**THAMIRABHARANI ENGINEERING COLLEGE**

**IoT BASED SAFETY GADGET FOR CHILD SAFETY MONITORING AND NOTIFICATION**

**A project report submitted by**

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1. **INTRODUCTION**

In today’s world, violent act against the children has increasedunprecedentlyandin the are found in dangerous conditions, where they cannot take the cell phone to contact the family members or police. In recent days, children can’t roam freely due to some type of misuse and a fear of ferocity. The device obtains IOT monitoring and GSM module keeps monitoring the children any time. It is very simple to hold the device with extra functions and supports. The alternative push buttons used during emergency. The main resolution of this devices to inform the parent and police about the current location of the children with the help of the emergency push button. To locate the current area GPS method is used and a GSM modem is helping to share the information via SMS message to the predefined numbers and the nearest police stations.

1. **LITERATURESURVEY**

RFID-based System for School Children Transportation Safety Enhancement This paper presents a system to monitor pick-up/drop-off of school children to enhance the safety of children during daily transportation from and to school.

Design and Development of an IOT based wearable device for the Safety and Security of women and girl children The aim of this work is to develop a wearable device for the safety and protection of women and girls.

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.

**2.1 Existing problems**

To existing system, the IoT device which ensure the complete solution for child safety problems. As this device battery gives short life time. High power efficient model will have to be used which can be capable of giving the battery for a longer time. This system is unable to sense human behaviour of child. This device cannot in used by rural areas.

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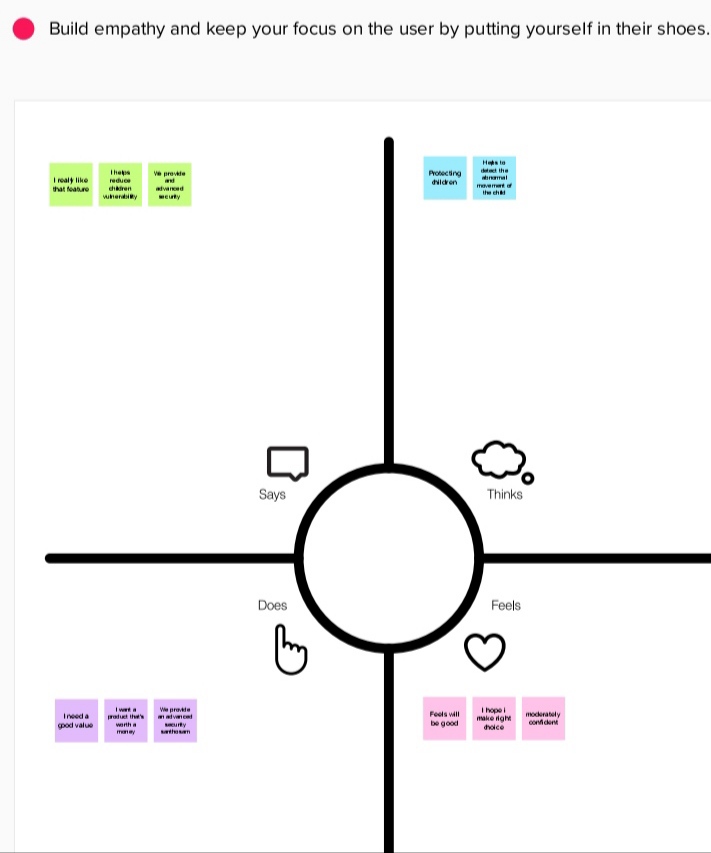
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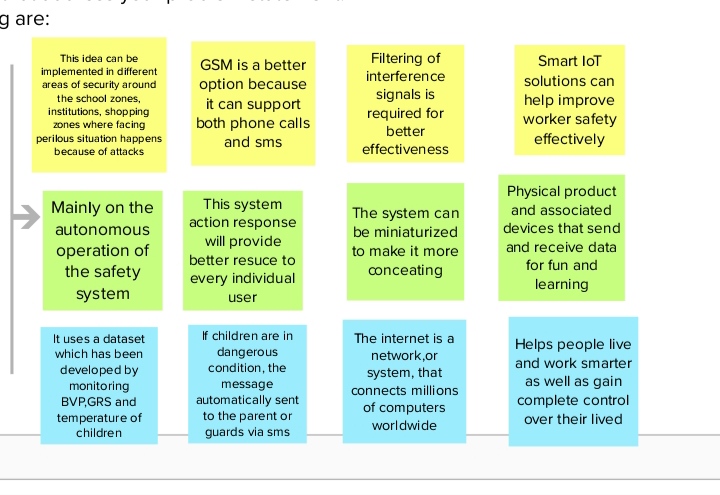
**2.3 Problem statement**

Now-a-days human life is becoming very fast. In the daily busy schedule it is becoming very difficult for the parents to monitor their children closely. Child safety and tracking is of utmost importance as children are the most vulnerable. With increasing crime rates such as child kidnapping, child abuse and so on, the need for an advanced smart security system has become an necessity. We provide an environment where this problem can be resolved in efficient mannar.

**IDEATION & PROPOSED SOLUTION**

**2.4 Empathy map**

**2.5 Ideation & Brainstorming**



**2.6 Proposed Solution:**

**Problem Statement (Problem to be solved)**

Child safety and tracking is of utmost importance as children are the most vulnerable. With increasing crime rates such as child kidnapping, child abuse and so on.

**Idea / Solution description**

A smart IoT device for child safety monitoring and notification is developed to help the parents to locate their children. The system is developed using arduino UNO and interfaced with temperature, pulse sensor and also GSM, GPS.

**Novelty / Uniqueness**

The system automatically alerts the parent by sending message, when immediate attention is required for the child during emergency.

**Social Impact / Customer Satisfaction**

The parents and the children by making the parents relaxed by knowing childrens location and providing the freedom for children.

**2.7 Problem Solution Fit**

1. **Customer Segments(s)**

Our customers are mainly parents. The parents to keep track of their children when they are out of their sight.

1. **Customer Constraints**

Child safety and tracking is of utmost importance as children are the most vulnerable. With increasing crime rates such as child kidnapping, child abuse and so on.

**3. Available Solutions**

Children need to carry mobile phones in order to contact their parents.

The solutions are available readily in the market such as GPS, GSM kit, etc..,

**4. Jobs-To-Be-Done / Problems**

Instant notification to the parents and to their close relative if the children is in danger.

Health monitoring and reporting the health condition to their parents.

**5. Problem Root Cause**

Most parents want to love and care for their child in a safe home. Stress, tiredness or lack of parenting skills or family support make the pressures of caring for a child overwhelming.

**6. Behaviour**

Find the way to protect the child using IoT sensors. Indirectly associated with safety of the child without help of parents.

**7. Triggers**

The trigger which induces the customers is the one that when other working parents give a try to this and comment a positive review on this, they also tend to have a try to enhance their child safety.

**8. Your Solution**

. We provide an environment this problem can be resolved in an efficient manner.

It is useful to reduce the stress of the parent and increase the safety of the child and it afford confident to the parents.

**9. Channel Of Behaviour**

Our solution has the modes of working in both offline and online.

ONLINE: keep track of their location and Notify to the parents.

OFFLINE: Contact the parents in case of abnormal situation.

**10. Emotions: Before / After**

People do not feel good to buy the product as it is very costly. They feel more relaxed as they monitor their child and can concentrate on their work.

**3. REQUIREMENT ANALYSIS**

**3.1 Functional Requirement**

Following are the functional requirements of the proposed solution.

|  |  |  |
| --- | --- | --- |
| **FR No.** | **Functional Requirement (Epic)** | **Sub Requirement (Story / Sub-Task)** |
| FR-1 | User Registration | Install the app.  Signing up with Gmail or phone numbers |
| FR-2 | User Confirmation | Verification via Gmail or OTP |
| FR-3 | Notification | Mobile app |
| FR-4 | Database | Database containing childs location |
| FR-5 | User interface | Mobile app- to see location of childrens when they are out of their range. |
| FR-6 | Sensor | Pulse sensor, Temperature sensor |

**Non-functional Requirements**

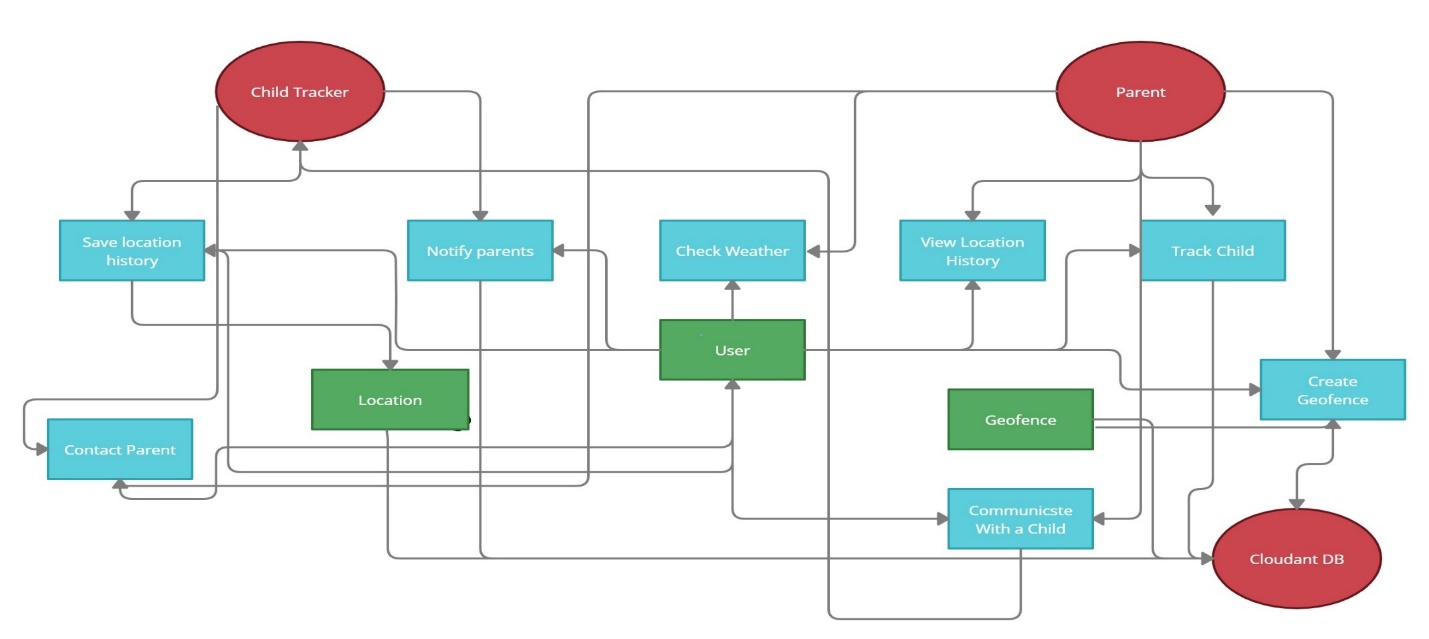
Following are the non-functional requirements of the proposed solution.

|  |  |  |
| --- | --- | --- |
| **FR No.** | **Non-Functional Requirement** | **Description** |
| NFR-1 | **Usability** | The device can be used by parents to track of their children. |
| NFR-2 | **Security** | Providing permission for some information only be decided by the used to parents. |
| NFR-3 | **Reliability** | Easy to use, Portable |
| NFR-4 | **Performance** | Good performance of children when they are out of their sight. |
| NFR-5 | **Availability** | Children need to carry mobile phones in order to contact their parents. |
| NFR-6 | **Scalability** | Reliable and cost effective |

**4. PROJECT DESIGN**

**4.1 Data Flow Diagrams**

A Data Flow Diagram (DFD) is a traditional visual representation of the information flows within a system. A neat and clear DFD can depict the right amount of the system requirement graphically. It shows how data enters and leaves the system, what changes the information, and where data is stored.



**6. PROJECT PLANNING&SCHEDULING**

**6.1 Sprint planning& Estimation**

| **Sprint** | **Functional Requirement (Epic)** | **User Story Number** | **User Story / Task** | **Priority** | **Story Points** | **Team Members** |
| --- | --- | --- | --- | --- | --- | --- |
| Sprint-1 | Registration | USN-1 | As a user, I can register for the application by entering my email, password, and confirming my password. | High | 2 | P.Sobiya |
| Sprint-1 | Login | USN-2 | As a user, I will receive confirmation email once I have registered for the application | High | 1 | P.subitha |
| Sprint-2 | User Interface | USN-3 | As a user, I can register for the application through Facebook | Low | 2 | S.Sumitha |
| Sprint-1 | User Visualization | USN-4 | As a user, I can register for the application through Gmail | Medium | 2 | S.Prabavathi |
| Sprint-1 | Login | USN-5 | As a user, I can log into the application by entering email. | High | 1 | S.Sumitha |

**6.2 Solution& Technical Architecture**

|  |
| --- |
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| --- |
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**USER ADMIN**

|  |
| --- |
| **1668353014869.jpg1668353014860.png** |

**7. CODING& SOLUTION**

import time import sys

import ibmiotf.application import ibmiotf.device import random

#Provide your IBM Watson Device Credentials organization = "zwx6lb"

deviceType = "ABCD" deviceId = "13" authMethod = "token" authToken = "12345678"

#api key {a-illza1-mbdxqo6z0s} #api token {zSYzISuAWF&F\_x7GkT}

try:

deviceOptions = {"org": organization, "type": deviceType, "id": deviceId, "auth-method":

authMethod, "auth-token": authToken}

deviceCli = ibmiotf.device.Client(deviceOptions) #..............................................

except Exception as e:

print("Caught exception connecting device: %s" % str(e)) sys.exit()

# Connect and send a datapoint "hello" with value "world" into the cloud as an event of type "greeting" 10 times

print("power on ")

print("checking connection to waston iot...") time.sleep(2)

deviceCli.connect()

print("dear user ... welcome to IBM-IOT ")

print("i can provide your children live location and temperature ") print()

name=str(input("enter your child name:")) while True:

temperature=random.randint(20,50)#random temperature for your child latitude=random.uniform(10.781377,10.78643)#random latitude for your child longitude=random.uniform(79.129113,79.134014)#random longitude for your child a="Child inside the geofence"

b=" Child outside the geofence" c="High temperature"

d="Low temperature" x={'your\_child\_Zone':a} y={'your\_child\_Zone':b} z={'temp\_condition':c} w={'temp\_condition':d}

data = { 'temp' : temperature, 'lat': latitude,'lon':longitude,'name':name } #print data

def myOnPublishCallback():

print ("Published Temperature = %s C" % temperature, "latitude = %s %%" % latitude, "longitude = %s %%" % longitude, "to IBM Watson")

print("\n")

success = deviceCli.publishEvent("IoTSensorgpsdata", "json", data, qos=0, on\_publish=myOnPublishCallback)

if latitude>=10.78200 and latitude<=10.786000 and longitude >=79.130000 and longitude

<=79.133000:

deviceCli.publishEvent("IoTSensorgpsdata","json",data=x,qos=0,on\_publish=myOnPublishCallb ack)

print(x) print("\n")

else:

deviceCli.publishEvent("IoTSensorgpsdata","json",data=y,qos=0,on\_publish=myOnPublishCallb ack)

print(y) print("\n")

if (temperature>35):

deviceCli.publishEvent("IoTSensorgpsdata","json",data=z,qos=0,on\_publish=myOnPublishCallb ack)

print(c) print("\n")

else:

deviceCli.publishEvent("IoTSensorgpsdata","json",data=w,qos=0,on\_publish=myOnPublishCall back)

print(d) print("\n")

if not success:

print("Not connected to IoTF") print("\n")

time.sleep(3)

# Disconnect the device and application from the cloud deviceCli.disconnect()

**8. TESTING**

**8.1 Test Cases**

Today in introduce universe of advanced innovation and worldwide figuring each individual is associated with each other in number of ways. In current worldwide figuring world, the youngsters and ladies provocation, chain snatchings, hijacking, lewd activities, eve prodding, and so forth are expanded step by step, winding up more perilous and powerless.

At the point when these risky circumstances happen there must be an inclining innovation to be agreeable to deal with. So we are proposing a framework that takes a shot at the debate of youngsters utilizing IOT.

In this venture we proposed a gadget which is incorporated with different gadgets, containing wearable "Action Tracker Wrist Band" which is modified with all the required information which incorporates the conduct of humanHealth is fundamental need and it is human right to get quality Health Care.

Nowadays India is facing many health issues because of less resource. This review paper presents the idea of solving health issues using latest technology, Internet of Things. It presents the architectural review of smart health care system using Internet of Things which is aimed to provide Quality Health Care to everyone.

Using this system architecture, patients' body parameters can be measure in real time. Sensors collects patients body parameters and transfers that data to Arduino Uno which further transfer that data to cloud with the help of WiFi module.

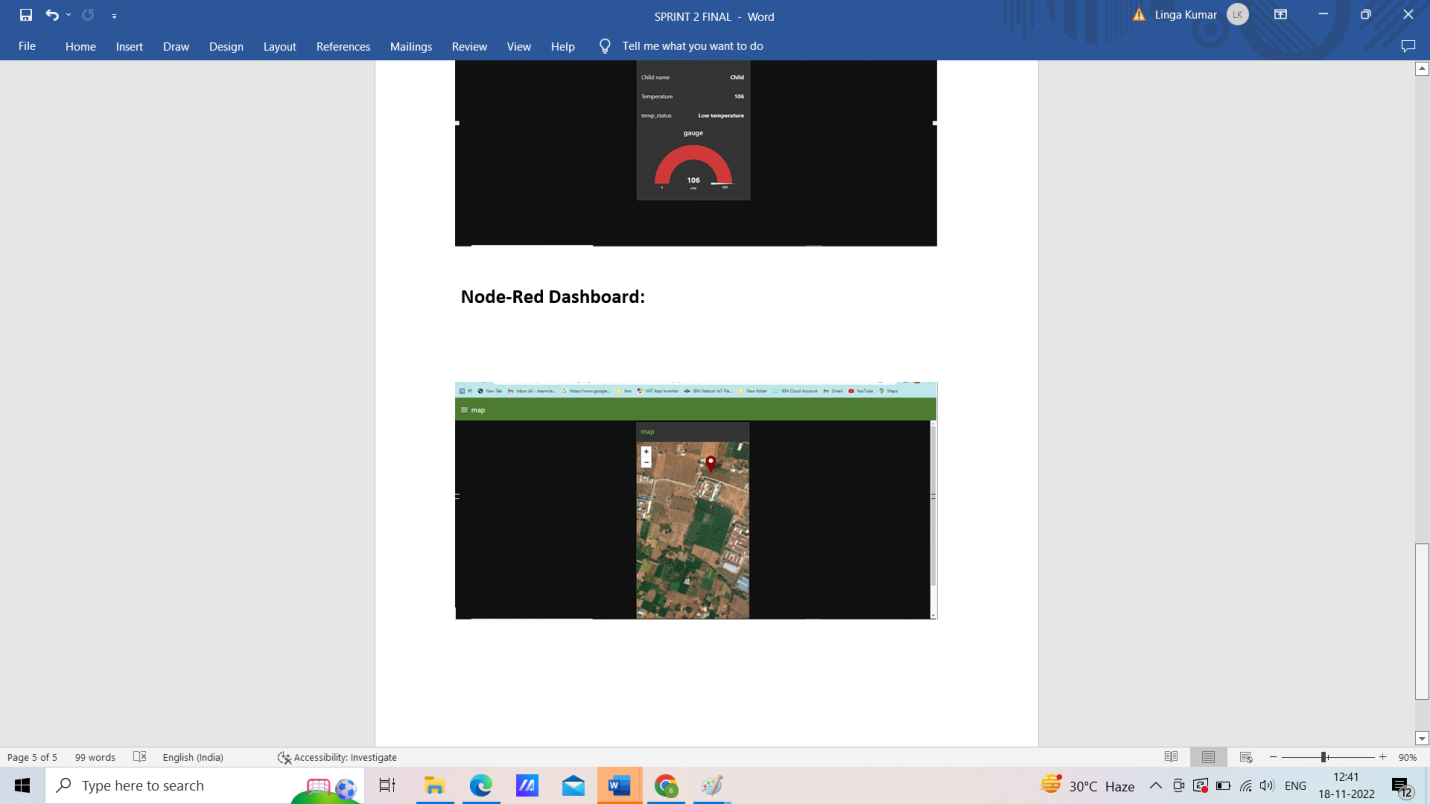
This data is stored into Thingspeak database server which manages data and provides accessibility. User can view this data with the help of Android App.

This work mainly focuses on alerting the individuals arround baby so as to locate the baby in safer zone before arrival of the parent. Among all the available wearable devices focusing on the conditions to provide the locality, action and so forth of the child to the parents via wireless Wi-Fi and Bluetooth, Bluetooth and Wi-Fi (wireless fidelity)becomes a very inconsistent resource to the communication.

Hence by the implementation of IOT technology it is planned to use SMS/MAIL as the method of communiqué between the parent and child wearable device.

**9. RESULTS**

**9.1 Performance Matrics**



**10. ADVANTAGES&DISADVANTAGES**

**ADVANTAGES**

* Gives peace of mind to parents
* Helps monitor children with behavioural problems.
* This might be suitable if you have a strained  
  relationship with the other parent.
* Keeps track of children in case of abduction

**DISADVANTAGES**

* Children may feel a loss of privacy
* Losing confidence
* There is a charge for the Child Maintenance Collect and Pay service.

**11. 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 are 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.

This research demonstrates Smart IoT device for child safety and tracking helping the parents to locate and monitor their children. If any abnormal values are read by the sensor then an SMS is sent to the parents mobile and an MMS .

**12. FUTURE SCOPE**

The future scope of the work is to implement the IoT device which ensures the complete solution for child safety problems.