Vesture Device for Child Safety

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Abstract-This paper discuss the concept of a smart wearable device for little children. The major advantage of this wearable over other wearable is that it can be used in any cellphone and doesn't necessarily require an expensive smart phone. The purpose is to help parents to locate their children with ease. This paper is to have SMS text enabled communication medium between the child and parent as the environment for GSM mobile communication is almost present anywhwere. The parent can send text with specific keywords such as "location", "temprature", "buzz" etc..

Keywords: loT, Children, Arduino, Safety, Wearable.

I. INTRODUCTION

In The Internet of Things System (loT) refers to the set of devices and systems that stay interconnected with real-world sensors and actuators to the Internet. loT includes many different systems like smart cars, wearable devices and even human implanted devices, home automation systems and lighting controls; smartphones which are increasingly being used to measure the world around them. This paper focusses on the key aspect that lost child can be helped by the people around the child and can play a significant role in the child's safety until reunited with the parents. SMS as the mode of communication between the parent and child's wearable device, as this has fewer chances of failing compared to Wi-Fi and Bluetooth.

II. SYSTEM DESIGN AND ARCHITECTURE

The wearable device, for now, is not built on a SoC model, rather has been proposed using larger components and can later build on the SoC platfonn once put into manufacture. The wearable loT device tasked with acquiring various data from the all the different modules connected The user, therefore, can conveniently view the information on the their cell phone . 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/parent. For the moment the design is not made compact, since the main focus now has been to show that this concept of smart wearables would be highly impactful for the safety of children. The wearable system runs on a battery with an output voltage of 5V.

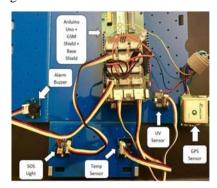


Fig. 1.1 Proposed wearable lo Device.

1) GPS Location Sensor

For determining the real time location of the child Parallax PMB-648 GPS module has been used which communicates with the Arduino Uno through a 4800 bps TTL-level interface. The connections between the Arduino Uno and the GPS module established with three wired connections which enable the Arduino to read the GPS data. The GPS module receives location information from the various satellites present in the NAVSTAR.

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Fig. 1.2. Output received GPS location sensor.

2) GPS Location Sensor

The GPS location sensor was able to respond back with precise latitude and longitude coordinates of the wearable device to the user's cellphone, which then the user would click on the received Google maps URL which would, in tum, open the google maps app and display the pinpoint location.

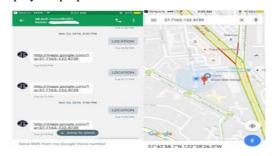


Fig.1.3 Google maps with latitude and longitude

III. FUTURE ENHANCEMENT

Camera Module:

For surveillance of the child's surroundings, to get a clearer picture of the location, this wearable can also contain a camera module incorporated in it. The hardware that could be used would be a adafruit TTL serial camera. Since the major focus of this wearable project is the GSM module which is a better alternative than Bluetooth, Wi-Fi or ZigBee

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due to the short range and connectivity issues of these technologies.

IV. CONCLUSION

The child safety wearable device is capable of acting as a smart loT device. It provides parents with the real-time location, surrounding temperature, UV radiation index and SOS light along with Distress alarm buzzer for their child's surroundings and the ability to locate their child or alert bystanders in acting to rescue or comfort the child. The smart child safety wearable can be enhanced much more in the future by using highly compact Arduino modules such as the LilyPad Arduino which can be sewed into fabrics. Also a more power efficient model will have to be created which will be capable of holding the battery for a longer time.

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