



ADHIPARASAKTHI
ENGINEERING COLLEGE

A Project Report

On

IoT Based Safety Gadget for Child Safety Monitoring & Notification

SUBMITTED BY

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Project Report Format

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1.INTRODUCTION

1.1 Project Overview

Basically, children cannot complain about abusements which they face in their daily life to their parents. They can't even realize what actually happens to them at their age. It is also difficult for parents to identify their children are being abused. Since to prevent children before being attacked, an autonomous real-time monitoring system is necessary for every child out there. In this system, the collected values from every sensor like temperature sensor, pulse rate detection sensor, metal detection sensor, and the location value from GPS are used to detect the status of the child and alerts the respective guardians using GSM accordingly.

1.2 Purpose

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.

By the end of this project, we will:

- Gain knowledge of Watson IoT Platform.
- Connecting IoT devices to the Watson IoT platform and exchanging the sensor data.
- Gain knowledge on Cloudant DB
- Gain Knowledge of geofence
- Creating a Web Application through which the user interacts with the device

Project Flow:

- The GPS coordinates of the child will be sent to the IBM IoT platform
- Location can be viewed in the Web Application
- A parent can create a geofence in the web application
- The web application will check if the child is inside or outside the geofence
- Notifies the parents if the child goes out of the geofence

To accomplish this, we must complete all the activities and tasks listed below:

- Create and configure IBM Cloud Services to Create IBM Watson IoT Platform to Create a device & configure the IBM IoT Platform to Create Node-RED service to Create a database in Cloudant DB to store location data
- Develop a web Application using Node-RED Service. o Develop the web application using Node-RED o Integrate the geofence & google map
- Develop a python script to publish the location details to the IBM IoT platform

2.LITERATURE SURVEY

2.1 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.

The disadvantage of this project are,

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

2.2 References

1. Kamat, Mr DK, Ms Pooja S. Ganorkar, and Mrs RA Jain. "Child activity Monitoring using Sensors."International Journal of Engineering and Techniques 1.3 (2015): 129-133.
2. Saranya, J., and J. Selvakumar. "Implementation of children tracking system on android Mobile terminals." Communications and Signal Processing (ICCSP), 2013 International Conference on. IEEE, 291
3. P. Wei, R. Guo, J. Zhang and Y. T. Zhang, "A new wristband wearable sensor Using adaptive reduction filter to reduce motion artifact", Information Technology And Applications in Biomedicine 2008. ITAB 2008. International Conference on, pp. 278-281, May 2008

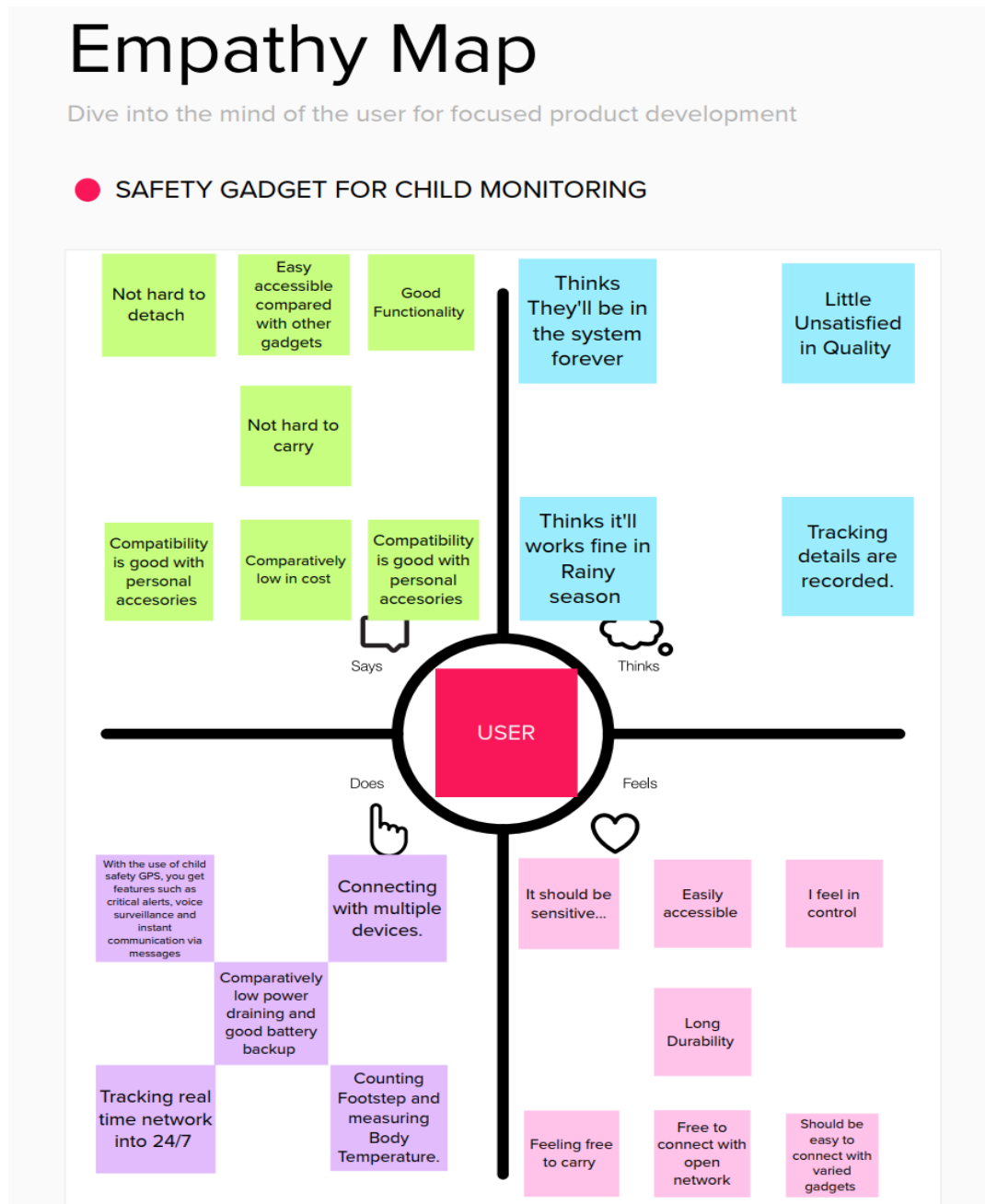
2.3Problem Statement Definition

- 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.

- Children are the backbone of one's nation, if the future of children was affected, it would Impact the entire growth of that nation. For every 40 seconds, a child goes missing in this world.
- Due to the abuse, the emotional and mental stability of the children gets affected which in turn Ruins their career and future.
- Parents Are responsible for taking care of their own children. But, due to economic Condition and aims to focus on their Child's future and career, parents are forced to crave For money. Hence, it becomes difficult to cling on to their Children all the time.
- The system has a developed web-based database-driven application that facilitates its management and provides useful information about the children to authorized personnel.
- The aim of this 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.
- Real-time monitoring of data is achieved by wirelessly sending Sensor data to an open source Cloud Platform. This device is programmed to continuously monitor the subject's parameters and take action when any dangerous situation presents itself. It does so by detecting the change in the monitored signals, following which appropriate action is taken by means of sending notifications/alerts to designated individuals.
- In our system, we provide an environment where this problem can be resolved in an efficient manner. It makes parents to easily monitor their children in real time just like staying beside them as Well as focusing on their own career without any manual Intervention

3.IDEATION & PROPOSED SOLUTION

3.1 Empathy Map Canvas



3.2 Ideation & Brainstroming

1.RFID-basedSystemforSchoolChildrenTransportationSafety

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 leave the bus and issues an alert message accordingly. The system has a developed web-based database-driven application that facilitates its management and provides useful information about the children to authorized personnel.

A complete prototype of the proposed system was implemented and tested to validate the system functionality. The results show that the system is promising for daily transportation safety.

2)IOT-based wearable device for the Safety a girl children

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.

This device is programmed to continuously monitor the subject's parameters and take action when any dangerous situation presents itself.

It does so by detecting the change in the monitored signals, following which appropriate action is taken by means of sending notifications alerts to designated individuals..

3).Smart Intelligent System for Child Security

A portable device which will have a pressure switch. As soon as an assailant is about to attack the person or when the person senses any i n security from a stranger, he/she can then put pressure on the device by squeezing or compressing it .

Instantly the pressure sensor senses this pressure and a conventional SMS, with the victim's location will be sent to their parents/guardian cellphone numbers stored in the device while purchasing it, followed by a call.

If the call sun answered for a prolonged time ,a call will be redirected to the police and the same message will be sent.

Additionally, if the person crosses some are a which is usually not accessed by the person then a message with the real-time location is sent to the parent/guardian's phone via conventional SMS.

3.3 Proposed Solution

Proposed Solution Template:

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	These days parents are worried about their children's so they want a complete track of them and monitor them all the time. So, we introduce child tracking application which is helpful for monitoring or tracking the child and their activities from anywhere in the world. The major issue of child missing can be solved with the help of child tracking system as well as parents who need to keep a track of their every step, this system plays a vital role
2.	Idea / Solution description	The major goal of this project is to use modern technology to create a gadget that provides "Smart Child Safety" to protect children, 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.
3.	Novelty / Uniqueness	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
4.	Social Impact / Customer Satisfaction	Parents are responsible for taking care of their own children. Hence, it becomes difficult to cling on to their children all the time. In our system, we provide an environment where this problem can be resolved in an efficient manner. It makes parents to easily monitor their children in real time just like staying beside them as well as focusing on their own career without any manual intervention.
5.	Business Model (Revenue Model)	The smart gadgets monitoring devices designed in such a way that should be Economically low in price and the device should be reusable.
6.	Scalability of the Solution	Easy and simple setup is required and less number of connections and sensors are used for efficient performance. Everything can be controlled from anywhere through cloud.

3.4 Problem Solution fit

Problem statement

- 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.
- Children are the backbone of one's nation, if the future of children was affected, it would impact the entire growth of that nation. For every 40 seconds, a child goes missing in this world
- Due to the abuse, the emotional and mental stability of the children gets affected which in turn Ruins their career and future.

- Parents Are responsible for taking care of their own children. But, due to economic condition and aims to focus on their Child's future and career, parents are forced to crave for money. Hence, it becomes difficult to cling on to their Children all the time.

- The system has a developed web-based database-driven application that facilitates its management and provides useful information about the children to authorized personnel.

- The aim of this 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.

- Real-time monitoring of data is achieved by wirelessly sending Sensor data to an open source Cloud Platform. This device is programmed to continuously monitor the subject's parameters and take action when any dangerous situation presents itself.

- It does so by detecting the change in the monitored signals, following which appropriate action is taken by means of sending notifications/alerts to designated individuals.

- In our system, we provide an environment where this problem can be resolved in an Efficient manner. It makes parents to easily monitor their children in real time just like staying beside them as Well as focusing on their own career without any manual intervention.

4 REQUIREMENT ANALYSIS.

4.1 Functional requirement

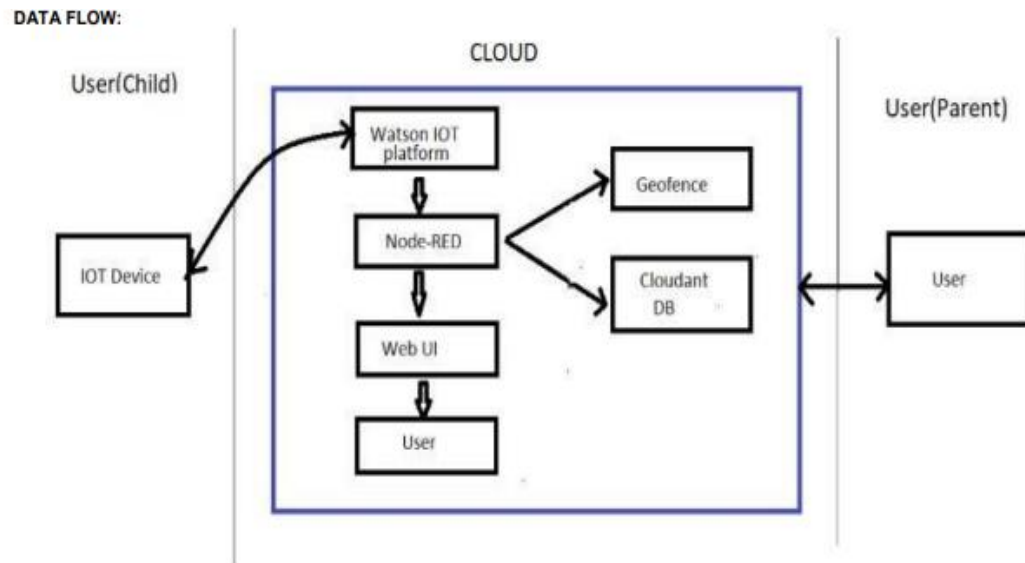
FR No.	Non-Functional Requirement	Description
NFR-1	Usability	Usability is a non-functional requirement, because in its essence it doesn't specify parts of the system functionality, only how that functionality is to be perceived by the user, for instance how easy it must be to learn and how efficient it must be for carrying out user tasks.
FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	Software interface	This includes embedded application that will used in supporting the various functions of the system Eg: GPS, Web Server and Database
FR-2	User interface	It should be the connector between the various systems or between other part or unit of the system
FR-3	Authentication	The system sends an approval request after the user enters personal information
FR-4	External Interface	These requirements include interaction logic between software and user, screen layouts, buttons, functions on every screen, hardware interfaces (here a team describes what devices the software is created for), and other relevant particularities.
FR-5	Reporting	Reporting Requirements means any applicable laws, rules, regulations, instruments, orders or directives and any requirements of a regulatory or supervisory organization that mandate reporting and/or retention of safety and similar information

4.2 Non-functional requirements

FR No.	Non-Functional Requirement	Description
NFR-1	Usability	Usability is a non-functional requirement, because in its essence it doesn't specify parts of the system functionality, only how that functionality is to be perceived by the user, for instance how easy it must be to learn and how efficient it must be for carrying out user tasks.
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5.PROJECT DESIGN

5.1 Data Flow Diagrams



5.2 Solution & Technical Architecture

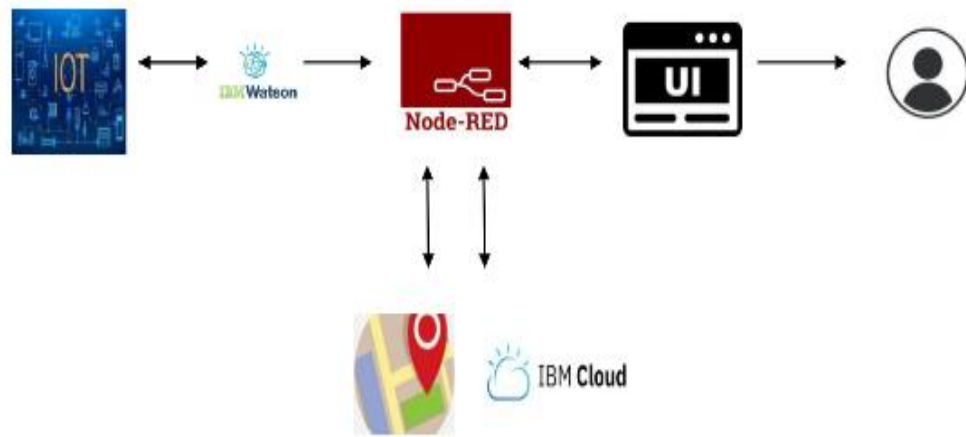


Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	. Web UI, Mobile App.	HTML, CSS, JavaScript
2.	Application Logic-1	Code development phase	Python
3.	Application Logic-2	Interfacing purpose	IBM Watson Assistant
4.	Cloud Database	Database Service on Cloud	IBM Cloudant
5.	File Storage	Usage of IBM Cloud Storage	IBM Block Storage
6.	Browser based flow editor	Visual programming	Node Red
7.	Infrastructure (server/cloud)	Application deployment on Local Server	Cloud Platform

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	A template for software development that is designed by social network	IBM Watson Platform, Node Red
2.	Security Implementations	Each and every parent should take care of their own children, without letting them to fall into the dark world of abuses, which entirely ruin them physically, mentally and emotionally destroying our future. Hence, considering the importance of our future, our project makes it easy for parents to track their children and to visually monitor them on regular basis, which makes them ensure the safety of their children and reduces	Notifications and alerts
3.	Scalable Architecture	the rate of incidents of child abuse. If any abnormal values are read by the sensor, then an SMS is sent to the parents mobile	Implementation using Software

4.	Availability	The solution represented takes advantage of Open-source Platform	NODE RED, IBM cloud, IBM lot Platform
5.	Performance	GPS is useful for tracking child and GPS also provides the information where the child is currently located as well as it also informs the parents how long his child is far away from his parents. SMS services used when smart phones do not support internet connectivity in this case child is able to send a text message or exact location in the parents. This system is going to help the parents to track the location of their children without informing them because their movement is displayed on the parent's phone.	GPS

5.3 User Stories

User Stories Use the below template to list all the user stories for the product.

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Customer (Mobile user & Web users)	Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirming my password.	I can access my account / dashboard	High	
		USN-2	As a user, I will receive confirmation email once I have registered myself	I can receive confirmation email & click confirm	High	
		USN-3	As a user, I can register for the application through Apple account and twitter	As a user, I can register for the application through Apple account and twitter I can register & access the dashboard with Apple account Login and twitter account login		
	Login	USN-4	As a user, I can register for the application by entering the user ID & password		High	
Customer Care Executive	Login			I can login only with my provided credentials	Medium	

6.PROJECT PLANNING &SCHEDULING

6.1 Sprint Planning & Estimation

1. Prerequisites

- IBM Cloud Services→
- Software→

2. Project Objectives

- Abstract→
- Brainstorming→

3.Create And Configure IBM Cloud Services

- Create IBM Watson Iot Platform And Device→
- Create Node- Red Service→
- Create A Database In Cloudant DB→

4.Develop The Python Script

- Develop A Python Script→

5.Develop AWeb Application Using Node-RED Service.

- Develop The Web Application Using Node-RED→

6.Ideation Phase

- Literature Survey On The Selected Project→ & Information Gathering
- Prepare Empathy Map→
- Ideation→

7.Project Design Phase -1

- Proposed Solution→
- Prepare Solution Fit→
- Solution Architecture→

8. Project Design Phase -2

- Customer journey→
- Functional Requirement→
- Data Flow Diagram→
- Technology Architecture→

9. Project planning Phase

- Prepare Milestones→ & Activity List
- Sprint Delivery Plan→

10. Project Development Phase

- Project Development-Delivery Of Sprint-1→
- Project Development-Delivery Of Sprint-2→
- Project Development-Delivery Of Sprint-3→
- Project Development-Delivery Of Sprint-4→

6.2 Sprint Delivery Scheduling

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority
Sprint-1	Registration	USN-1	As a user, I can register for the application by entering my email, and password, and confirming my password.	4	High
Sprint-1	Confirmation Email	USN-2	As a user, I will receive a confirmation email once I have registered for the application	4	High
Sprint-1	Authentication	USN-3	As a user, I can register for the application through Gmail and mobile app.	4	Medium
Sprint-1	Login	USN-4	As a user, I can log into the application by entering email & password	4	High
Sprint-1	Dashboard	USN-5	As a user, I need to be able to view the functions that I can perform	4	High
Sprint-2	Notification	USN-1	As a user, I should be able to notify my parent and guardian in emergency situations	10	High
Sprint-2	Store data	USN-2	As a user, I need to continuously store my location data into the database.	10	Medium
Sprint-3	Communication	USN-3,1	I should be able to communicate with my parents	6	Low

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority
Sprint-3	IoT Device – Watson communication	USN-1,4	The data from IoT device should reach IBM Cloud	7	Medium
Sprint-3	Node RED- Cloudant DB communication	USN-5,2	The data stored in IBM Cloud should be properly integrated with Cloudant DB	7	High
Sprint-4	User – WebUI interface	USN-1,4	The Web UI should get inputs from the user	6	High
Sprint-4	Geofencing	USN-2,3,5	The geofencing of the child should be done based on the geographical coordinates	7	High

7.CODING & SOLUTIONING(Explain the features added in the project along with code)

7.1 FeaturANALYZE THE PREREQUISITES:

Needed prerequisites for child safety monitoring and notication using Internet Of Things (IoT) were

- ❖ IBM Watson IoT Platorm
- ❖ Node-RED Service
- ❖ Cloudant DB

Python code:

```
import time

import wiotp.sdk.application

myConfig = {
    "identity": {
        "orgId" : "p8ajwt",
        "typeId": "abcd",
        "deviceId":"1234",
```

```
},  
"auth": {  
    "token": "12345678"  
}  
}  
  
client = wiotp.sdk.device.DeviceClient(config = myConfig, logHandlers = None)  
client.connect()  
  
while True:  
    name = "Pushpalatha K"  
  
    #in area location latitude = 17.4219272  
  
    longitude = 78.5488783  
  
    #out area location  
  
    #latitude = 17.4219272  
  
    #longitude = 78.5488783  
  
    myData = {"name":name, "lat":latitude, "lon": longitude}  
  
    client.publishEvent(eventId = "status", msgFormat = "json", data = myData, qos =  
0,  
onPublish =None)  
  
    print("Data published to IBM IoT Platform: ", myData)  
  
    time.sleep(5)  
  
    client.disconnect() e 1
```

OUTPUT:

```
Python 3.7.9 Shell
File Edit Shell Debug Options Window Help
Python 3.7.0 (tags/3.7.0:01b1f905093, Jun 27 2019, 04:09:15) [MSC v.1914 64 bit (AMD64)] on win32
Type "copyright()" for more information.
>>>
RESTART: C:\Users\pushp\AppData\Local\Programs\Python\Python37\chilidkacckez2.py
2022-11-11 15:25:42.202 winapi.device-class.deviceclass INFO Connected successfully: dlp@jet:abcd:1234Data published to IBM IoT Platform:
{"name": "Pushpalatha K", "lat": 17.4219272, "lon": 78.5489793}
Data published to IBM IoT Platform: {"name": "Pushpalatha K", "lat": 17.4219272, "lon": 78.5489793}
Data published to IBM IoT Platform: {"name": "Pushpalatha K", "lat": 17.4219272, "lon": 78.5489793}
Data published to IBM IoT Platform: {"name": "Pushpalatha K", "lat": 17.4219272, "lon": 78.5489793}
Data published to IBM IoT Platform: {"name": "Pushpalatha K", "lat": 17.4219272, "lon": 78.5489793}
Data published to IBM IoT Platform: {"name": "Pushpalatha K", "lat": 17.4219272, "lon": 78.5489793}
```

Registration successful | My IBM | IBM Cloud | Service Details - IBM | IBM Watson IoT Platform | Service Details - IBM | IBM Watson IoT Platform | WhatsApp

420419106022@smarternuz.com
ID: pldjet

IBM Watson IoT Platform

Browse Action Device Types Interfaces

Search by Device ID

Device Simulator ☒

Device ID	Status	Device Type	Class ID	Date Added	Descriptive Location	Added By
1234	Connected	abcd	Device	Nov 3, 2022 6:33 PM		420419106022@smarternuz.com

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
status	{"name": "Pushpalatha K", "lat": 17.4219272, "lon": ...}	json	a few seconds ago
status	{"name": "Pushpalatha K", "lat": 17.4219272, "lon": ...}	json	a few seconds ago
eventflow	{"randomNumber": 24, "temp": 99, "hum": 87}	json	a few seconds ago
status	{"name": "Pushpalatha K", "lat": 17.4219272, "lon": ...}	json	a few seconds ago

Items per page: 50 | 1-1 of 1 item

1 of 1 page

1 Simulation running

Registration successful | My IBM | IBM Cloud | Service Details - IBM | IBM Watson IoT Platform | Service Details - IBM | IBM Watson IoT Platform | WhatsApp

420419106022@smarternuz.com
ID: pldjet

IBM Watson IoT Platform

Browse Action Device Types Interfaces

Search by Device ID

Device Simulator ☒

Browse Devices

All Devices Diagnose

This table shows a summary of all devices that have been added. It can be filtered, organized, and searched on using different criteria. To get started, you can add devices by using the Add Device button, or by using API.

Device ID	Status	Device Type	Class ID	Date Added	Descriptive Location	Added By
1234	Connected	abcd	Device	Nov 3, 2022 6:33 PM		420419106022@smarternuz.com

Items per page: 50 | 1-1 of 1 item

1 of 1 page

1 Simulation running

7.2 Feature 2

ALGORITHM:

- Import Packages
- Create 'myConfig' location
- Implement the wiotp.sdk.device.DeviceClient
- Run a while Loop
- Finally set the latitude and longitude range
- Desired result Obtained

Modified Version of Code according to main project:

```
import json

import wiotp.sdk.device

import time

myConfig={

    "identity":{

        "orgId": "p8ajwt", "typeid": "abcd",

        "deviceId": "1234"

    },

    "auth": {

        "token": "12345678"

    }

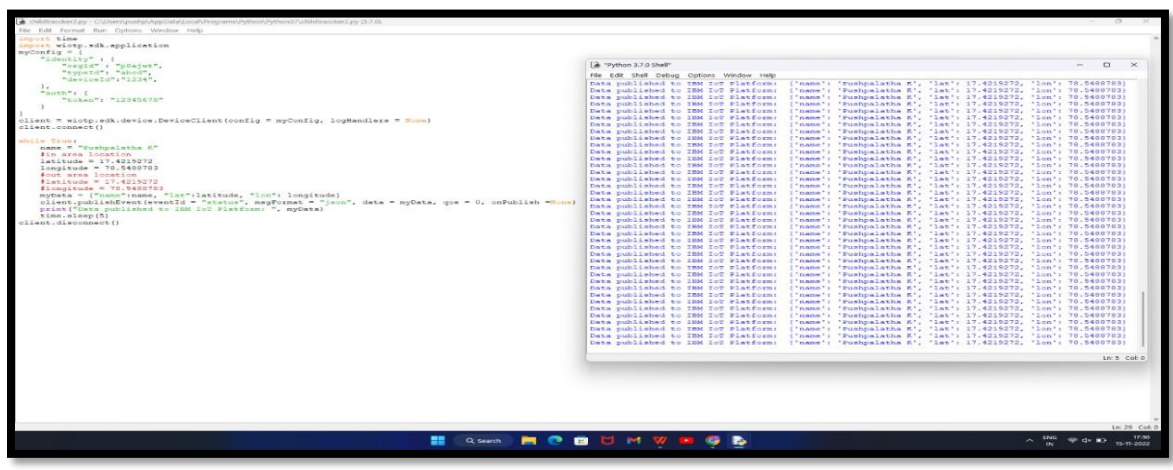
}

client = wiotp.sdk.device.DeviceClient (config=myConfig,

logHandlers=None)
```



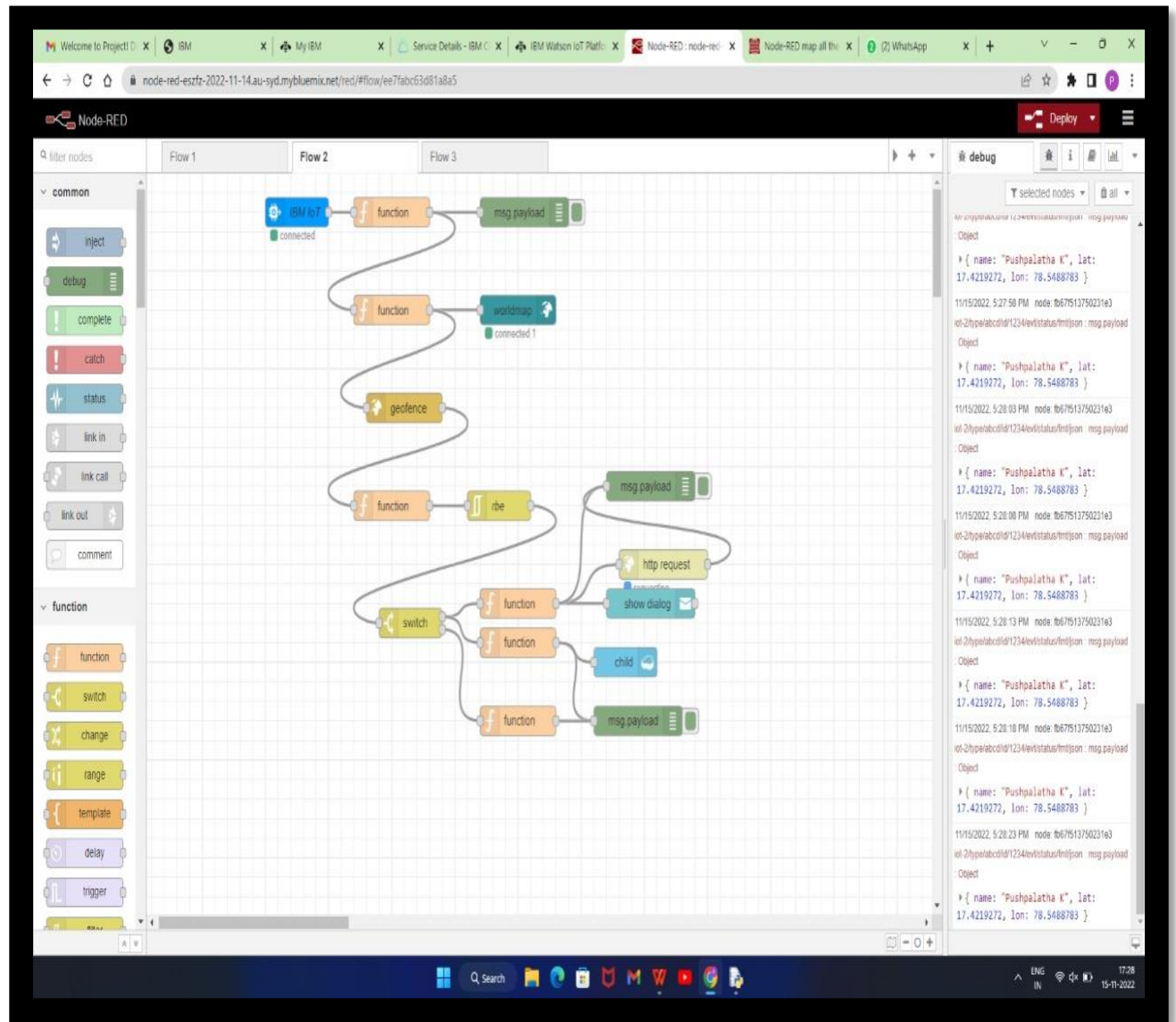
```
client.disconnect()
```



7.3 Database Schema(if Application)

Steps Followed:

- **Opened a Node-RED project**



- Added code to get child location in python

The image shows a Python script in a code editor and its output in a terminal window. The script is a Flask application that receives a POST request from a device and returns a JSON response. The terminal window shows the output of the script, which is a list of 20 JSON objects, each representing a location point with fields like name, latitude, longitude, and altitude.

```

import time
import winreg, json, requests
import sys

myConfig = {
    "deviceId": "12345678",
    "password": "12345678",
    "username": "12345678"
}

client = winreg.device.DeviceClient(config = myConfig, logHandler = None)
client.connect()

def main():
    name = "Pushpalatha E"
    loc = None
    latitude = 17.4215272
    longitude = 79.5400703
    alt = None
    altitude = 17.4215272
    myData = {"name": name, "lat": latitude, "lon": longitude}
    client.publishEvent(eventId = "location", msgFormat = "json", data = myData, qos = 0, usePublish = True)
    print("Data published to IBM IoT Platform")
    time.sleep(1)
    client.disconnect()

if __name__ == '__main__':
    main()

```

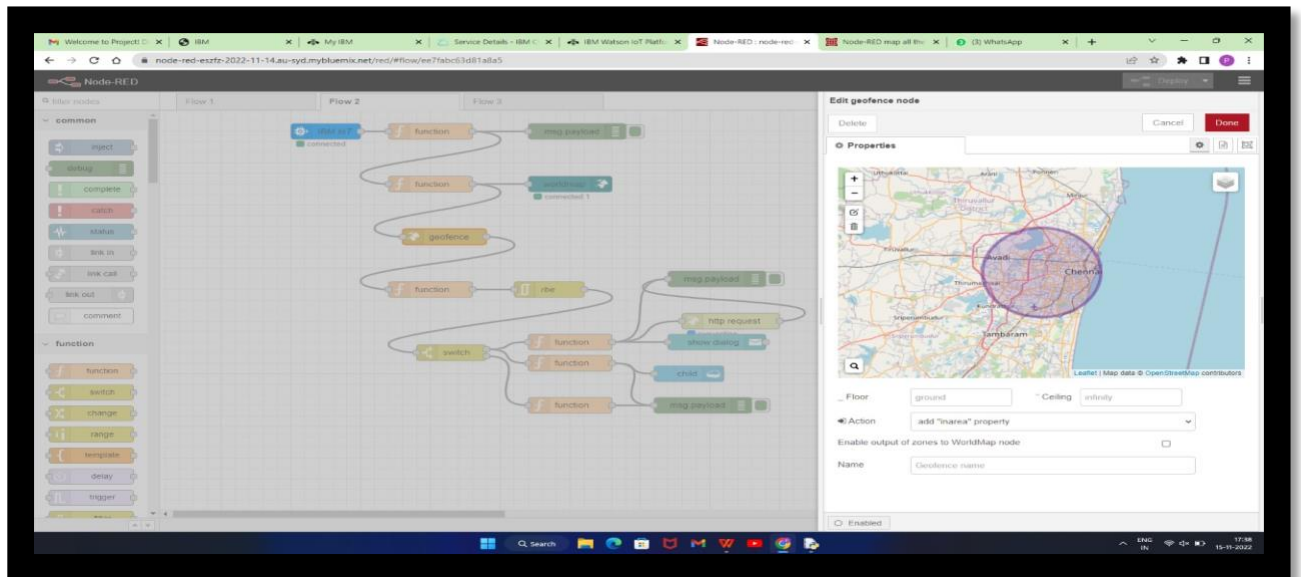
The terminal output shows the following data points (repeated 20 times):

```

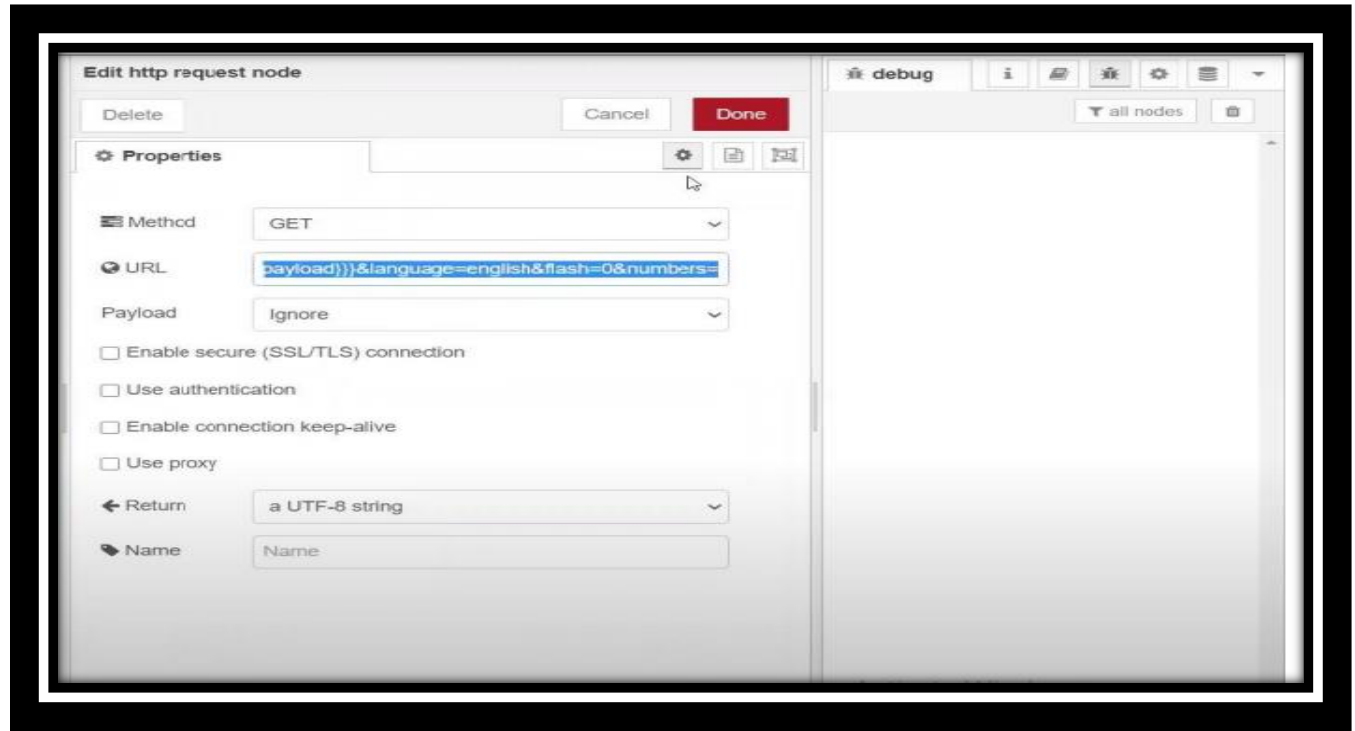
Data published to IBM IoT Platform: [{"name": "Pushpalatha E", "lat": 17.4215272, "lon": 79.5400703, "alt": 17.4215272, "usePublish": true}
Data published to IBM IoT Platform: [{"name": "Pushpalatha E", "lat": 17.4215272, "lon": 79.5400703, "alt": 17.4215272, "usePublish": true}
...
Data published to IBM IoT Platform: [{"name": "Pushpalatha E", "lat": 17.4215272, "lon": 79.5400703, "alt": 17.4215272, "usePublish": true}

```

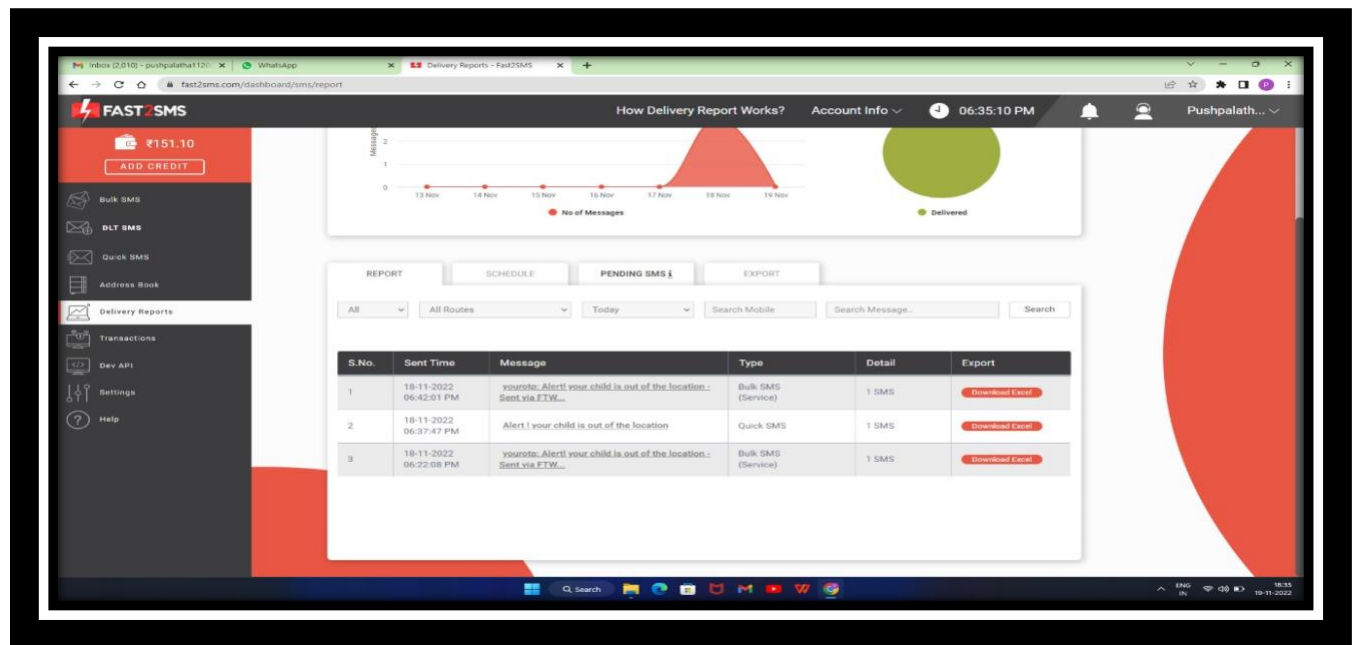
- Create The Geofence



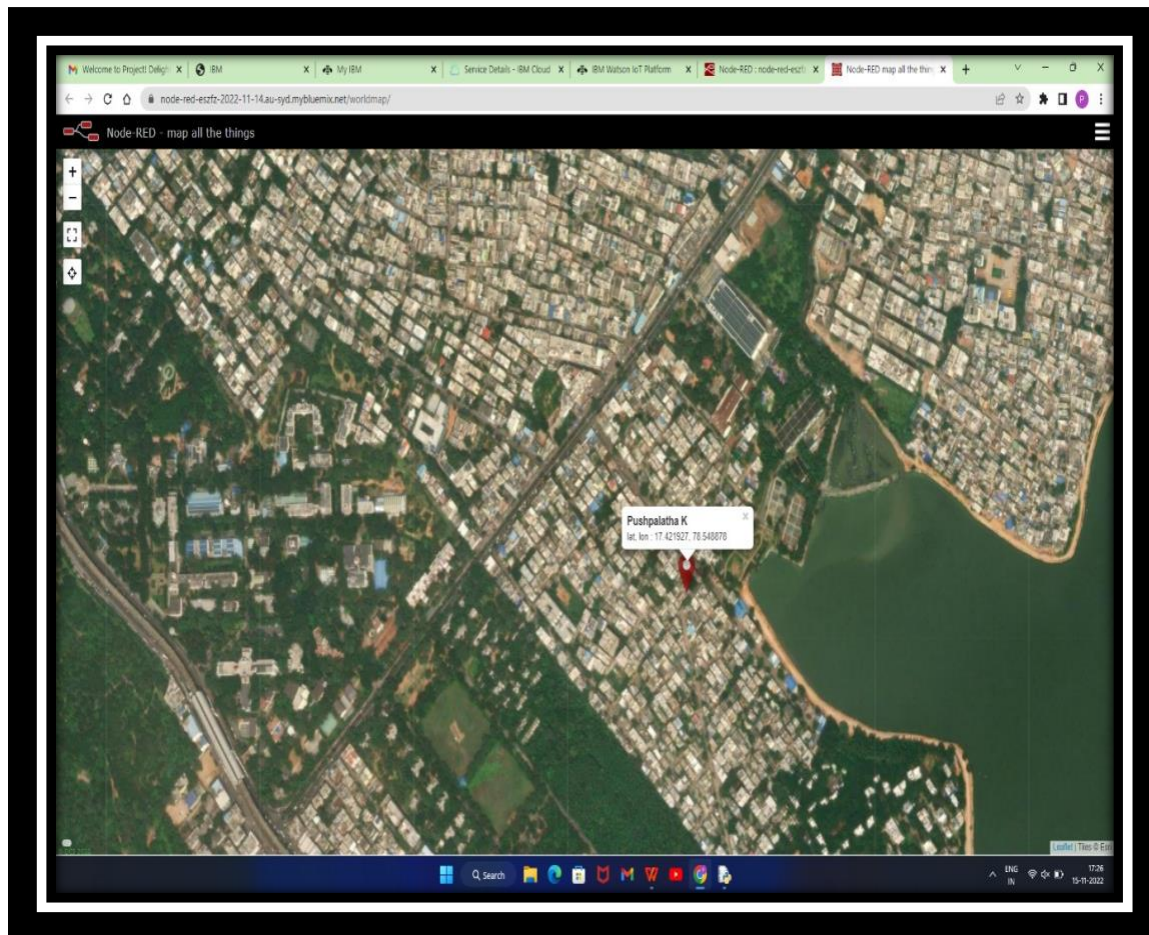
- Editing the HTTP Request URL



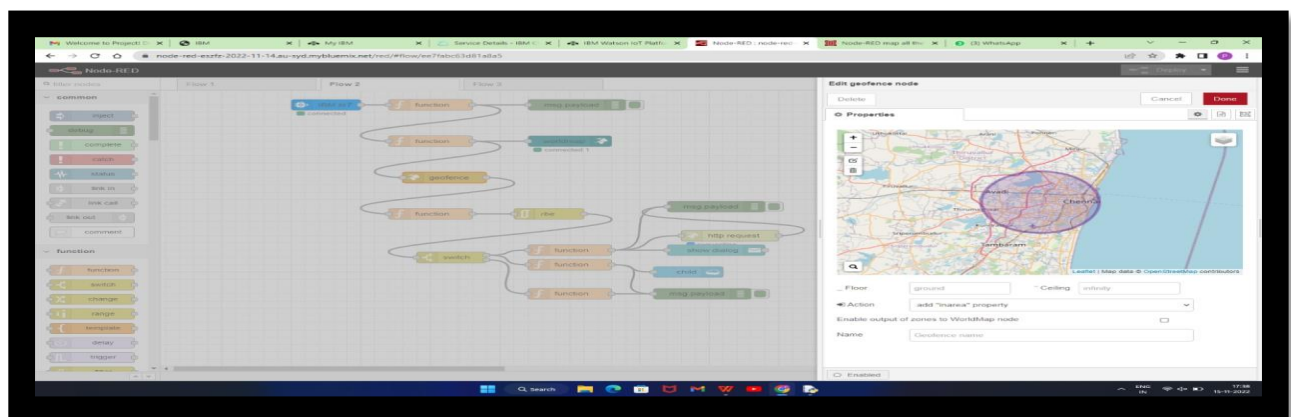
- Fast to sms output

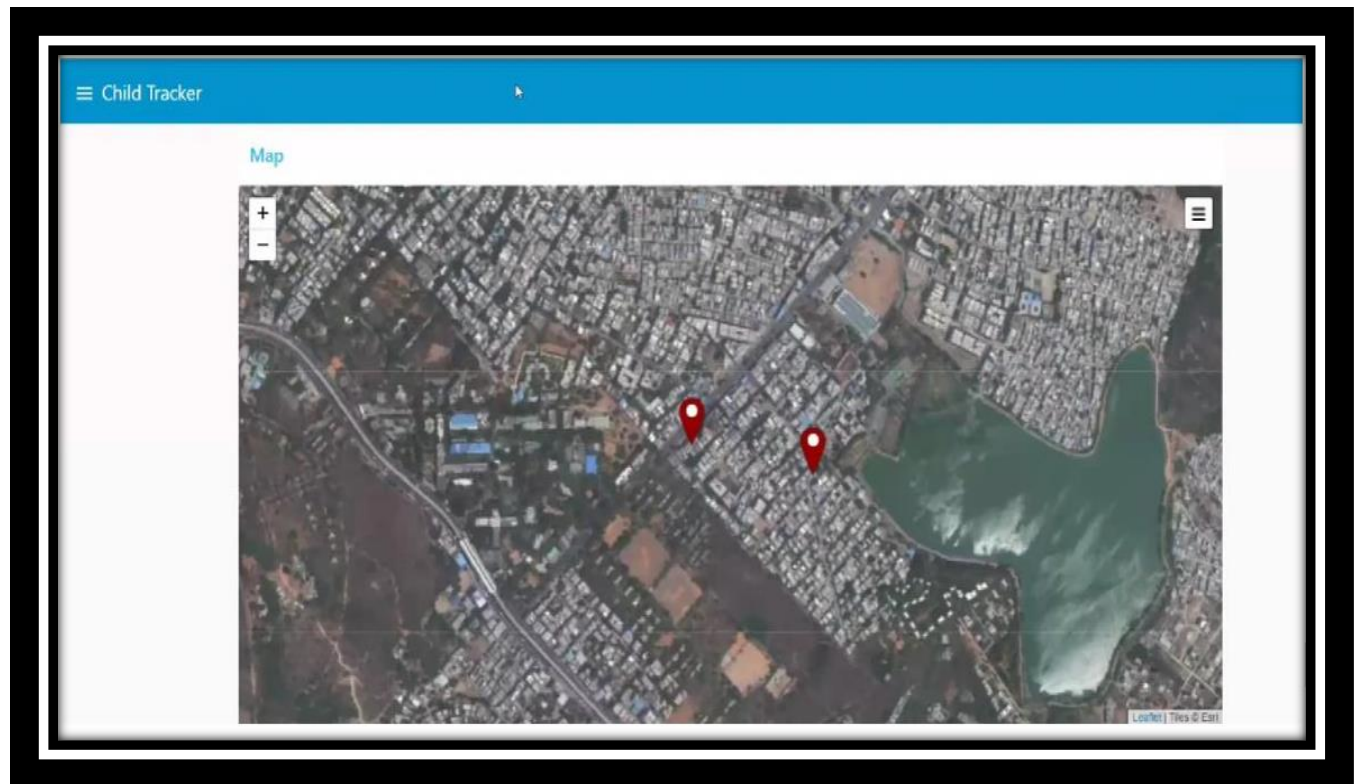


- Located the child



- Created the geofence node





8.TESTING

8.1 Test Case

Testcases Report (1).xlsx - Microsoft Excel													
G1													
	B	C	D	E	F	G	H	I	J	K	L	M	N
1				Date	18/Nov/22								
2				Team ID	PNT2022TMD38846								
3				Project Name	IOT based safety gadget for chil								
4				Maximum Marks	4 marks								
5	Feature Type	Component	Test Scenario	Pre-Requsite	Steps To Execute	Test Data	Expected Result	Actual Result	Status	Comments	TC for Automation(Y/N)	BUG ID	Executed By
6	Functional	Home Page	Verify user is able to see the Login when user clicked on NEXT button	Android application	1.Enter the app and click NEXT 2.Verify login/Signup popup displayed or not	http://a2.appinventor.mit.edu/#4876750790893680	Login/Signup popup should display	Working as expected	Pass	No issues faced			
7	UI	Home Page	Verify the UI elements in Login/Signup popup	Android application	1.Enter the app and click NEXT 2.Verify login popup with below UI elements: a. Username text box b.password text box c. Submit button	http://a2.appinventor.mit.edu/#4876750790893680	Application should show below UI elements: a. Username text box b. password text box c. Submit button with green colour	Working as expected	Pass	No issues faced			
8	Functional	Home page	Verify user is able to log into application with Valid credentials	Login credentials	1.Enter the app and click NEXT 2.Enter valid username in Username text box 3.Enter valid password in password text box 4.Click on submit button	Username: Pushpalatha k password: 1234	User should navigate to user account homepage	Working as expected	Pass	No issues faced			
9	Functional	Login page	Verify user is able to log into application with Invalid credentials	Login credentials	1.Enter the app and click NEXT 2.Enter valid username in Username text box 3.Enter valid password in password text box 4.Click on submit button	Username: kalpana password: kps	Application should show 'Incorrect email or password' validation message.	Working as expected	pass	No issues faced			
10	Functional	Login page	Verify user is able to log into application with Invalid credentials	Login credentials	1.Enter the app and click NEXT 2.Enter valid username in Username text box 3.Enter valid password in password text box 4.Click on submit button	Username: Test1 password: abcd	Application should show 'Incorrect email or password' validation message.	Working as expected	pass	No issues faced			
11	Functional	Monitoring page	Verify the simulated sensor data is displayed on the Android application	name and location of the child	1.Enter the app and click NEXT 2.Enter valid username in Username text box 3.Enter valid password in password text box 4.Click on submit button	name: Pushpalatha k lat:17.4219272 lon:78.5488783	Application should display the values that has been generated from the python code	Working as expected	pass	No issues faced			
12													
13													
14													

8.2 User Acceptance Testing

1. Purpose of Document

The purpose of this document is to briefly explain the test coverage and open issues of the - IOT Based Safety Gadget for Child Safety Monitoring and Notification Project at the Time of the Release to User Acceptance Testing (UAT).

2. Defect Analysis

This report shows the number of 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	7	2	3	2	14
Duplicate	1	0	0	2	3
External	2	4	0	5	11
Fixed	10	2	3	7	22
Not Reproduced	0	0	1	1	2
Skipped	0	0	0	1	1

3. Test Case Analysis

This report shows the number of test cases that have passed, failed, and untested

Section	Total Cases	Not Tested	Fail	Pas s
Print Engine	6	0	0	6
Client Application	25	0	0	25
Security	3	0	0	3
Exception Reporting	8	0	0	8
Final Report Output	5	0	0	5
Version Control	2	0	0	2

9.RESULTS

9.1 Performance Metrics

Use performance monitoring to know the velocity of data records processed by your deployment.

You enable performance monitoring when you select the deployment to be tracked and monitored. Performance metrics are calculated based on the following information:

- scoring payload data
- For proper monitoring purpose, log in every scoring request in Watson OpenScale as well.
- Payload data logging is automated for IBM Watson Machine Learning engines.
- For other machine learning engines, the payload data can be provided either by using the Python client or the REST API.
- Performance monitoring does not create any additional scoring requests on the monitored deployment.

10.ADVANTAGES & DISADVANTAGES

Advantages

In our system, we provide an environment where this problem can be resolved in an efficient manner. It makes parents to easily monitor their children in real time just like staying beside them as well as focusing on their own career without any manual intervention.

Disadvantages:

Hackers may gain access to the system and steal personal information. Since we add so many devices to the internet, there is a risk that our information as it can be misused.

They rely heavily on the internet and are unable to function effectively without it.

With the complexity of systems, there are many ways for them to fail.

We lose control of our lives—our lives will be fully controlled and reliant on technology.

Overuse of the Internet and technology makes people unintelligent because they rely on smart devices instead of doing physical work, causing them to become lazy.

Unskilled workers are at a high risk of losing their jobs, which could lead to unemployment. Smart surveillance cameras, robots, smart ironing systems, smart washing machines, and other facilities are replacing security guards, maids, ironmen, and dry-cleaning services etc.

It is very difficult to plan, build, manage, and enable a broad technology to IoT framework.

Deploying IoT devices is very costly and time-consuming.

11.CONCLUSION

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 indicating an image captured by the serial camera is also sent. The future scope of the work is to implement the IoT device which ensures the complete solution for child safety problems.

12.FUTURE SCOPE

This research demonstrates Smart IoT device for child safety and tracking, to help the parents to locate and monitor their children.

If any abnormal readings are detected by the sensor, then an SMS and phone call is triggered to the parents mobile. Also ,updated to the parental app through the cloud.

The system is equipped with GSM and GPS modules for sending and receiving call, SMS between safety gadget and parental phone.

The system also consists of Wi-Fi module used to implement IoT and send all the monitored parameters to the cloud for android app monitoring on parental phone.

Panic alert system is used during panic situations alerts are sent to the parental phone, seeking for help also the alert parameters are updated to the cloud.

Boundary monitoring system is implemented on safety gadget with the help of BEACON technology, as soon as the safety gadget moves far away from the BLE listener gadget an alert is provided to itself.

Future Scope of Work This system can be further enhanced by installation of mini camera inside smart gadget for better security so that live footage can be seen on parental phone during panic situations.

The system can be modified by installation of small solar panels for charging the battery of smart gadget to gain maximum battery backup.

13.APPENDIX

13.1Source Code

Modified Version of Code according to main project:

```
import json

import wiotp.sdk.device

import time

myConfig={

    "identity":{

        "orgId": "p8ajwt", "typeid": "abcd",

        "deviceId": "1234"

    },

    "auth": {

        "token": "12345678"

    }

}

client = wiotp.sdk.device.DeviceClient (config=myConfig,

logHandlers=None)

client.connect()

while True:

    name= "Pushpalatha K"

    #in area location

    latitude=17.4219272

    Longitude= 78.5488783

    #out area location
```

```
client.disconnect()
```

<https://github.com/IBM-EPBL/IBM-Project-14089-1659540380>

