



IoT based safety gadget for child safety monitoring and notification

NALAIYA THIRAN - PROJECT REPORT

PROJECT ID:PNT2022TMID01040

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BACHELOR OF ENGINEERING

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(AN AUTONOMOUS INSTITUTION, AFFILIATED TO ANNA UNIVERSITY)

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BONAFIDE CERTIFICATE

Certified that this project report

IoT based safety gadget for child safety
monitoring and notification

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is the bonafide work of

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INTRODUCTION

Internet of Things (IOT) is the latest technology that connects entire world. It establishes connectivity (through internet) among the various devices or services or systems in order to little by little make automation development in all areas.

Technology is the best way to solve this problem. That's the reason to develop this project that can act as a rescue device and protect at the time of danger. The motivation behind this project is an attempt to focus on a security system that is designed merely to serve the purpose of providing security to child so that they never feel helpless while facing such social challenges.

An advanced system can be built that can detect the location and health condition of child that will enable us to take action accordingly based on electronic gadgets like GPS receiver, GSM, pulse rate sensor, body temperature sensor. We can make use of number of sensors to precisely detect the real time situation of the children in critical situations. The heartbeat of a child in such situations is normally higher which helps make decisions to detect the abnormal motion of the children while she is victimized.

PROJECT OVERVIEW

The device has IoT monitoring and a GSM module that allows the child to be monitored at all times. It also has numerous sensors that are connected to a CPU and are used to detect exact signals such as heart rate, temperature, and other dangers and alert the parents. In the event of a power outage, the wearable serves as a backup. On the device, there is an additional panic button. The purpose of this button is to notify parents and the police of a child's current location whenever they are in a perilous scenario. A GPS module is utilized to access their present location, and a GSM module assists in transmitting the information via SMS to designated contacts. In this approach, the device tries to provide child safety while remaining unobtrusive.

PURPOSE

The major goal of this project is to use modern technology to create a gadget that provides "**Smart Child Safety**" to protect children, which will be far more effective than current methods in assisting victims.

LITERATURE SURVEY :

Literature Survey Based on Iot Based Safety Gadget for Child Safety Monitoring and Notification

**Mirjami Jutila, Esko Strömmer, Mari Ervasti, Mika Hillukkala, Pekka Karhula
Juhani Laitakari (2015) Safety services for children: a wearable sensor vest with
wireless charging**

Wearable sensors constitute an increasing market in providing various promising opportunities for improving and controlling safety issues for children in day care and schools. This paper presents the technological enablers and requirements for building a complete end-to-end energy-efficient safety system. Our work introduces a proof-of-concept for a wearable sensor vest with integrated wireless charging, designed to enhance the security of children. The wireless charging takes place in the ordinary repository for the vests, such as in a wardrobe or a coat rack, without requiring any specific actions from the user. The developed sensor vest provides information about the location and well-being of children, based on received signal strength indication, global positioning system, accelerometer, and temperature sensors. This paper also discusses the experiences of the “safety service for children” school pilot, which utilized various sensors with end-to-end applications. Piloting and technological implementations are based on a participatory study conducted among children, teachers, and parents, to gain important knowledge and understanding about the real user needs and service system usability requirements.

N. Manjunatha , H. M. Jayashree , N. Komal , K. Nayana(2020) : Smart Gadget for Child Safety and Tracking

This paper is mainly streamed towards child safety solutions by developing a gadget which can be tracked via its GPS locations and also a panic button on gadget is provided to alert the parent via GSM module calling for help. Parental android app is developed to manage and track the device anytime. Smart gadget device is always connected to parental phone which can receive and make phone calls and also receive SMS on gadget via GSM module, also a wireless technology is implemented on device which is useful to bound the device within a region of monitoring range, if device is moving out of monitoring range then an alert will be triggered on binding gadget, this helps you keep a virtual eye on child. Health monitoring system on gadget checking for parameters like heart beat/pulse rate and temperature is included which can be monitored on parental app. Gadget also monitors whether it is plugged on hand or not using contact switch and alert the parent as soon as it is unplugged.

S. Rajalakshmi S._AngelDeborah G._SoundaryaV._Varshitha K. ShyamSundhar (2020) Safety Device for Children Using IoT and Deep Learning Techniques

The safety and security of children is a major problem in the current era. The children are too young to take care of themselves. We cannot monitor the children at all times. In this report, we discuss the concept of child safety device based on Internet of Things. The aim of this device is to provide safety to the child by allowing the parent to locate the child and view their surroundings. This device can be used to monitor the temperature and motion of the child. If any problem persists, then GSM mobile communication module automatically sends a text message to the parent as SMS. The other features of the device are emergency light and alarm buzzer which are activated when the button is pressed by the child in a distress situation to seek the attention of the bystanders.

The accelerometer and vibration sensors are used to detect the motion of the child. The camera is used to capture the environment of the child. The image taken is processed using conventional neural network (CNN) which predicts the background like play area, railway station, beach, road, or classroom. The GPS module is used to record current location of the device which is used to track the device if the child is missing. Hence, this device provides a security cover to the child in today's time.

REFERENCE

Mirjami Jutila, Esko Strömmer, Mari Ervasti, Mika Hillukkala, Pekka Karhula Juhani Laitakari [*Personal and Ubiquitous Computing*](#)

N. Manjunatha H. M. Jayashree N. Komal K. Nayana International Journal of Research in Engineering, Science and Management Volume-3, Issue-6, June-2020.

S. Rajalakshmi S. Angel Deborah G. Soundarya V. Varshitha K. Shyam Sundhar [*Advances in Intelligent Systems and Computing*](#) (AISC, volume 1163).

IDEA GATHERING

ABSTRACT :

The overall percentage of child abuse filed nowadays in the world is about 80%, out of which 74% are girl children and the rest are boys. For every 40 seconds, a child goes missing in this world. Children are the backbone of one's nation, if the future of children was affected, it would impact the entire growth of that nation.

Due to the abuse, the emotional and mental stability of the children gets affected which in turn ruins their careers and future. These innocent children are not responsible for what happens to them. So, parents are responsible for taking care of their children. But, due to economic conditions and aims to focus on their child's future and career, parents are forced to crave money. Hence, it becomes difficult to cling to their children all the time. In our system, we provide an environment where this problem can be resolved efficiently. It makes parents easily monitor their children in real-time just by staying beside them as well as focusing on their careers without any manual intervention.

The history of wearable technology:

The origins of wearable technology date back to the 13th century when eyeglasses were first invented. In the 15th century, timepieces were created -- some of which were small enough to be worn -- but it was not until the 1960s that modern wearable technology came into exist.

The future of wearable technology

Wearable technology is becoming increasingly popular and is all set to revolutionize the future. While fitness trackers, smart devices, intelligent clothing, and VR and AR headsets have gained widespread approval, they are only the tip of the iceberg.

EXISTING SYSTEM:

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 alertcommand which was previously stored and set 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 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. The disadvantage of this project are ,

- > The child could not produce the exact alert command during a panic condition.
- > The command produced may not match with the previously stored command.
- > This project requires manual intervention.

Reference :

[MirjamiJutila, Esko Strömmer, Mari Ervasti, Mika Hillukkala, PekkaKarhulaJuhani Laitakari](#)*Personal and Ubiquitous Computing*

N. Manjunatha H. M. Jayashree N. Komal K. Nayana International Journal of Research in Engineering, Science and Management Volume-3, Issue-6, June-2020

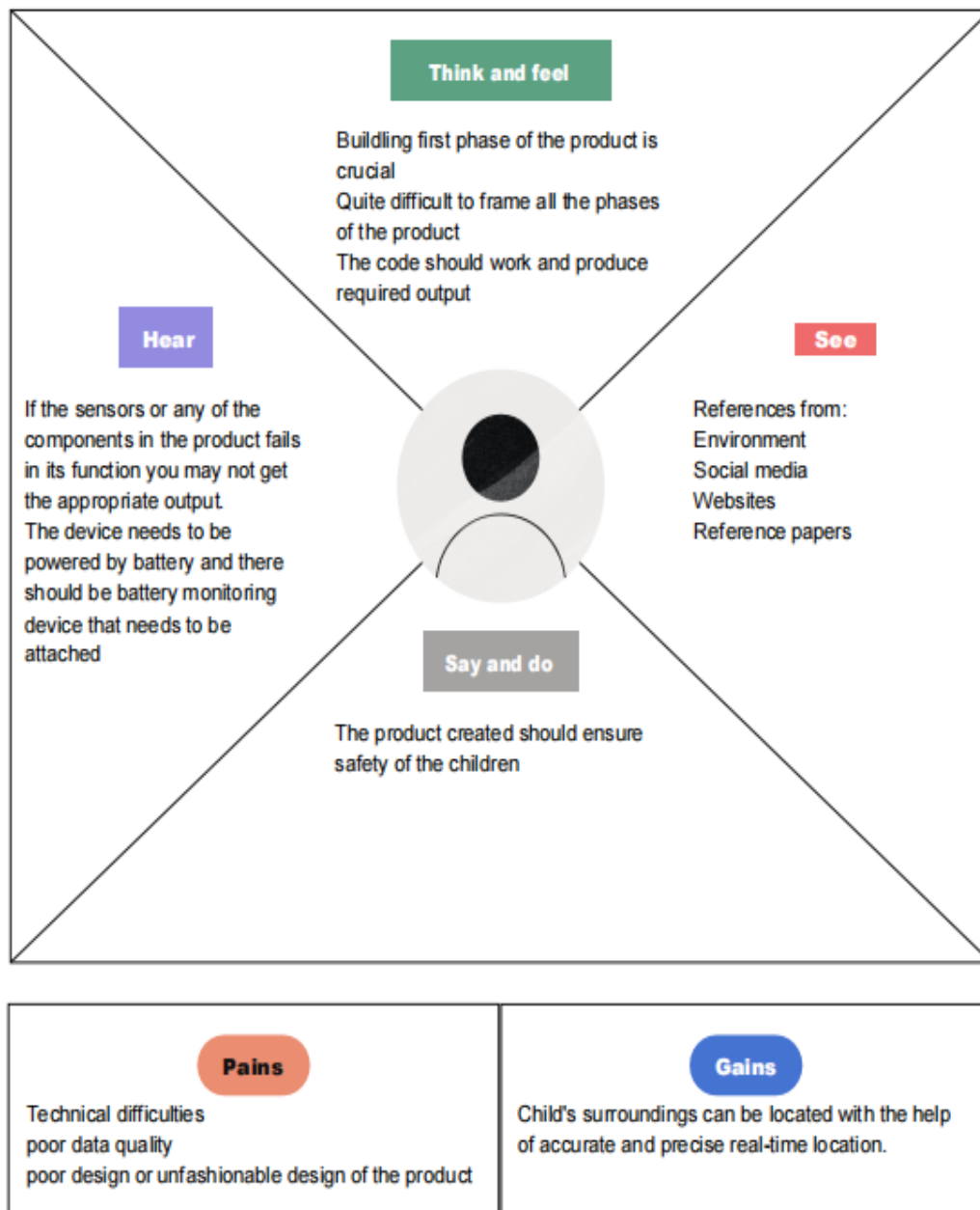
[S._RajalakshmiS._Angel_DeborahG._SoundaryaV._Varshitha K._ShyamSundhar](#)
Advances in Intelligent Systems and Computing (AISC, volume 1163)

IDEATION & PROPOSED SOLUTIONS

EMPATHY MAP

User: End users/customers

Scenario: Child Safety Monitoring and Notification



BRAINSTORMING SESSION

DEFINING PROBLEM STATEMENT:

Child tracker helps the parents in continuously monitoring the child's location. They can simply leave their children in school or parks and create a geofence around the particular location. By continuously checking the child's location notifications will be generated if the child crosses the geofence. Notifications will be sent according to the child's location to their parents or caretakers. The entire location data will be stored in the database.

BRAIN STORMING :

KEERTHANA K

Excessive worries of parents regarding their children

Some hazardous rays cause health issues to the child

GPS device is not very accurate in giving locations. Accuracy problem like sudden jumps or movements

Alerting parent when the child passes a range

DURGA DEVI T

Device heat may affect the child and causes health issues

We can only view the last active location of the children.

If you are using GPS on battery operated device there could also be battery failure and you will need a external power supply .it is not always possible

If the child gadget is affected due to any climatic condition .It causes mental illness to parents.

MADHUMITHA G

Body temperature and pulse rate may be incorrect sometimes.

Issues conserving with accuracy takes place

If the GPS tracking is lost, then the child's location is unidentified, so we are forced to search in other way..

Maintain a record of child's location

KAVYA M

When the database crashes, the malfunction of gadgets may occur

When the child unknowingly leaves the gadget somewhere, the location will be mistracked

Regular monitoring of the performance is difficult

To reduce interrupt and to get correct information, we need advanced components

GROUP IDEAS:

Based on location:

*GPS device is not very accurate in giving locations. Accuracy problem like sudden jumps or movements even if the child is placed still.

*As with any GPS enabled device there is risk and concern of hacking which is insecure for the child.

*The device should be built in such a way that the child's location access is only in the hands of the parent/guardian.

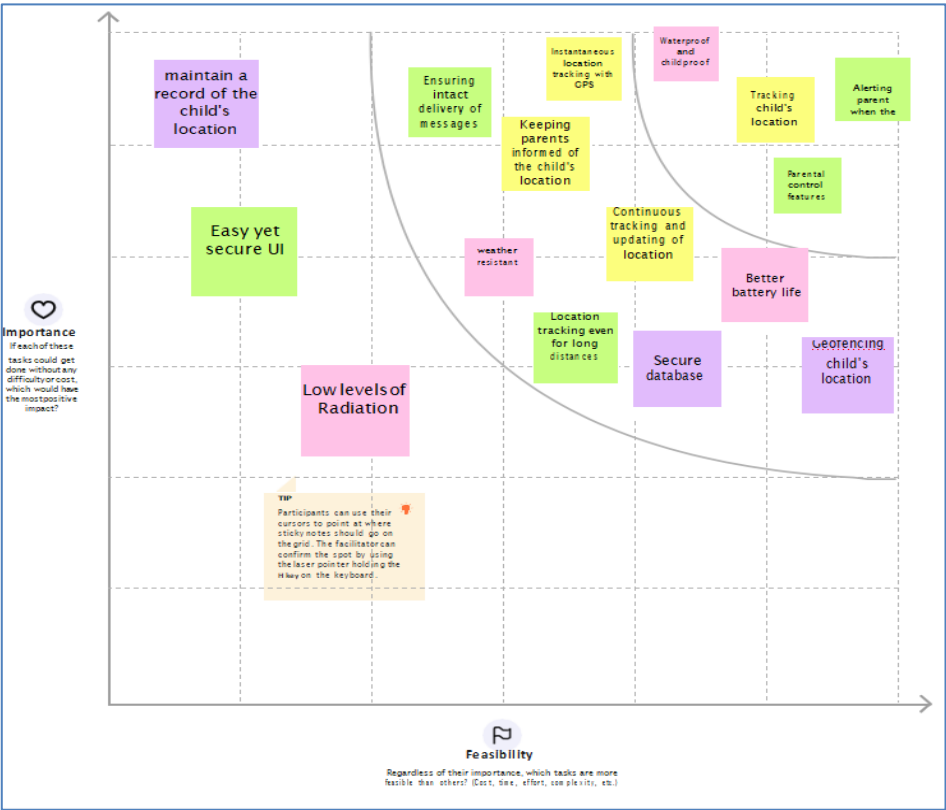
Based on data:

*Maintain a record of the child's location

*Ensure a secure database

*Geo fencing child's location

PRIORITIZE :



IdeationPhase
Define the Problem
Statements

Problem Statement (PS)	I am (Customer)	I'm trying to	But	Because	Which makesme feel
PS-1	A Parent	Monitor my child's condition	Information can't be tracked persistent	Device turned off(low battery)	concerned
PS-2	A Parent	Locate my child's location	Accuracy problem causes	GPS antenna do not have potential to send strong signals in that location	Tensed

Project Design Phase-I

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Child safety and tracking is major significant as number of crimes on children occurs. hence parents are more concerned on their kids.
2.	Idea / Solution description	A smart IoT device for child safety and tracking is developed to help the parents to locate and monitor their children. Device is interfaced with temperature, heartbeat, touch sensors and also GPS, GSM & digital camera modules. Using this device parents can easily observe their children.
3.	Novelty / Uniqueness	The system automatically alerts the parents via message whenever the child is out of safety zone and sends another notification if the child comes under the safety zone. Panic button is placed in the device in order to alerts the parents if the child is in danger;
4.	Social Impact / Customer Satisfaction	This mechanism makes parents confident on their child safety and makes children feel secured.
5.	Business Model (Revenue Model)	This device is weightless, accessible, compatible and is useful for the customers. so it increases the revenue of the business.
6.	Scalability of the Solution	The ability to support an increasing number of connected devices, users, application features, and analytics capabilities, without any degradation in the quality of service

PROPOSED SOLUTION FIT:

Define CS, fit into CC	1. CUSTOMER SEGMENT(S) CS Who is your customer? i.e. working parents of 0-5 y.o. kids Parents of the children are our customer	6. CUSTOMER CONSTRAINTS CC What constraints prevent your customers from taking action or limit their choices of solutions? i.e. spending power, budget, no cash, network connection, available devices. Our project will reduce the power, cost with available devices.	5. AVAILABLE SOLUTIONS AS Which solutions are available to the customers when they face the problem or need to get the job done? What have they tried in the past? What pros & cons do these solutions have? i.e. pen and paper is an alternative to digital notetaking The solution is that the notification is sent to parents mail id.	Explore AS, differentiate
	2. JOBS-TO-BE-DONE / PROBLEMS J&P Which jobs-to-be-done (or problems) do you address for your customers? There could be more than one; explore different sides. The notification is sent to the parents through their mail id.	9. PROBLEM ROOT CAUSE RC What is the real reason that this problem exists? What is the back story behind the need to do this job? i.e. customers have to do it because of the change in regulations. Because of the change in regulation.	7. BEHAVIOUR BE What does your customer do to address the problem and get the job done? i.e. directly related: find the right solar panel installer, calculate usage and benefits; indirectly associated: customers spend free time on volunteering work (i.e. Greenpeace) Customer is free with stress	
Identify strong TR & EM	3. TRIGGERS TR What triggers customers to act? i.e. seeing their neighbour installing solar panels, reading about a more efficient solution in the news. Reading about a more efficient solution in the news.	10. YOUR SOLUTION SL If you are working on an existing business, write down your current solution first, fill in the canvas, and check how much it fits reality. If you are working on a new business proposition, then keep it blank until you fill in the canvas and come up with a solution that fits within customer limitations, solves a problem and matches customer behaviour. Our solution is that the notification is sent to parents mail id.	8. CHANNELS of BEHAVIOUR CH 8.1 ONLINE What kind of actions do customers take online? Extract online channels from #7 8.2 OFFLINE What kind of actions do customers take offline? Extract offline channels from #7 and use them for customer development. ONLINE: Control your kids' access to adult material and help protect them from Internet predators. OFFLINE: Mand asks respondents some predetermined questions while other being asked are not planned in advanced.	Identify strong TR & EM
	4. EMOTIONS: BEFORE / AFTER EM How do customers feel when they face a problem or a job and afterwards? i.e. lost, insecure > confident, in control - use it in your communication strategy & design. They will feel a lot when their child was lost.		8. CHANNELS of BEHAVIOUR CH 8.1 ONLINE What kind of actions do customers take online? Extract online channels from #7 8.2 OFFLINE What kind of actions do customers take offline? Extract offline channels from #7 and use them for customer development. ONLINE: Control your kids' access to adult material and help protect them from Internet predators. OFFLINE: Mand asks respondents some predetermined questions while other being asked are not planned in advanced.	

Project Design Phase-II REQUIREMENT ANALYSIS

Functional Requirements

Following are the functional requirements of the proposed solution.

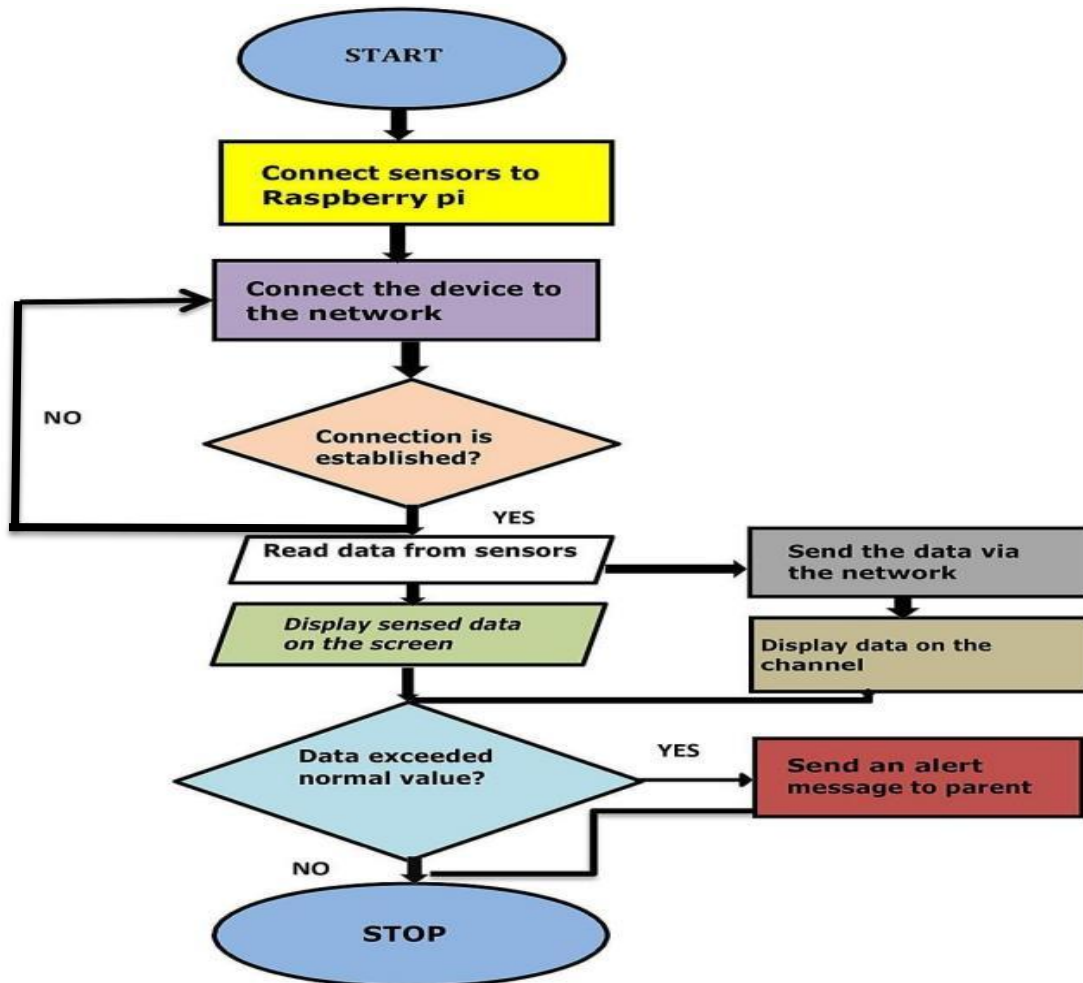
FR No.	Functional Requirement (Epic)	Sub Requirement (Story /Sub-Task)
FR-1	User Registration	Registration through Form Registration through Gmail Registration through LinkedIN
FR-2	User Confirmation	Confirmation via Email Confirmation via OTP
FR-3	App installation	Installation through link Installation through play store
FR-4	Location History	Used to detect the location precisely Point –to-point location can be seen in the app
FR-5	GPS tracking	In order to track the location, GPS module needs to be implemented.
FR-6	Battery Life	Since the gadget works on the basis of battery life, the life of the battery should be long lasting. So the main aim is to provide additional battery(spare),which is used when they forgot to charge the battery

Non-functional Requirements:

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

NFR No.	Non-Functional Requirement	Description
NFR-1	Usability	Since it uses GSM, which helps to inform the current situation and danger accurately and immediately to parents.
NFR-2	Security	Provides assurance to parents(specially working parents)about the security of their child Develop the parents to monitor and locate the location of the child
NFR-3	Reliability	Easy to access and to use Easy to handle Portable
NFR-4	Performance	Instance notification is sent to the child's parent immediately Location of the child is stored for the future use
NFR-5	Availability	Amber alert GPS Accessing of location
NFR-6	Scalability	Gives more confident to the parents about child safety Easily approaching the child with the help of GSM

PROJECT DESIGN - Data Flow Diagram



TECHNOLOGY ARCHITECTURE

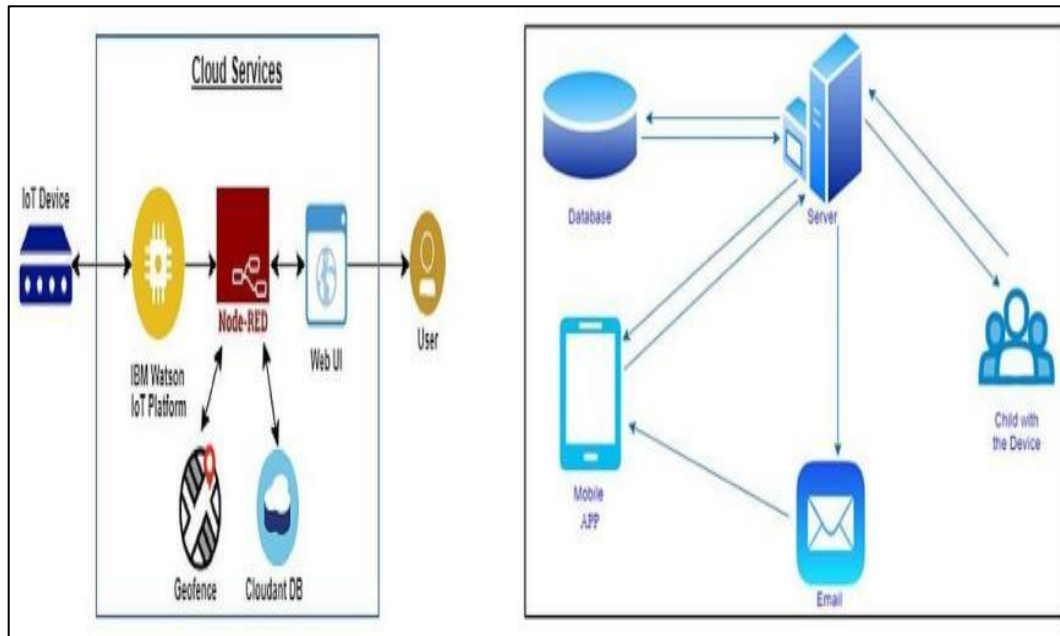


Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	The communication protocol being used in the proposed solution might act as an interface the way like WiFi, Bluetooth and ZigBee	MIT app
2.	Application Logic	The data to be collected and sent to the authenticator's (parent) via GSM providing the GPS coordinates to easily locate access and monitor the child	IBM Watson STT service, python etc
3.	Database	Data to be segregated and secured in the form of relational DBMS	MySQL
4.	Cloud Database	IBM	IBM Cloud ant
5.	File Storage	File storage requirements	IBM Block Storage or Other Storage Service or Local File system
6.	External API-1	To access the children location	GPS location monitoring etc
7.	Infrastructure (Server / Cloud)	Application Deployment on Local System / Cloud Local Server Configuration	Cloud Foundry

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	The proposed solution being framed in the form an android application providing the end user an easy surveillance of their children (preferably users are parents)	UI/UX designdevelopment
2.	Security Implementations	The developed application should be accessible in the way it can only respond to the comments ofthe relevant users	Encryptions, IAM Controls.
3.	Scalable Architecture	The app format comes the way easier to handleand operate.	Yet to be done
4.	Availability	The developed solution tends to be available in themarket at any time	Yet to be done
5.	Performance	Highly proper and betterment functionalities are tobe ensured in the designed solution	Yet to be done

USER STORIES

User Stories

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Customer (Mobile user)	Registration	USN-1 (FATHER)	As a user, I can register by entering my email, and password, and confirming my password. I can access the location of my children using the credentials provided as a Father.	I can access my account/dashboard and receive a confirmation email & click confirm	High	Sprint-1
		USN-2 (MOTHER)	As a user, I can register by entering my email, and password, and confirming my password. I can access the location of my children using the credentials provided as a Mother.	I can access my account/dashboard and receive a confirmation email & Clickconfirm	High	Sprint-1
		USN-3 (GUARDIAN/ CARETAKER)	As a user, I can also monitor the children's activities using a safety gadget monitoring system.	I can access my account/dashboard and receive confirmation email & click confirm	Medium	Sprint-1

	Login	USN-4	As a user, I can log into the application by entering My email & password.	I can access my account / dashboard.	Medium	Sprint-2
	Dashboard	USN-5	As a user, I can fix the geofence for my child's location so that I will receive alerts if my child crosses the geofence.	I can monitor the current location of my child.	High	Sprint-2
Customer (Web user)	Registration	USN-1 (FATHER)	As a user, I can register by entering my email, and password, and confirming my password. I can access the location of my children using the credentials provided as a Father.	I can access my account/dashboard and receive a confirmation email & click confirm	High	Sprint-1
		USN-2 (MOTHER)	As a user, I can register by entering my email, and password, and confirming my password. I can access the location of my children using the credentials provided as a Mother.	I can access my account/dashboard and receive a confirmation email & click confirm	High	Sprint-1
		USN-3 (GUARDIAN/ CARETAKER)	As a user, I can also monitor the children's activities using a safety gadget monitoring system.	I can access my account/dashboard and receive a confirmation email & Clickconfirm	Medium	Sprint-1

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
	Login	USN-4	As a user, I can log into the application by entering my email & password.	I can access my account/dashboard.	Medium	Sprint-2
	Dashboard	USN-5	As a user, I can fix the geofence for my child's location so that I will receive alerts if my child crosses the geofence.	I can monitor the current location of my child.	High	Sprint-2
Customer Care	Dashboard	USN-6	As a customer care service person, whenever I receive a complaint, I forward the complaint and ensure that the complaint is resolved.	I can keep track of all the complaints and the status of the complaints received.	Medium	Sprint-3
Administrator	Admin Dashboard	USN-7	As an administrator, I will take care of all the payment processes, queries and complaints, and login credentials.	I can access all the customer details, payment details, and complaints received.	High	Sprint-4

CUSTOMER JOURNEY MAP

IOT BASED SAFETY GADGET FOR CHILD SAFETY MONITORING AND NOTIFICATION



SCENARIO

To continuously monitor the child's location and alert when the child is in danger



Entice

How does someone initially become aware of this process?



Enter

What do people experience as they begin the process?



Engage

In the core moments in the process, what happens?



Exit

What do people typically experience as the process finishes?



Extend

What happens after the experience is over?

Steps

What does the person (or group) typically experience?

- Barcode a gadget already has an owner device
- Use vehicle strap
- Choose a username, password and other details
- Device available feature
- Download or install modules
- Start journey to gadget
- Complete parent interaction
- Confirm parent ID via gadget
- Contact details confirmation
- Gadget delivery status, gadget for mobile, reference video
- See a manual delivery use
- Back to the gadget
- Experience the gadget performance
- Print the gadget
- Print for review
- Write a security review
- Personalized recommendations
- Alert parents

Interactions

What interactions do they have at each step along the way?

- People: Who do they see or talk to?
- Places: Where are they?
- Things: What digital touchpoints or physical objects would they use?

Interacting with child

Parents can create safe zones by including all the usual places that the child visits everyday and gets an alert if the device is somewhere else

Establish the preference for child safety

The caretakers or the parents or the guardians conditions and requirements regarding the child safety are met

The application sends a notification stating the location of the child and the parents can utilize it to know the whereabouts of the child

The location verification and constant monitoring are turned off when the GPS turns off or the internet is not available from the device user's side

Goals & motivations

At each step, what is a person's primary goal or motivation? ("Help me..." or "Help me avoid...")

The purpose of this device is to help parents locate their children with ease

The parent can send a text with specific keywords such as "LOCATION", "TEMPERATURE", "UV", "BUEZ" etc. the device will reply back with a text containing the real time accurate location of the child

Frequent updates and bug fixes in order to provide the desired result

Notifies when child crosses geofence

The child's safety is ensured and the device is kept safe.

Positive moments

What steps does a typical person find enjoyable, productive, fun, motivating, delightful, or exciting?

When a missing child is found.

Regular updates and user friendly

Upon successfully detecting the location of the child, the parents are tension-free and relaxed

Successful logout

Satisfied that the child is safe

Negative moments

What steps does a typical person find frustrating, confusing, angering, costly, or time-consuming?

Alert sound is not given

GPS location is not tracked properly

Message along with notification not sent

Regular updates not delivered

Unsuccessful logout

Parents or guardians find the process to be a little hassle as it is a long process

Areas of opportunity

How might we make each step better? What ideas do we have? What have others suggested?

In absence of caretaker

Alternate options if message not sent

Automatically monitor the child in real time using Internet of Things with the help of GPS, GSM, Raspberry Pi

The gadget automatically alerts the parent/caretaker by sending SMS, when immediate attention is required for the child during emergency.

With the use of child safety GPS, there are features such as critical alerts, voice surveillance and instant communication via messages.

Project Planning Phase
Project Planning and scheduling
(ProductBacklog, Sprint Planning, Stories,
Story points)

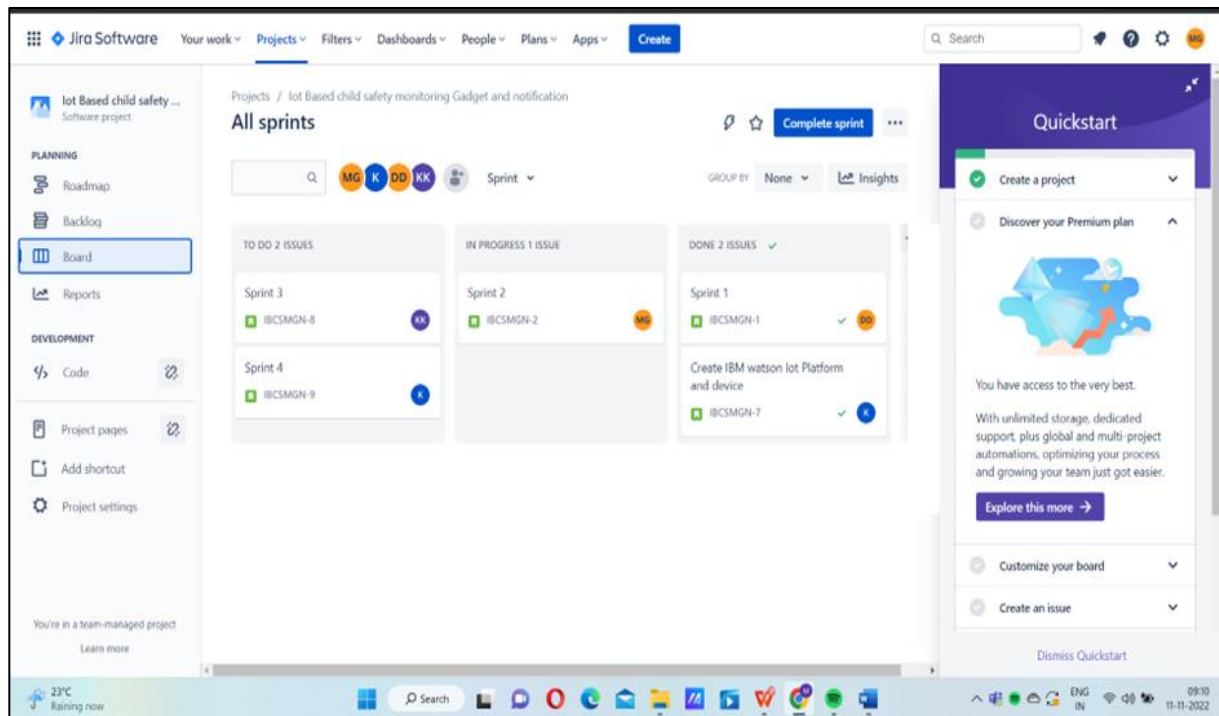
Product Backlog,Sprint Schedule, and Estimation

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Registration	USN-1	As a parent/guardian, I can register for the application by entering my email, and password, and confirming my password.	2	High	Durga Devi.T
Sprint-1	User confirmation	USN-2	As a parent/guardian, I will receive a confirmation email once I have registered forthe application	1	High	Kavya.M
Sprint-2		USN-3	As a parent, I will receive the connection, andlocation in SMS/mail once I have entered the application.	1	High	Keerthana. K
Sprint-1		USN-4	As a parent/guardian, I can register for the application through Gmail	2	Medium	Madhumitha.G
Sprint-1	Login	USN-5	As a parent, I can log into the application byentering email & password	1	High	Keerthana.K

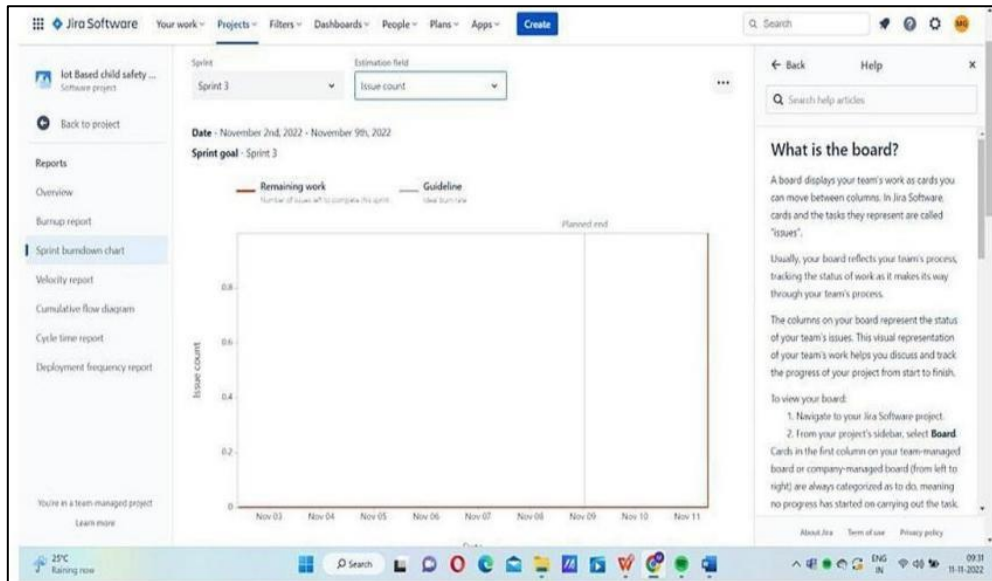
Project Tracker, Velocity & BurndownChart:

Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date (Planned)	Story Points Completed (as on Planned End Date)	Sprint Release Date (Actual)
Sprint-1	20	4 Days	24 Oct 2022	27 Oct 2022	20	29 Oct 2022
Sprint-2	20	5 Days	28 Oct 2022	01 Nov 2022	20	04 Nov 2022
Sprint-3	20	8 Days	02 Nov 2022	09 Nov 2022	20	11 Nov 2022
Sprint-4	20	9 Days	10 Nov 2022	18 Nov 2022	20	19 Nov 2022

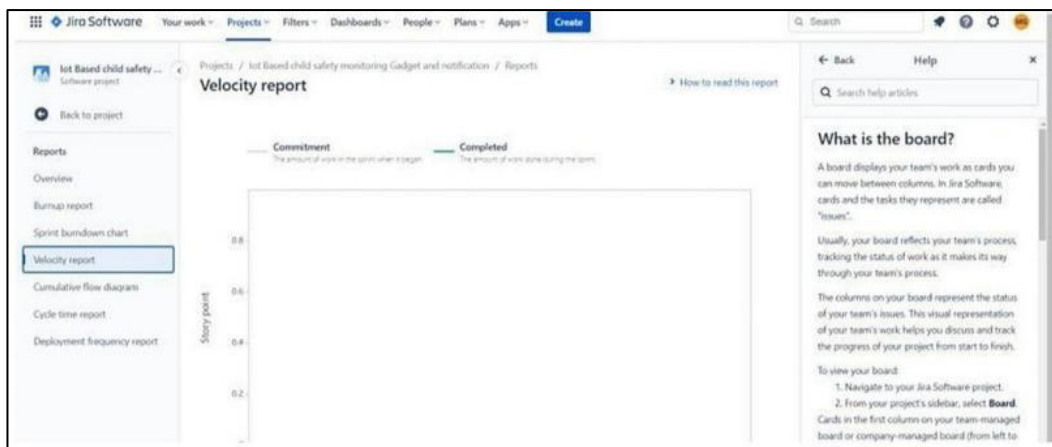
JIRA SOFTWARE :

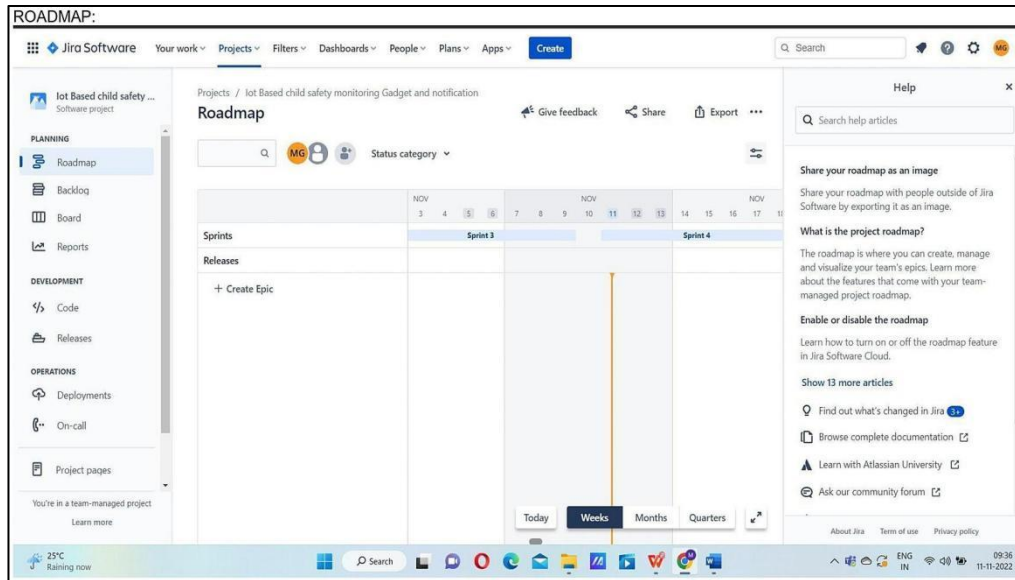


SPRINT BURNT REPORT :



VELOCITY REPORT :

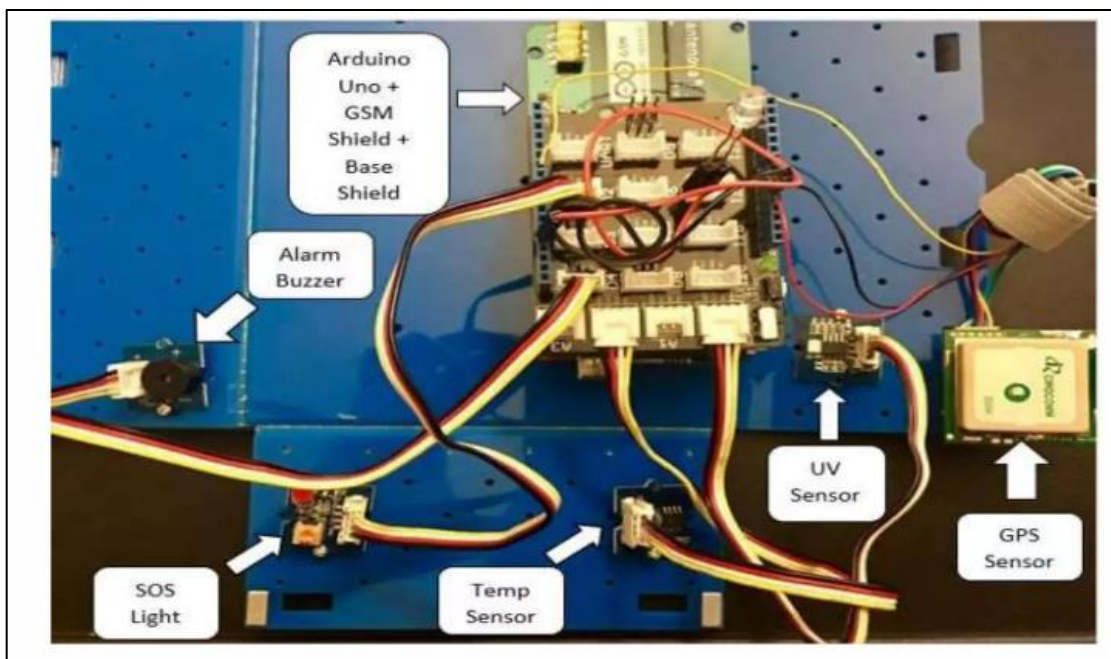




HARDWARE REQUIREMENTS:

ARDUINO UNO
ALARM BUZZER
SOS LIGHT
TEMPERATURE AND UV SENSOR
GPS SENSOR

CIRCUIT DIAGRAM:



CODING AND SOLUTIONS

SPRINT 1 [REGISTRATION AND LOGIN]

```
<!DOCTYPE html>

<html lang="en">

<head>

  <meta charset="UTF-8">

  <meta http-equiv="X-UA-Compatible" content="IE=edge">

  <meta name="viewport" content="width=device-width, initial-scale=1.0">

  <link rel="stylesheet" href="/css/login.css">

  <title>Sign Up</title>

  <script>

    if (window.location.hostname !==

      "localhost") {if (location.protocol !==

        "https:") {

          location.replace(

            `https:${location.href.substrin

g(location.protocol.length

)}}`

          )

        }

      }
```



```
    }

</scri
pt>

<script src="./localforage.js"></script>

</head>

<body>

<div class="wrapper">

  <div class="loginContainer">

    <span>Don't have an account?Sign up</span>

    <divclass="traditionalLoginContainer">

      <form class="signupForm" action="/" method="post">

        <input type="text" name="firstName" placeholder="First Name" id="firstName"><br>

        <input type="text" name="lastName" placeholder="Last Name" id="lastName"><br>

        <input type="text" name="username" placeholder="User Name" id="username"><br>

        <input type="radio">male<br>

        <input type="radio">female<br>

        <input type="email" name="email" placeholder="Email" id="email"><br>

        <input type="password" name="password" placeholder="Password" id="password"><br>

        <input type="phone number" name="phone number" placeholder="Phone number"
id="phonenumber"><br>

        <input class="loginButton" type="submit" value="Sign Up">

      </form>

    </div>

    <div class="loginWithFireContainer">
```

</div>

<aclass="hyperLink" href="<"https://appinventor.mit.edu/">Account already exists? Login ->

</div>

</div>

<script>

// Necessary for Fire OAuth to Function

const fireBroadcastingChannel = new

BroadcastChannel('fireOAuthChannel');

fireBroadcastingChannel.addEventListener('message', async event => {

let data = event.data

/**

1. @typedef {Object<string, any>}Data
2. @property {boolean} success - Whether the login was successful
3. @property {string} token - The data returned from the login i.e. Fire Token

*/

// data.token is the messagesent from the fireOAuthChannel after verification

// data.success is a booleanthat indicates whetherthe verification was successful

// data.token is the fire token

// What to do with the Fire Token?

// * Fire Token is an unique token which uniquely identifies the user who authorized your login
attemptwith Fire

// * You can use this token ONLY ONCE as it will be destroyed after the first use

// 1. Send the fire token to the Fire Server to verify the user

// - You can do that client sided or server sided

// - You need to send a POST Request to the Fire Server with the fire token

```

// at the URL: http://localhost:3003/api/tokens/verify

// - The Fire Server will verify the fire token and return a response

// - If the verification was successful - CODE (200), the Fire Server will return a response with
theuser 's data

// - If the verification was unsuccessful - CODE (400) or CODE (401), the Fire Server will
return aresponse with an error 'message'

// - You can use the data returned from the Fire Server to create a new user in your database

// This example will send the token to Fire Servers and console.log the response
console.log("%c" + `Fire Token: ${data.token}`, `color: #f1c40f; font-weight:
bold;`);constresponse =
awaitfetch('https://fire.adaptable.app/api/tokens/verify', {
  method:
  'POST',
  headers: {
    'Content-Type': 'application/json'
  },
  body:
    JSON.stringify({t
      oken: data.token
    })
})
// get the response
const responseData = await response.json()

// console.log the
response
console.log(responseDat
a)

```

```

    await localforage.setItem('userData', {
        ...responseData, isFire: true
    })

    // Adding the user data to the user Database

    let database = await
    localforage.getItem("userDatabase") if (database ==
    null) {
        database = []
    }

    database.push(responseData)

    await localforage.setItem("userDatabase", database)

    // redirect to the home
    pagewindow.location.href
    = '/'

})

function popupwindow(url, title, w,
    h) {var left = (screen.width / 2) - (w
    / 2); var top = (screen.height / 2) -
    (h / 2);
    return window.open(url, title, 'toolbar=no, location=no, directories=no, status=no, menubar=no,
        scrollbars = no, re-sizable = no, copyhistory = no, width= '+w+', height= '+h+', top = '+top+', left =
        '+left');
    }

    document.getElementById("fire").addEventListener("click",
        function() {popupwindow("/fireoauth.html", "Fire OAuth", 450,

```

```

        600)
    })
</script>
<script>
    // this.Website's Scripts / App Logic
    document.querySelector(".signupForm").addEventListener("submit", async(e) => {
        e.preventDefault()

        let firstName =
            document.getElementById("firstName").value let lastName
            = document.getElementById("lastName").value let
            username = document.getElementById("username").value
            let email = document.getElementById("email").value
            let password= document.getElementById("password").value

            let profilePic =
`https://avatars.dicebear.com/api/adventurerneutral/${firstName}${lastName}.svg?backgroundColor=variant0
1` let data = {
    firstNa
    me,
    lastNam
    e,
    userna
    me,ema
    il,
    passwo
    rd,
    profileP
    ic
    }

```

```

        awaitlocalforage.setItem("userData", data)

        let database = await

        localforage.getItem("userDatabase")if (database ==

        null) {

            database = []

        }

        database.push(data)

        await localforage.setItem("userDatabase",

        database>window.location.href = "/"

    })

</script>

</body>

</html>

```

The screenshot displays the 'codingground' Online HTML Editor interface. The left pane shows the source code for a login form, and the right pane shows the rendered result.

Source Code (Left Pane):

```

25 <form class="signupForm" action="/" method="post">
26 <input type="text" name="firstName" placeholder="First Name" id="firstName">
27 <br>
28 <input type="text" name="lastName" placeholder="Last Name" id="lastName">
29 <input type="text" name="username" placeholder="User Name" id="username">
30 <input type="email" name="email" placeholder="Email" id="email">
31 <input type="password" name="password" placeholder="Password" id="password">
32 <input type="phone number" name="phone number" placeholder="Phone number" id="phone
    number">
33 <input type="radio" name="gender" value="Male" id="Male"> Male
34 <input type="radio" name="gender" value="Female" id="Female"> Female
35 <input class="loginButton" type="submit" value="SIGN UP">
36 </form>
37 </div>
38 <div class="loginWithFireContainer">
39 <button type="button" class="fire" title="Login" id="fire">LOGIN</button>
40 </div>
41 <a class="hyperLink" href="https://careereducation.smartinternz.com/student-enroll
    -login">Already have an Account? Login </a>
42 </div>
43 </div>
44 <script>
45 // Necessary for Fire OAuth to Function
46 const fireBroadcastingChannel = new BroadcastChannel('fireOAuthChannel');
47 fireBroadcastingChannel.addEventListener('message', async event => {
48   let data = event.data
49   //++
50   * @typedef {Object<string, any>} Data
51   * @property {boolean} success - Whether the login was successful
52

```

Rendered Result (Right Pane):

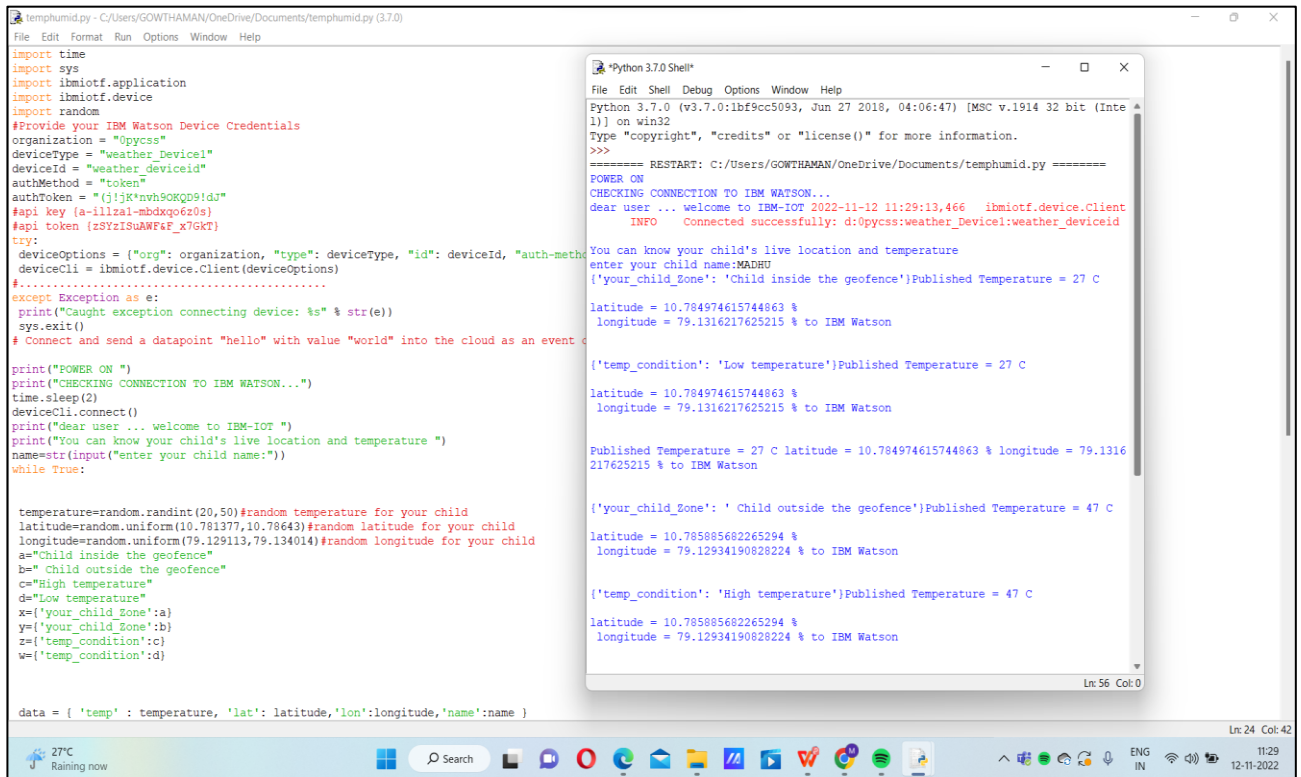
The rendered output shows a login form with the following fields and controls:

- First Name (text input)
- Last Name (text input)
- User Name (text input)
- Email (email input)
- Password (password input)
- Phone number (text input)
- Gender selection: Male (radio), Female (radio, selected)
- SIGN UP button
- LOGIN button
- Link: [Already have an Account? Login](#)

The bottom of the image shows a Windows taskbar with the date and time as 11-11-2022, 18:54.

DELIVERY OF SPRINT 2

Creating IBM Cloud Service and IBM WATSON IoT PLATFORM:



The image shows a Windows desktop environment with two windows. The background window is a text editor titled 'temphumid.py - C:/Users/GOWTHAMAN/OneDrive/Documents/temphumid.py (3.7.0)'. It contains a Python script that interacts with the IBM Watson IoT platform. The script imports necessary modules, sets up credentials, connects to the platform, and simulates sending temperature data points. The foreground window is a 'Python 3.7.0 Shell' showing the execution of the script. It displays messages like 'POWER ON', 'CHECKING CONNECTION TO IBM WATSON...', and 'dear user ... welcome to IBM-IOT'. It also shows the successful connection and the sending of three simulated data points with their respective coordinates and temperature values.

```
temphumid.py - C:/Users/GOWTHAMAN/OneDrive/Documents/temphumid.py (3.7.0)
File Edit Format Run Options Window Help

import time
import sys
import ibmiotf.application
import ibmiotf.device
import random

#Provide your IBM Watson Device Credentials
organization = "0pycss"
deviceType = "weather_Device1"
deviceId = "weather_deviceid"
authMethod = "token"
authToken = "(j!jK*nvh9OKQ0!dJ"
#api key (a-1llzal-mbdxq6z0s)
#api token (zSYzISuAWFxF_x7GkT)
try:
    deviceOptions = {"org": organization, "type": deviceType, "id": deviceId, "auth-method": authMethod}
    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 "hello"

print("POWER ON ")
print("CHECKING CONNECTION TO IBM WATSON...")
time.sleep(2)
deviceCli.connect()
print("dear user ... welcome to IBM-IOT ")
print("You can know your child's live location and temperature ")
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 }
```

```
Python 3.7.0 Shell
File Edit Shell Debug Options Window Help

Python 3.7.0 (v3.7.0:1bf9cc5093, Jun 27 2018, 04:06:47) [MSC v.1914 32 bit (Intel)] on win32
Type "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: C:/Users/GOWTHAMAN/OneDrive/Documents/temphumid.py =====
POWER ON
CHECKING CONNECTION TO IBM WATSON...
dear user ... welcome to IBM-IOT 2022-11-12 11:29:13,466 ibmiotf.device.Client
INFO Connected successfully: d:0pycss:weather_Device1:weather_deviceid

You can know your child's live location and temperature
enter your child name:MADHU
({'your_child_zone': 'Child inside the geofence'})Published Temperature = 27 C
latitude = 10.784974615744863 &
longitude = 79.1316217625215 & to IBM Watson

({'temp_condition': 'Low temperature'})Published Temperature = 27 C
latitude = 10.784974615744863 &
longitude = 79.1316217625215 & to IBM Watson

Published Temperature = 27 C latitude = 10.784974615744863 & longitude = 79.1316217625215 & to IBM Watson

({'your_child_zone': 'Child outside the geofence'})Published Temperature = 47 C
latitude = 10.785885682265294 &
longitude = 79.12934190828224 & to IBM Watson

({'temp_condition': 'High temperature'})Published Temperature = 47 C
latitude = 10.785885682265294 &
longitude = 79.12934190828224 & to IBM Watson

Ln: 56 Col: 0
```

Taskbar: 27°C Raining now, Search, 11:29 12-11-2022

Creating and Connecting IBM cloud for Project and Python Code

The screenshot displays the IBM Watson IoT Platform dashboard. The top navigation bar includes tabs for 'Browse', 'Action', 'Device Types', and 'Interfaces'. A sidebar on the left contains icons for various platform features. The main content area shows a list of devices. One device, 'weather_Device1', is selected and its details are expanded. The 'Recent Events' tab is active, showing a table of live data events.

| Event | Value | Format | Last Received |
|----------------|--|--------|-------------------|
| IoTSensorgp... | {"temp_condition":"Low temperature"} | json | a few seconds ago |
| IoTSensorgp... | {"your_child_Zone":"Child outside the geofence"} | json | a few seconds ago |
| IoTSensorgp... | {"temp":30,"lat":10.785361477535123,"lon":79... | json | a few seconds ago |
| IoTSensorgp... | {"temp_condition":"Low temperature"} | json | a few seconds ago |
| IoTSensorgp... | {"your_child_Zone":"Child inside the geofence"} | json | a few seconds ago |

At the bottom of the dashboard, there is a status bar showing '27°C Raining now' and a Windows taskbar with various application icons and system clock showing 11:30 on 12-11-2022.

PYTHON CODE:

```
import time
import sys
import ibmiotf.application
import ibmiotf.device
import random
#Provide your IBM Watson Device Credentials
organization = "Opycss"
deviceType = "weather_Device1"
deviceId = "weather_deviceid"
authMethod = "token"authToken = "(j!jK*nvh9OKQD9!dJ"
#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
print("POWER ON ")
print("CHECKING CONNECTION TO IBM WATSON...")
time.sleep(2)
deviceCli.connect()
print("dear user ... welcome to IBM-IOT ")
print("You can know your child's live location and temperature ")
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=myOnPublishCallback)

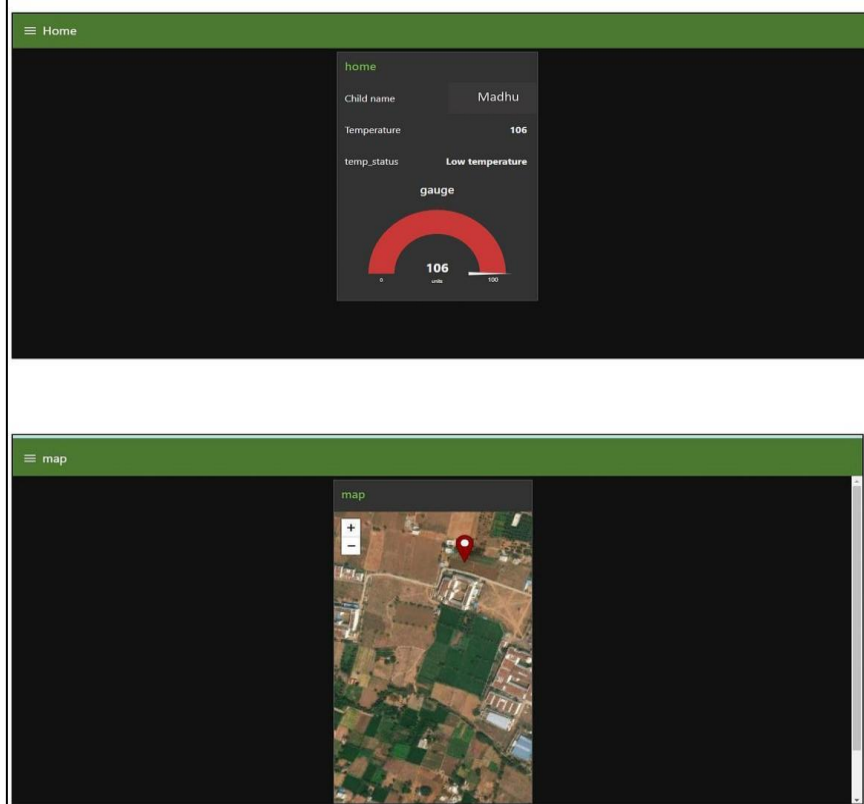
    print(x)
    print("\n")
else:
    deviceCli.publishEvent("IoTSensorgpsdata","json",data=y,qos=0,on_publish=
myOnPublishCallback)
    print(y)
    print("\n")
    if (temperature>35):
    deviceCli.publishEvent("IoTSensorgpsdata","json",data=z,qos=0,on_publish=myOnPublishCallback)

        print(z)
        print("\n")
    else:
    deviceCli.publishEvent("IoTSensorgpsdata","json",data=w,qos=0,on_publish=myOnPublishCallback)

    print(w)
    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()

```


NODE-RED OUPUT:



RESULTS :

```

tempHumid.py - C:\Users\GOWTHAMAN\OneDrive\Documents\tempHumid.py (3.7.0)
File Edit Format Run Options Window Help

import time
import sys
import ibmiotf.application
import ibmiotf.device

import random

#Provide your IBM Watson Device Credentials
organization = "ibpcss"
deviceType = "weather_device"
deviceId = "weather_deviceid"
authMethod = "token"
authToken = "i1jKPezh3Qg2S'dis"
api key (a-l1a1al-shdgdq2d0)
api token (d5Tz12uMNF4F_A7dKt)

try:
    deviceOptions = {"org": organization, "type": deviceType, "id": deviceId, "auth-method": authMethod, "device-cli": ibmiotf.device.Client(deviceOptions)}
    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 c

print("POWER ON ")
print("CHECKING CONNECTION TO IBM WATSON...")
time.sleep(2)
deviceCli.connect()
print("dear user ... welcome to IBM-IOT ")
print("You can know your child's live location and temperature ")
name=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_name':a})
    y=('{your_child_name':b})
    z=('{temp_condition':c})
    w=('{temp_condition':d})

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

Python 3.7.0 Shell
File Edit Shell Debug Options Window Help
Python 3.7.0 (tags/v3.7.0:1bf9cc5093, Jun 27 2018, 04:06:47) [AMD64 v.1914 32 bit (Intel)] on win32
Type "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: C:\Users\GOWTHAMAN\OneDrive\Documents\tempHumid.py =====
POWER ON
CHECKING CONNECTION TO IBM WATSON...
dear user ... welcome to IBM-IOT 11:29:13,466 ibmiotf.device.Client
INFO Connected successfully: d:\ibpcss\weather_device\weather_deviceid

You can know your child's live location and temperature
enter your child name:MADHU
({'your_child_name': 'Child inside the geofence'})Published Temperature = 27 C

latitude = 10.784974615744863 %
longitude = 79.1316217625215 % to IBM Watson

({'temp_condition': 'Low temperature'})Published Temperature = 27 C

latitude = 10.784974615744863 %
longitude = 79.1316217625215 % to IBM Watson

Published Temperature = 27 C latitude = 10.784974615744863 % longitude = 79.1316
217625215 % to IBM Watson

({'your_child_name': ' Child outside the geofence'})Published Temperature = 47 C

latitude = 10.785885482245294 %
longitude = 79.1293419028224 % to IBM Watson

({'temp_condition': 'High temperature'})Published Temperature = 47 C

latitude = 10.785885482245294 %
longitude = 79.1293419028224 % to IBM Watson

Ln 56 Col 0

```

Node-RED : node-red-igby-20... IBM Watson IoT Platform

https://0pccs.internetofthings.ibmcloud.com/dashboard/devices/browse

IBM Watson IoT Platform

contactmadhu1310@gmail.com ID: 0pccs

Browse Action Device Types Interfaces

Add Device

weather_device Disconnected weather_today Device Nov 11, 2022 9:30 PM

weather_deviceid Connected weather_Device1 Device Nov 11, 2022 9:34 PM

Identity Device Information Recent Events State Logs

The recent events listed show the live stream of data that is coming and going from this device.

| Event | Value | Format | Last Received |
|----------------|---|--------|-------------------|
| IoTSensorgp... | {"temp_condition": "Low temperature"} | json | a few seconds ago |
| IoTSensorgp... | {"your_child_Zone": "Child outside the geofence"} | json | a few seconds ago |
| IoTSensorgp... | {"temp": -30, "lat": 10.785361477535123, "lon": 79... | json | a few seconds ago |
| IoTSensorgp... | {"temp_condition": "Low temperature"} | json | a few seconds ago |
| IoTSensorgp... | {"your_child_Zone": "Child inside the geofence"} | json | a few seconds ago |

Items per page 50 | 1-3 of 3 items

1 of 1 page

27°C Raining now

Search

ENG IN

11:30 12-11-2022

Home

latitude

100 75 50 25 0

15:31:31 15:31:51 15:32:11

longitude 79.13214936602644

longitude

100 75 50 25 0

15:27:00 15:29:00 15:31:00 15:33:00

temperature

0 25 100

28°C Rain off and on

Search

ENG IN


15:32 12-11-2022

Home

longitude

10.783406548304898


latitude



longitude

79.13144114747048


longitude



your_child_zone

text

location



25°C Cloudy

Search

ENG IN

11:47 13-11-2022

1:23 PM | 2.7KB/s  

 Vo WiFi   37

Screen1

child safety monitoring

Temperature

98

ADVANTAGES :

- Easy availability and affordability
- Tracking is easy
- Watch your kids
- Guarantees piece of mind to caretakers.

Conclusion

This wearable device has a superior mode for viewing and locating the children's whereabouts with correct latitude and longitude, which is especially useful when using Google maps. This could assist to reduce the number of attacks on children while also making them feel protected and secure. The major goal of this project is to create a device that protects youngsters from risky circumstances while also assisting them in combating them.

FUTURE SCOPE :

A camera module for surveillance of the child's surrounds can be added to improve the system's performance. It's also possible to do it with a Raspberry Pi and Lilypad. It is possible to develop a more energy-efficient type that can keep the battery for a longer period of time .

APPENDIX :

Github:

<https://github.com/IBM-EPBL/IBM-Project-2086-1658428018>

project demo link:

https://drive.google.com/file/d/1DzC88MJGTQnbWntEJPQRcafWIR6YSwID/view?usp=share_link