IOT BASED SAFETY GADGET FOR CHILD

SAFETY MONITORING AND NOTIFICTION.

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INTRODUCTION

Project Overview

The concept of a smart wearable device for little children.The major advantageof this wearable over other wearable is that it can be used in anycellphone and doesn'tnecessarily require an expensivesmartphone and not a very tech savvy individual to operate. The purpose of this deviceis to help parents locatetheir children withease. At the moment there are many wearables 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. Therefore, the focusof this paper is to have an SMS text enabled communication medium betweenthe child's wearableand the parent as the environment for GSM mobile communication is almost presenteverywhere. The parent can send a text with specific keywords such as "LOCATION" "TEMPERATURE" "UV" "SOS""BUZZ", etc., the wearable device will reply back with a text containing the real time accuratelocation of the child which upontapping will provide directions to the child's location on google maps app and will also provide the surrounding temperature, UVradiation index so that the parentscan keep track if the temperature or UV radiation is not suitable for the child. The prime motivation behind this paper is that we know how important technology is in our lives but it can sometimes can't betrusted, and we always need to have a secondary measure at hand. The secondary measure used in this project is the people present in the surrounding of the child who could instantly react for the child's safety till the parents arrive or they could contact the parents and help locate them. The secondarymeasure implemented was using a bright SOS Light and distress alarm buzzer present on the wearable device which when activated by the parents via SMS text should display the SOS signal brightly and sound an alarm which a bystander can easily spot as a sign ofdistress. Hence this paper aims at providing parents with a senseof security for their child in today'stime.

Purpose

It **assists parents to monitor their children remotely**. In case situations happen, notification will be sent to parents so that actions can be taken.

Through this, child safety can be ensured and crime rate will be reduced.

LITRATURE SURVEY

A system to monitor pick-up/drop-off of school children to enhance the safety of children during daily transportation from and to school. The system consists of two main units, a bus unit, and a school unit. The bus unit the system is used to detect when a child boards or leaves the bus. This information is communicated to the school unit that identifies which of the children did not board or the bus and issues an alert message accordingly. The system has a developed web-based database-driven application that facilities its management and provides useful information about the children to authorized personnel. A complete prototype leave of the proposed system was implemented and tested to validate the system functionality. The results show that the system is promising for transportation safety. The work is to develop a wearable device for the safety and protection of women and girls. This objective is achieved by the analysis of physiological signals in conjunction with body position. The physiological signals that are analyzed are galvanic skin resistance and body temperature. Body position is determined by acquiring raw accelerometer data from a triple axis accelerometer. Acquisition of raw data is then followed by activity recognition which is a process of employing a specialized machine learning algorithm. Real-time monitoring of data is achieved by wirelessly sending sensor data to an open source Cloud Platform. Analysis of the data is done on MATLAB simultaneously.

EXISTING PROBLEM

Real-Time Child Abuse and Reporting System In the existing system, we use a voice recognition module in which the alert commands from the child are stored and kept for further reference. If the same child delivers the same command, it will compare with the alert command which was previously stored and sets an emergency level according to the alert command. The GSM has a SIM which is used to send an alert message or an alert call to the trusted peoples. GPS is used to track the live location and it is used when needed. The server will search the

respective device ID from the database and search for respective contacts according to that

device ID and helps in alerting the registered guardians.

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PROBLEM STATEMENT

The Increasing need for protection of the child at present times and also when child can be lost in crowded areas. Using Bluetooth and Wi-Fi not possible to track longer distance. Crimes against children are increasing Year on Year. According to a study, roughly 60,000 children to missing in India every Year. Incase of an emergency, or in a situation of panic, the child must be not able to communicate with their parents without the Knowledge of mobile. Assuming the child is not found immediately, Officers and Detectives will begin following up on various leads to see if they can find the child .In many cases, community members will come together to form search parties to look for the child through out the town.

PROPOSED SOLUTION FIT

ANGEL CHILD MONITORING:

a. This device, which can be carried in pocket, strapped to body or worn around the neck, allows the parents to create safe zones for their child, including school, home, parks or even tuition centres.

b. The moment the child moves away from these zones, an alert is send to the parents phone using an app.

KAIOTA:

a. This is a GPS-enabled package which has a wearable phone and a tracker which could be installed in childrens watch.

b. Parents can monitor child location and surroundings.

c. It operates on an IOT platform called TRAXROOT.

REQUIREMENT ANALYSIS

FUNCTIONAL REQUIREMENTS

a. The systemshall allow the user or family's to register phone number.
b. The system shall provide report for the ongoing day to day activitybothfor the schools and families.
c. The system should provideall the senseddata from each sensor send bytext message.
d. The systemshall check the sensed data with the threshold valueof each input.
e. The systemshall notify the user while the inputvalue exceed or become belowthe threshold value.

NON- FUNCTIONAL REQUIREMENTS

f. The system shall give the accurate result for different factors using sensingmaterial as a resulttheir will not be any distractive damage.
g. The systemshall be maintainable whenever faller occurs.

h. Sometime the GPS module works on rainy condition.
i. The systemis cost effective comparing to the featuresit provides.
j. The systemshall be usablewithin a few minutes training.

CODING & SOLUTIONING

FEATURE 1

Camera Module

For surveillance of the child surroundings, to get a clearer picture of the

location or place, this wearable can also be incorporated a camera module in it. The hardware that can be used would be an ad fruit TTL serial camera or any other camera module. Since the major focus of this wearable is the GSM module which is a better alternative than Bluetooth, Wi-Fi or ZigBee due to the short range and connectivity issues. Therefore, for this project using the GSM technologies is beneficial for us as the cellular range is vast and since all the communication between the wearable and the user is taking place via SMS, therefore no internet connectivity is required. But, still, the GSM module possess the added advantage of using GPRS which enables the board to use the internet if required. Whereas for 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. The red and black wires will be connected directly to +5V and GND respectively to the Arduino Uno board. Whereas for the RX pin which will be used for sending data via Arduino Uno and gsm board and for the TX pin which will be utilized for receiving incoming data via from the modules. The lO K resistor divider, the camera's serial data pins are 3.3v logic, and it would be a good idea to divide the 5V down so that its 2.5V.Normally the output from the digital 0 pin is 5V high, the wa0y we connected the resistors is so the camera input (white wire) never goes above 3.3V. To talk to the camera, the Arduino Uno will be using two digital pins and a software serial port to communicate to the camera. Since the camera or the Arduino Uno do not have enough onboard memory to save snapshots clicked and store it temporarily, therefore an external storage source microSD board will be used to save the images temporarily. The camera works on a standard baud rate of 38400 baud. The camera will be collecting information in the same manner as the GPS module does. It will be on standby conserving power waiting for the particular keyword "SNAPSHOT" or any other defined in the program to be sent from the user's smartphone to the GSM module will activate the camera by the Arduino Uno to start clicking a snapshot of the surrounding and save the file temporarily on the external microSD card. After which Arduino Uno will access the saved images from the SD storage and transfer it to the GSM module which send it to the user via SMS/MMS text.

FEATURE 2

Android App

The idea behind the Android app has been derived from having an automated bot to respond to text message responses from the user. It will provide the user with predefined response options at just the click of a button. The user doesn't need to memorize the specific keywords to send. Also, the bot will be pre-programmed to present the user with a set of predefined keyword options such as "LOCATION," "SNAPSHOT," "SOS," etc. Whereas for the future aspect of this wearable device based on what type sensor is added to it, additional specific keywords could be added such as, "HUMIDITY," "ALTITUDE," etc. This android app provides mote interface to the user which help to understand easily. The main idea in this android app is to provide keyword button i.e. that for getting location we have a specific button, by pressing this button we get the location instead of typing the keyword which ease our work.

TESTING

TEST CASES

This report showsthe number of test casesthat have passed,failed, and untested

Section	Total Cases	Not Tested	Fail	Pass
Print Engine	7	0	0	7
Client Application	51	0	0	51
Security	2	0	0	2

a. **USER ACCEPTANCE TESTING**

1　**Purpose of Document**

The purpose of this document is to briefly explain the test coverageand open issues of the [ProductName] project at the time of the releaseto User Acceptance Testing (UAT).

2　**Defect Analysis**

This reportshows the numberof resolved or closed bugs at each severity level,and how they were resolved

Resolution	Severity 1	Severity 2	Severity 3	Severity 4	Subtotal
By Design	10	4	2	3	20
Duplicate	1	0	3	0	4
External	2	3	0	1	6
Fixed	11	2	4	20	37
Not Reproduced	0	0	1	0	1
Skipped	0	0	1	1	2
Won't Fix	0	5	2	1	8
Totals	24	14	13	26	77

RESULTS

PERFORMANCE MERTICS

One of the module in our project is temperature sensor which is used to detect the temperature of the child as well as the surrounding temperature. If there occurs any abnormalrise or fall in temperature inthe body of the child or in the surrounding it will notify the user as per the coded time delay as shownin the picture. It will show the temperature and humidity values notifies the user based on the predefined value abnormal fall or rise scenarios.

The parameters such as touch, temperature & heartbeat of the child are used for parametric analysis and results are plotted for the same. Demerits: To implement the IoT device which ensures the complete solution for child safety problems.

ADVANTAGE & DISADVANTAGE

ADVANTAGE

a. Staying Connected

b. Data   Accuracy

c. Efficiency

d. It can be used in any cell phone and doesn't necessarily require an expensive smart phone

DISADVANTAGE

a. Security and privacy concerns

b. Health Risks

c. Limitations of wearable Technologies

d. Linked Devices

e. Distraction from work- related activities

f. High cost but once it is implemented the expenses can be reduced0

CONCLUSION

The word Future resembles the word Children. As Dr. A.P.J Abdul Kalam's words "Youngsters are the future pillars of one's nation", today's children are tomorrow's youngsters, preserving their dreams and life for a better future is necessary. Therefore, each and every parent should take care of their own children,without letting them to fall into the dark world of abusements, which entirely ruin them physically, mentally and emotionally destroying our future. Hence, considering the importance of our future, our project makesit easy for parents to track their children and to visuallymonitor them on regular basis, which makes them ensure the safety of their children and reduces the rate of incidents of child abuse.

FUTURE SCOPE

In our system, we automatically monitorthe child in real time using Internetof Things, with the help of GPS, GSM, and Raspberry Pi. This system requires networkconnectivity, satellite communication,and high-speed data connection when we use web camera and GPS to lively monitor. It is difficult to monitor when there occurs any hindrance to satellite communication or any network issue. There also occurs time delay in video

streaming through the server. Hence in the future, these issues can be overcome by using Zigbee concept or accessing the system withoutinternet and using high-speedservertransmission.

SCREENSHOT:

GITHUB LINK:

https://github.com/IBM-EPBL/IBM-Project-42770-1660708744
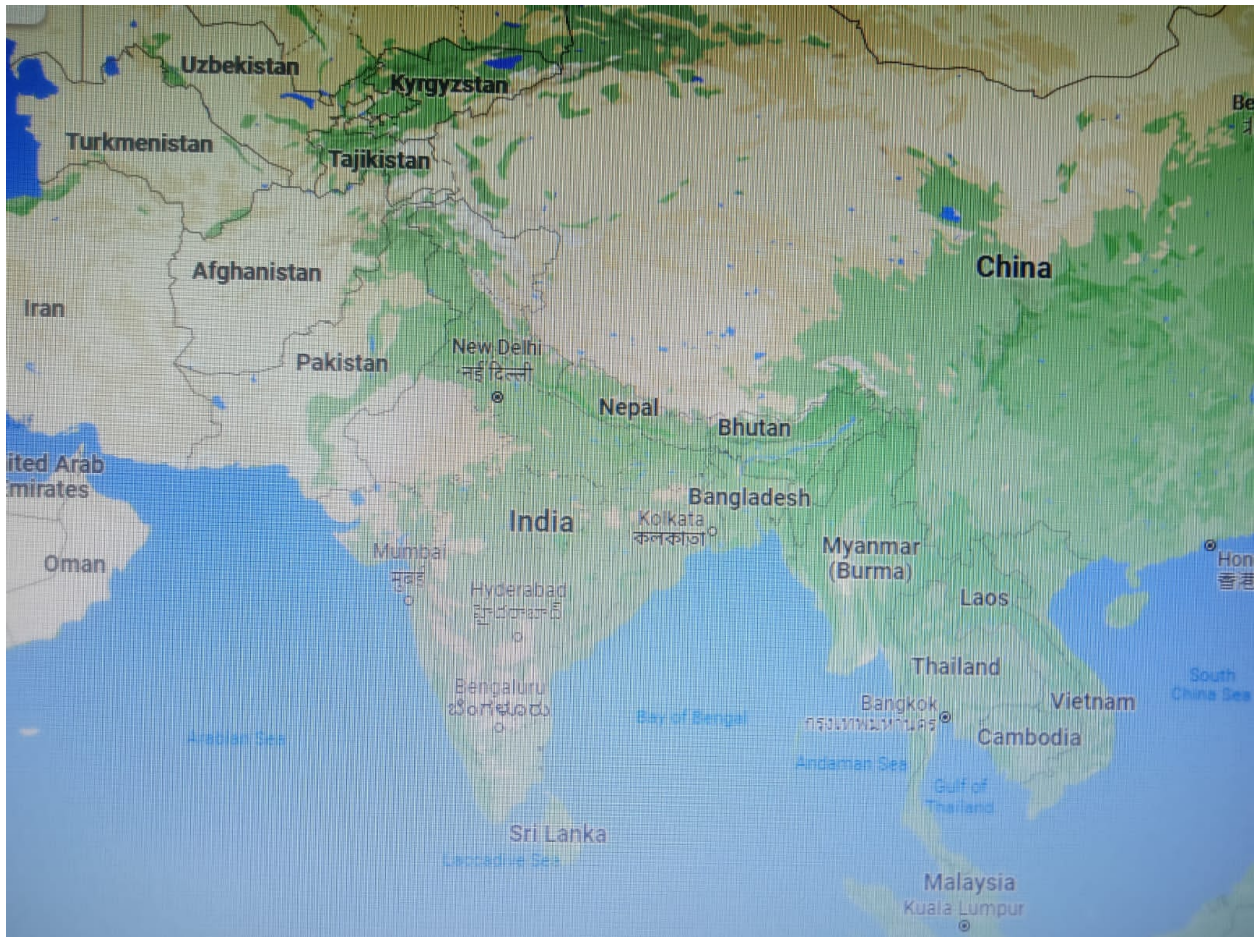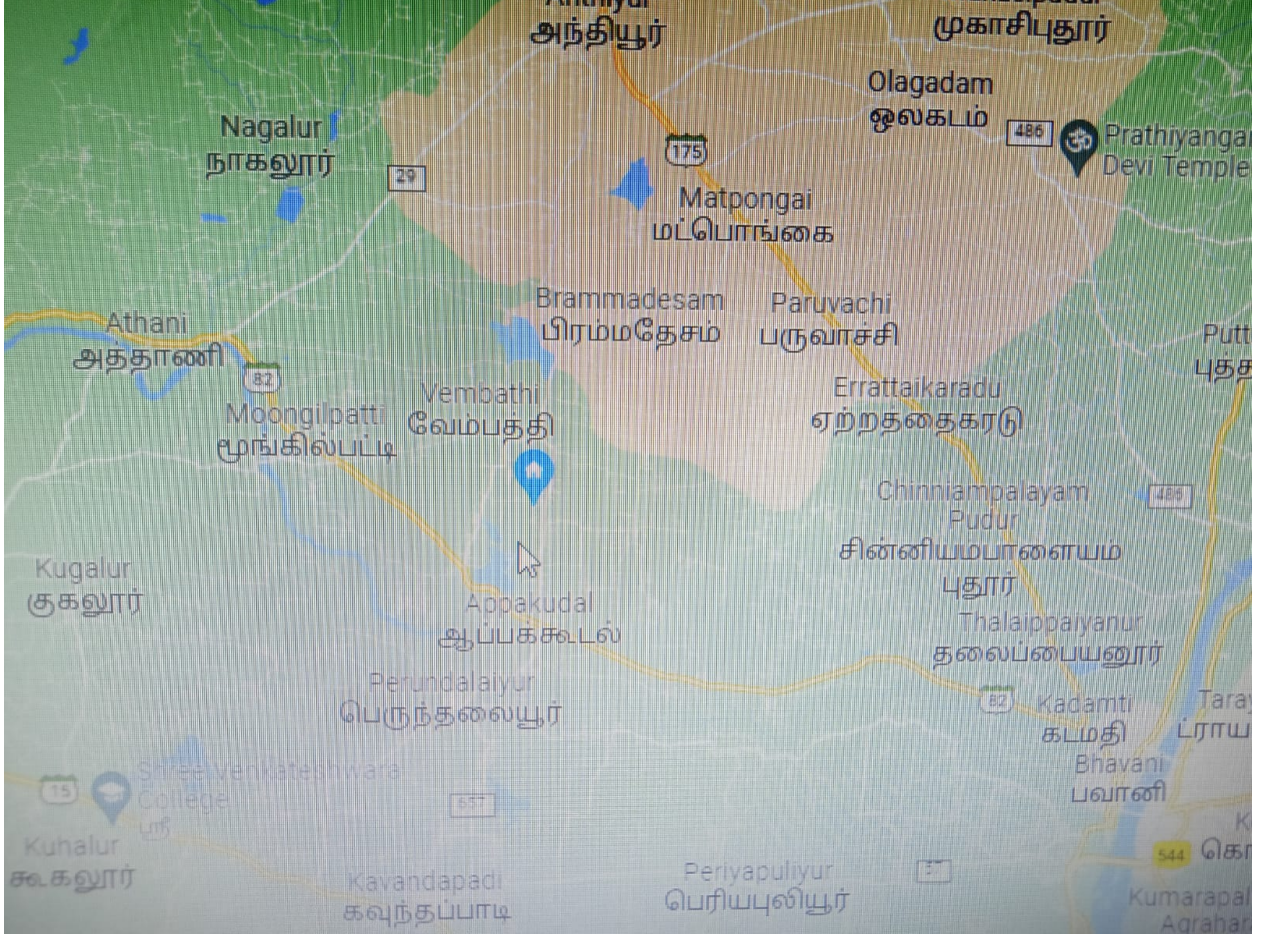
DEMO VIDEO LINK:

https://drive.google.com/file/d/1Xp-wRllEVONNjANYqQzv-zONS_mmYriO/view?usp=sharing