. which are growing in both popularity and performance. We exploit such devices to monitor the location and activities of the children and to proactively notify children and guardians of potential safety risk. The wearable device will reply back with a text containing the real time accurate location of the child which upon tapping will provide direction to the child's location on GOOGLE Map app and will also provide the surrounding temperature. The motivation for this wearable comes from the increasing need for safety for little children in current times most of wearable's are focused on providing the location, activityetc. of the child to the parent via

ZIGBEE and GPS therefore it is intended to use SMS as the mode of communication between the parent and child's wearable device.And also In an ICUshould play.
Before using the safety region function, guardians need to set polygon safety regions in the child's application. After that, the child application acquires from the device's sensors the coordinates of the child's current position (same as with the in-path function). If the child is near the boundary of the safety region of location share the systems and wi-Fi. We used the instant messenger software development kit (iMSDK) to set up a web server for information transit between the guardian and child applications of the ChildGuard system.

II. SYSTEM DESIGN AND ARCHITECTURE

This section discusses the architecture and design methodologies chosen for the development of the child safety wearable devices.

METHODOLOGY

A. Hardware

Hardware mainly consists of the different sensors

- Temperature Sensor(LM35)
- Skin Resistance sensor(Copper Strips) :

o The Copper strips pick up raw signals from the subject's bodies, and therefore have to undergo conditioning and attain stability before being sent to the controller.

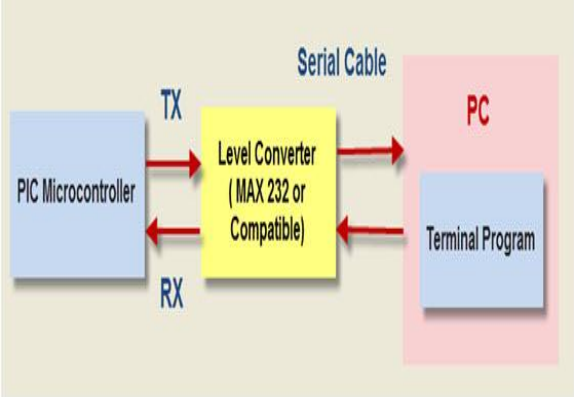
B.software

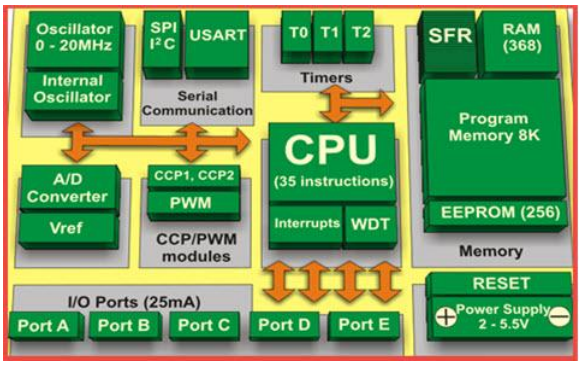
It only consists of programmable IC pic16F877A

It has five ports and three serial communication pins.it has 32 bit data bus and 40 pins IC

Pic consist of program memory

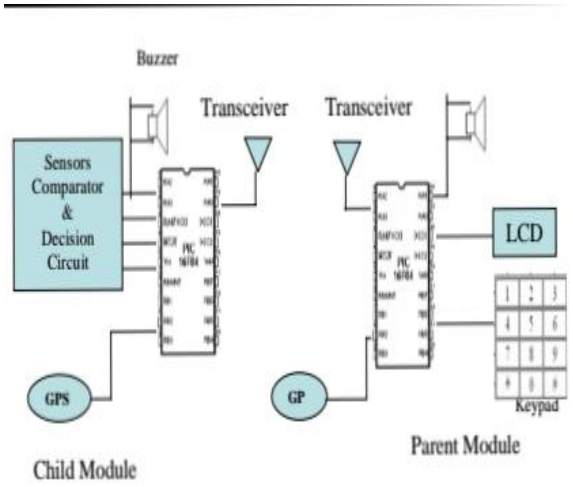
EEPROM,RAM,,PORTS,TIMER RTC,CENTRAL PROCESSING UNIT,ARITHMATIC LOGICAL UNIT,PROGRAM COUNTER,STACK,OSCILLATOR,REGISTER





B.WEARABLE DEVICE

The wearable device receives the data from its various physically connected module,anatomizes this data and refines the data in a more user understandable format to the different available user interfaces. The user ,therefore, conveniently view the information on their cellphone. the physical characteristics of the wearable device are proposed to be as a wrist watch which remains placed around the wrist of the child during times when the child is not being accompanied by an adult or parents. For the moment the design is not compact of smart wearable's system runs on abattery with an output voltage of 5v. In order to maximize power consumption, the wearable device has been programmed to provide GPS and image information only upon request by SMS text via GSM shield.



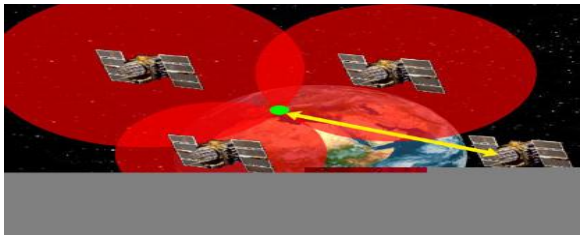
vvv

1)GPS location sensor

The connections between PIC microcontroller and the GPS module establish with three wired connection which enable the microcontroller to read the GPS data. The GPS module receives location information from the various satellite present in the NAVSTAR (American satellite timing and ranging global positioning system).It has low power consumption and which is very compact. The output received from the GPS module is a standard string information which is governed by the National Marine Electronics Association (NMEA) Protocol.

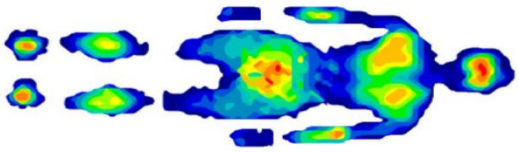
Once the SMS trigger text "LOCATION" is sent from the cellphone of the user this text is received by the GSM shield which in turn triggers the microcontroller to execute the GPS code to fetch the current, accurate location of the GPS module.

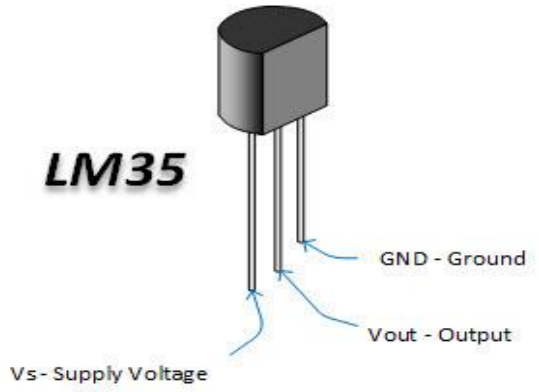
The latitude and longitude coordinates receive are stored in variables called "flat"which are called upon when the SMS text received on the GSM module



2) TEMPERATURE SENSOR

In order to measure the temperature of the surrounding of the child,a seed studio grove temperature sensor was used,The sensor module is equipped with a thermistor for measuring the ambient temperature and the fluctuation with high accuracy the observable temperature detectability. The temperature connected to microcontroller and





GSM shielding therefore the temperature sensor is connected to the analog port of the base shield .The temperature value is stored in a string get temp, .Hence the get Temp is called by the GSM module upon receiving the proper SMS keyword

"TEMPERATURE" by the user's smartphone. The temperature sensor is used to measure the temperature inside the borewell. The bore well depth increases also increase temperature. The temperature range inside the borewell is monitored with the help of PC.

- Type: LM35

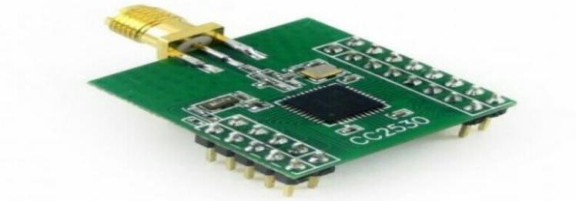
Temperature range: -55 to 150 degree Celsius

PRESSURE SENSOR

A pressure sensor is a device for a pressure measurement of gases or liquids. It is usually acts as transducer it generate a signal as a function of pressure imposed.Type: Foampressure gauge

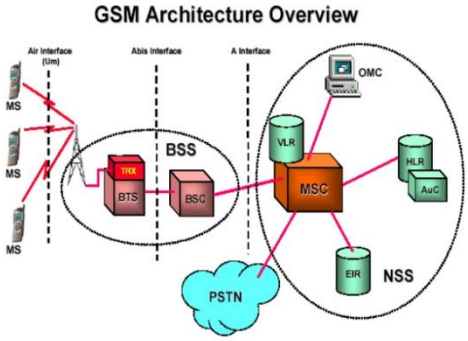
ZIGBEE

Zigbee is an IEEE 802.15.4 based specification for a suit of high level communication protocols used to create personal area network with small, low power digital radio signals. It is used to create networks that require a low data transfer rate, energy efficiency and secure networking.

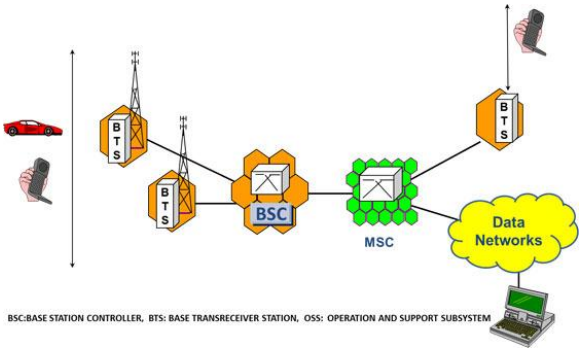


3)GSM ARCHITECTURE

It the information over to the user via SMS by using general packet radio service(GPRS) which can provide data rates. Microcontroller provides GSM libraries for their official GSM shield has well which allows the GSM shield to make/receive a call, send/receive SMS and act as a client/server.



The GSM shield has been programed to receive SMS text messages from the parent cellphone. The GSM shield will constantly be scanning the received text messages for the specific keywords such as "LOCATION" "TEMPERATURE" "BUZZER". The primary reason for using GSM shield as the mode of communication over ZIGBEE was that this wearable was aimed at being accessible to any cellphone user and not necessarily an expensive smart phone user. Also, to make the technology as user friendly possible so that a user who is technologically challenged can also use it with ease.

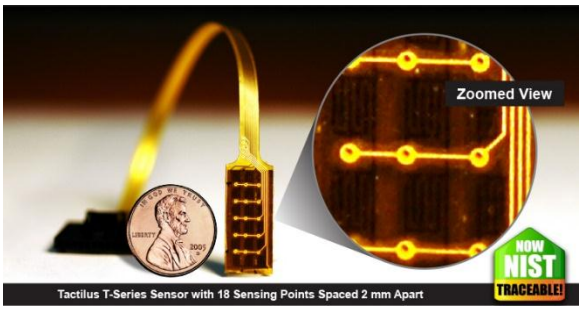


4) ALARM BUZZER AND DOOR CLOSING

If a child is separated from his/her parents the parent can locate their child by sounding a very loud alarm on the wearable.To achieve this, grove seed studio buzzer was used which has a piezoelectric module which is responsible for emitting strong tone upon the output being set to high.The grove BUZZER module is activated upon sending an SMS text with the keyword "BUZZ" from a cellphone also this buzzer work similar to the SOS led by alerting the people near by with the this distressed tone that the child might be last is in need of assistance the BUZZER is connected to the D4 digital port of the baseshiel

Conclusion

In conclusion, this system was developed to locate children for their parents and this research showed that GPS tracking technology is a practical option for monitoring and tracking the children in Hospital. This research presents design and implementation of pic processor based children tracking system. It primarily focuses on tracking a child's position and monitoring health condition of the child is sent to its parent and control room. in future we implement Nano technology.



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