DEVELOPMENT OF CHILDREN ACTIVITY TRACKING SYSTEM BASED ON IOT

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I. ABSTRACT

This paper discusses the concept of a smart child wearable device for little children. The major advantage of this wearable over other wearable is that it can be used in any cell phone and doesn't necessarily require an expensive smart phone and not a very tech savvy individual to operate. The purpose of this device is to help parents locate their children with ease. At the moment there are many wearable in the market which help track the daily activity of children and also help find the child using GPRS and GSM services present on the device. Therefore, the focus of this paper is to have an SMS text enabled communication medium between the child's wearable and the parent as the environment for GSM mobile communication is almost present everywhere. The parent can send a text with specific keywords such as "LOCATION" "TEMPERATURE" "LDR" etc.

Keywords: microcontroller, temperature sensor, LDR sensor, GPS/GPRS module, GSM module, sound detection.

II. INTRODUCTION

The motivation for this wearable comes from the increasing need for safety for little children in current

times as there could be scenarios of the child getting lost in the major crowded areas. This paper focuses 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. Most of the wearable devices available today are focused on providing the location, activity, etc. of the child to the parents via GPS and GPRS/GSM .Therefore it is intended to use SMS as the mode of communication between the parent and child's wearable device. The platform on which this project will be running on is the microcontroller board and the functions of sending and receiving SMS, calls and connecting to the internet which is provided by the microcontroller. GPRS/GSM shield using the GSM network Also, additional modules employed which will provide the current location of the child to the parents via SMS. The second measure added is led Light indicator device. Therefore, the wearable device proposed will be communicating with the parent via SMS which would ensure that there is a secure communication link. Also, customization of the wearable is possible as per our needs by reprogramming the microcontroller system. The wearable device will reply back with a text containing the real time accurate location of the child which upon tapping will provide directions to the

child's location on Google maps app and will also provide the surrounding temperature, so that the parents can keep track if the temperature suitable for the child. is in our lives but it can sometimes can't be trusted, and we always need to have a Hence this paper aims at providing parents with a sense of security for their child in today's time.

LITERATURE REVIEW:

Many types of smart devices are available in the world. Some devices for personal safety and some are for vehicle tracking. This project is designed to be used by parents and aimed to help locating missing or lost children. It takes advantage of the fact that many of today's children own smart phones which is convenient for this kind of situation. In this work, GPS is combined with one of the basic service of a smart phone which is GSM, more specifically SMS, in one system. An application at the parent's side will allow parents to send a location request to child side then retrieve the location from the request reply and display it on the map. On the other hand, the application at the child's side gathers the necessary information of the smart phone that will be used to locate the smart phone.

Information such as GPS coordinates and time are gathered and sent to the parent smart phone that's preregistered on the application. The communication between the parent and the child applications is done using Short Message Service (SMS). It will allow the system to work without the need of internet connection thus allows the application to be implemented on smart phones that don't support GPRS, 2G or 3G internet connectivity. The system sends the location of child's smart device to parent's smart phone when the parent wishes to check on the child [1].

EXISTING SYSTEM

In previous days, if a child had been theft or in danger it is difficult for the parents to identify the location. They need the help of the people surrounding the child and sometimes the people surrounding the child may do harm to him. The parents need to search all the places. At that moment there are many wearable in the market which help track the daily activity of children and also help find the child using Wi-Fi and Bluetooth services present on the device. But Wi-Fi and Bluetooth appear to be an unreliable medium of communication between the parent and child.

PROPOSED SYSTEM:

The focus of this paper is to have an SMS text enabled communication medium between the child's wearable and the parent as the environment for GPRS/GSM mobile communication is almost present everywhere.

III. BLOCK DIAGRAM



Fig(3.1). System block diagram

System Overview

Power Supply:

This section is meant for supplying Power to all the sections mentioned above. It basically consists of a Transformer to step down the 230V ac to 9V ac followed by diodes. Here diodes are used to rectify the ac to dc. After rectification the obtained rippled dc is filtered using a capacitor Filter. A positive voltage regulator is used to regulate the obtained dc voltage.

Microcontroller:

This section forms the control unit of the whole project. This section basically consists of a Microcontroller with its associated circuitry like Crystal with capacitors, Reset circuitry, Pull up resistors (if needed) and so on. The Microcontroller forms the heart of the project because it controls the devices being interfaced and communicates with the devices according to the program being written. ARM is the abbreviation of Advanced RISC Machines, it is the name of a class of processors, and is the name of a kind technology too. The RISC instruction set, and related decode mechanism are much simpler than those of Complex Instruction Set Computer (CISC) designs.

Temperature sensor:

Thermistors are a temperature sensing devise. It is used to sense the temperature. In this project by depends on the value of temperature the exhaust fan will run. The word thermistor is an acronym for thermal resistor, i.e., a temperature sensitive resistor. It is used to detect very small changes in temperature. The variation in temperature is reflected through appreciable variation of the resistance of the device.

LCD Display:

This section is basically meant to show up the status of the project. This project makes use of Liquid Crystal Display to display / prompt for necessary information.

GPS modem:

A GPS modem is used to get the signals and receive the signals from the satellites. In this project, GPS modem get the signals from the satellites and those are given to the microcontroller. The signals may be in the form of the coordinates; these are represented in form of the latitudes, longitudes and altitudes.

GPRS/GSM:

This section consists of a GPRS modem. The modem will communicate with microcontroller using serial communication. The modem is interfaced to microcontroller using MAX 232, a serial driver. The Global Packet Radio Service is a TDMA based digital wireless network technology that is used for connecting directly to internet. GPRS module will help us to post data in the web page directly.

This section consists of a GSM modem. The modem will communicate with microcontroller using serial communication. The modem is interfaced to microcontroller using MAX 232, a serial driver. The Global System for Mobile Communications is a TDMA based digital wireless network technology that is used for communication between the cellular devices. GSM phones make use of a SIM card to identify the user's account.

LDR:

The LDR is used to measure the light intensity.

IV. RESULTS



Fig (4.1) Device wearable to the web server





V. CONCLUSION

The child safety wearable device is capable of acting as a smart device. It provides parents with the realtime location, surrounding temperature, and ldr light along with Distress sound for their child's surroundings and the ability to locate their child or alert by standers 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 controller modules such. Also a more power efficient model will have to be created which will be capable of holding the battery for a longer time.

FUTURE SCOPE:

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 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 due to the short range and connectivity issues of these technologies. Whereas for the camera module which supports video streaming but due to the constraint of trying to use only sms, therefore only four wire connections will be taking place.

VI. REFERENCES

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