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REVIEW ON CHILD SAFETY WEARABLE DEVICE USING ARDUINO

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ABSTRACT
The main objective of this system is to provide the safety to child which is lost in major crowded area. Now a day, Childs are not secured they are facing many issues regarding their security. There are number of security systems for the child security purpose. In order to overcome such problems the child safety wearable system is implemented. This system is not required any expensive technology and it is user friendly for both educated and uneducated people. There are many wearable devices are available in the market to track the child using wi-fi and Bluetooth but the wi-fi and Bluetooth are the unreliable medium for the communication between parent and child. In this system we use the text SMS as a mode of communication between parent and child there is minimum chances of failing communication as compared to wi-fi and Bluetooth. It also includes SOS light and BUZZER to provide security to the child in real time situations and it helps to parents to check the condition of child using android application.

Keywords: Temperature, SOS light, child safety, SMS based.

INTRODUCTION
The purpose of this system is to provide the security to child using wearable devices. Now a day the child getting lost in the major crowed areas, this is the main motivation for the safety of children. Most of the wearable devices are available in the market and focused on providing the location, activity, temperature etc. these details of the child to the parents through wi-fi and Bluetooth, these are very unreliable sources to transfer the information to parents. Therefore, in this project we use the SMS as the mode of communication between parent and child's wearable device, as this has fewer chances of failing compared to wi-fi and Bluetooth. The proposed system focuses on the key aspect that the lost child can be helped by the people around the child and can play a significant role in the child's safety until returned to the parents. The platform of this project will be running on Arduino microcontroller board based on the ATmega 328p and functions of sending and receiving SMS connecting to the internet which is provided by the GSM shield. Also, additional modules employed which will provide the current location of the child to parent via SMS. The second measure added is SOS Light indicator that will be programmed with Arduino UNO board to display the SOS signal using Morse code. Therefore, the wearable device proposed will be communicating with the parent via SMS, which would ensure that there is a secure communication link.

Statement of Problem
- To design and implement a child safety wearable device using wireless technology which is a smart device.

- It provides parents with information such as temperature, heartbeat of the child along with the alarm buzzer to alert bystanders.
- The device detects if there is any obstacle found and also senses if there is too much change in the position of the child Design smart wearable device for children.
- This device responds to commands sent by guardian to ensure safety of children. It provides temperature, heartbeats, pulse rate surrounding the children and also provides the facility of SOS and buzzer in emergency case.

SCOPE OF PROJECT:

- To overcome the drawbacks of the existing system. We implement the system using microcontroller ATmega 328P the child abduction is found.
- The proposed system is to develop a device for the safety and security of the child.
- The device monitors the health condition of the child with the help of temperature and heartbeat sensor. The device detects the obstacle using ultrasonic sensor.
- It also senses if there is too much change in position of the child using accelerometer.
- The pulse oximeter differentiates the pulse rate of child and find whether child is in emergency condition.

OBJECTIVE OF RESEARCH

- The security of the child by using wearable device is to help the parent to locate their child easily and the location can be send to the parents mobile via SMS.
- Some past works on SMS based tracking which is not supportive to get an accurate location in our proposed system we have provided real time tracking.

HYPOTHESIS OR ASSUMPTION

This section discusses the architecture and the design methodologies chosen for the development of the Child Safety wearable device.

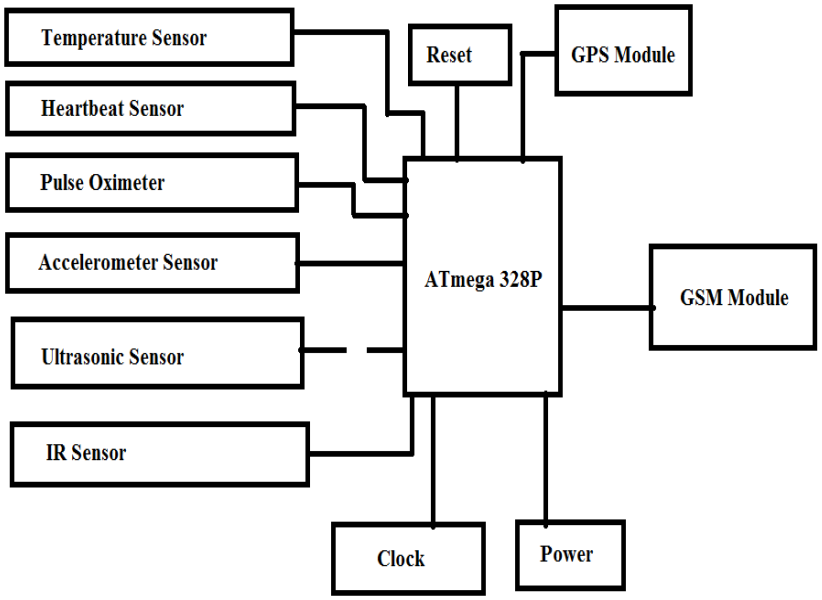

Fig: System Overview of Child Safety Wearable Device

ATmega328p micro-controller controls the system architecture of the wearable with an Arduino boot-loader. The system architecture of the wearable is based and controlled by an ATmega328p micro-controller with an Arduino UNO boot-loader. The system focuses on sending an SMS text enabling communication medium between the child's device and the parent.

For monitoring the child, we use temperature sensor and heartbeat sensor. For temperature measurement of the child dh11 sensor is used, and heartbeat sensor to track the heartbeat of the child. Ultrasonic sensor and IR detects the obstacles that are near the child. GPS Location sensor determines the real-time location of the child.

The GSM Module used is SIM800A. The primary reason for using the GSM shield as the mode of communication over Wi-Fi and Bluetooth was that this device was aimed at being accessible to any cell phone user and not necessarily an expensive Smartphone user . It is user friendly so there is no need for the parent to learn about new technology.

METHODOLOGY AND TOOLS:

Fig: Arduino GSM Shield

Hardware interfaces

1) ATmega 328p
2) Temperature Sensor
3) Heartbeat Sensor
4) IR sensor
5) Pulse Sensor
6) Ultrasonic Sensor
7) Accelerometer

Software Interfaces

1) Programming Language: Embedded C
2) Tools to be used: Arduino
3) Operating System: Windows

CONCLUSION

This system will be helpful for children when they are in major crowded areas. this application is designed for trace to missing child. This device uses SMS based technology so the parents are able to use it more efficiently. Some past works on SMS based tracking which is not supportive to get an accurate location in our proposed system we have provided real time tracking. With the help of sensors embedded in the wearable gadget the parents can keep track of health conditions of the child. This system can overcome the fear that scares child in the country about her safety and security.

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