Smart Wearable Device for Women Safety using IOT

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Project No. : CBIT/IT/2019-2020/205

Project Guide
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Domain

- ***Internet of Things***

Agenda

- Overview
- Literature Survey
- Problem Statement
- System Design
- Methodology
- Implementation
- Results
- Conclusion
- Future Scope
- Bibliography

Overview

- According to the National Crime Records Bureau, once every 20 minutes a crime against women occurs in India.
- The time gap between the real time of crime and time of reporting is huge.
- A smart device for automatic crime detection for women safety is required.

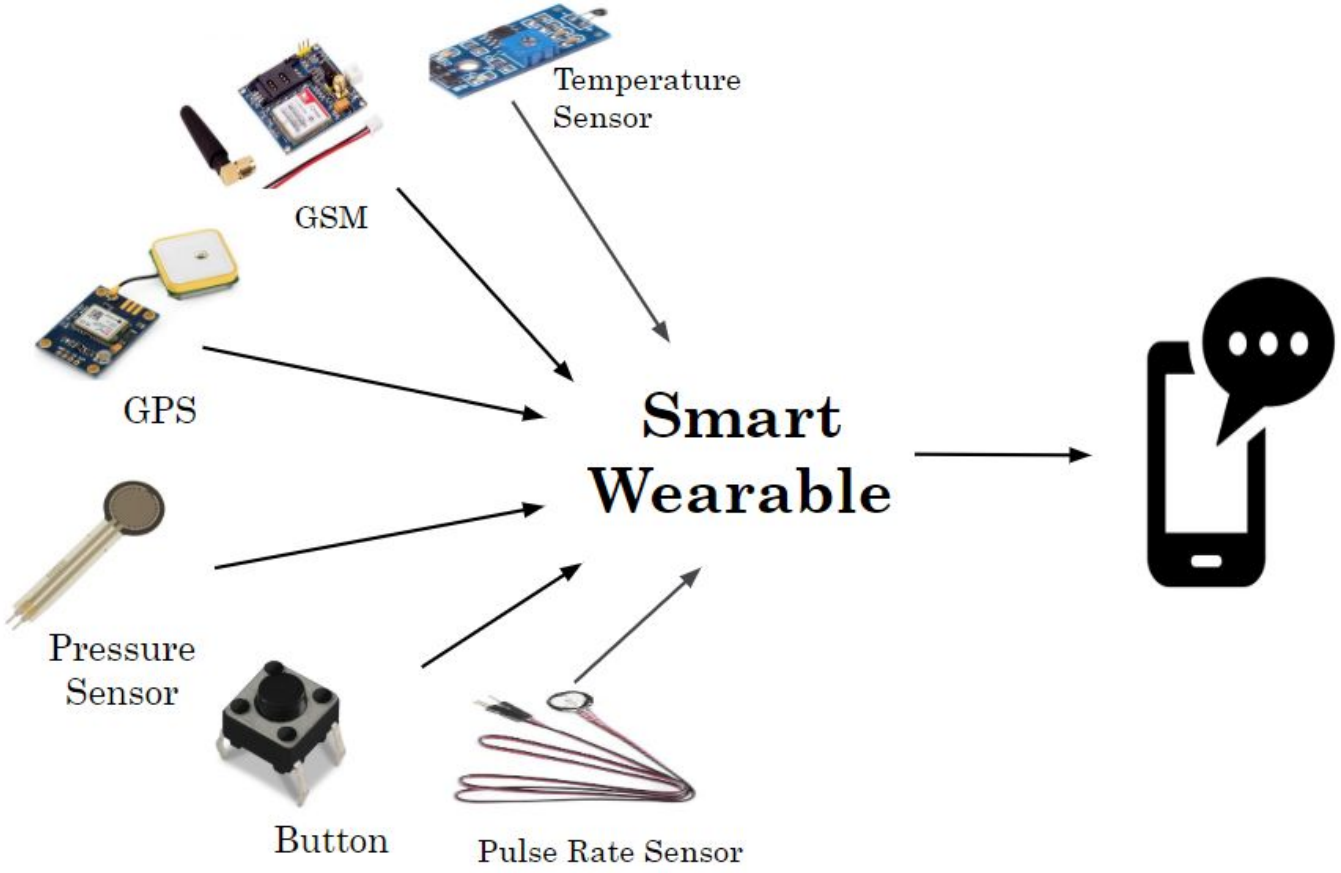
Literature Survey

Paper title	Publication Year	Methodology	Advantages	Disadvantages
Design and Implementation of Women Auspice System by Utilizing GPS and GSM	2019,IEEE	Used buttons for victim to manually indicate the occurrence of a crime	● Useful for different types of crimes ● Simple and cost effective	● Manual process ● Size of device
Smart Gadget for Women Safety using IoT	2018,IEEE	Used ultrasonic sensor to measure distance maintained by person	● Captures image of the culprit ● Checking with victim for crime	● Size of device ● Impractical in real time
Smart Band for Women Security Based on Internet of Things	2017,IEEE	Used pulse rate and temperature sensors to detect irregularities and update in app	● Size of device ● More accurate	● Decentralized ● Requires internet connection

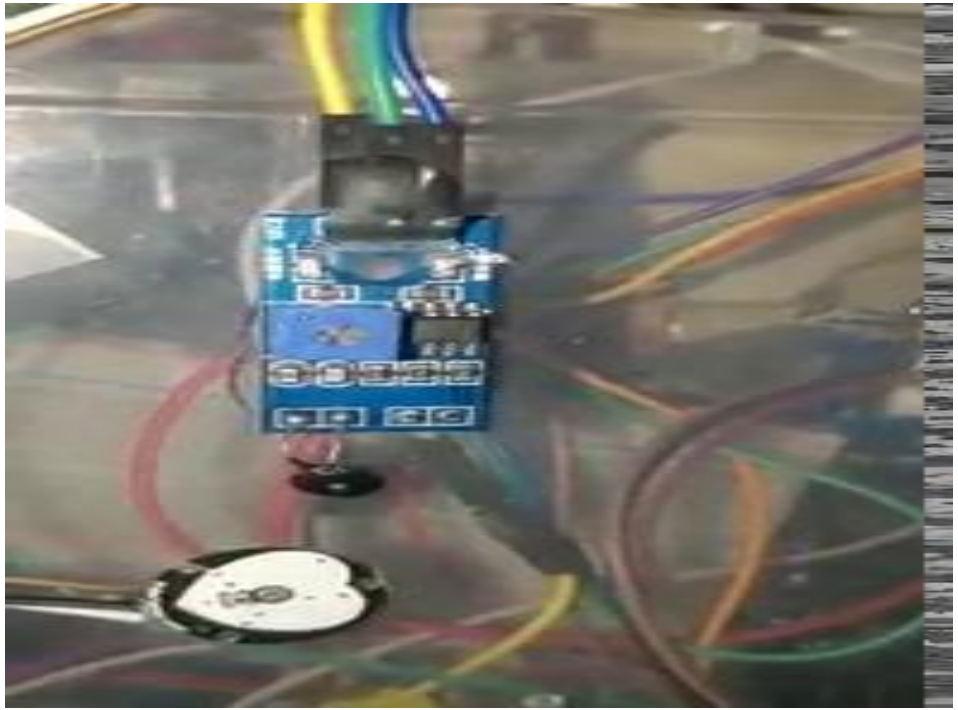
Problem Statement

- A smart device for women safety against crimes which automatically detects possibility of crime using sensors. The alert message is sent to the relatives and respective officials along with location of the victim.

System Design



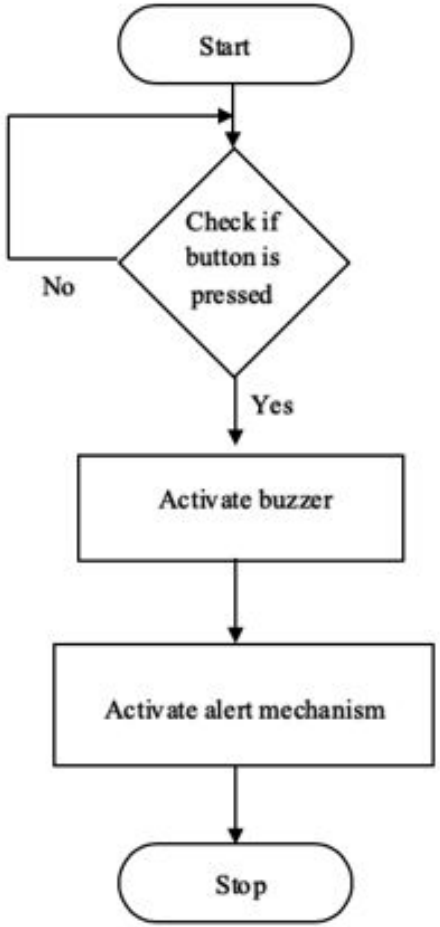
Model Presentation:



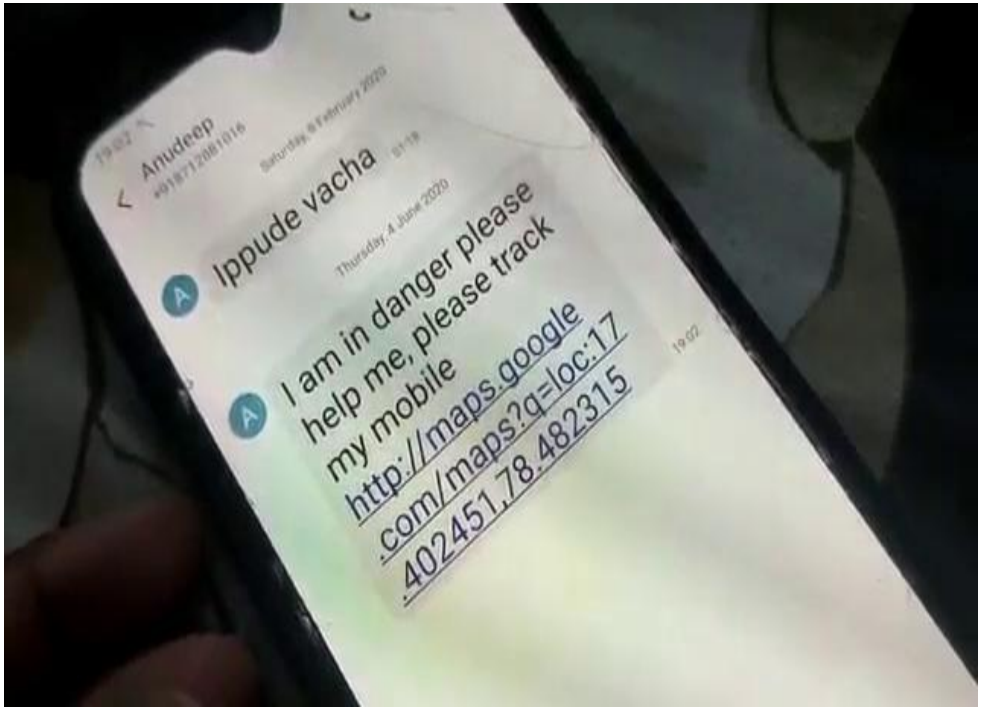
Methodology

Manual mechanism:

- Manual method which involves pressing of button in emergency conditions to send the alert message to the dear ones.
- Also a buzzer is triggered when the button is pressed to alert people in the surroundings.

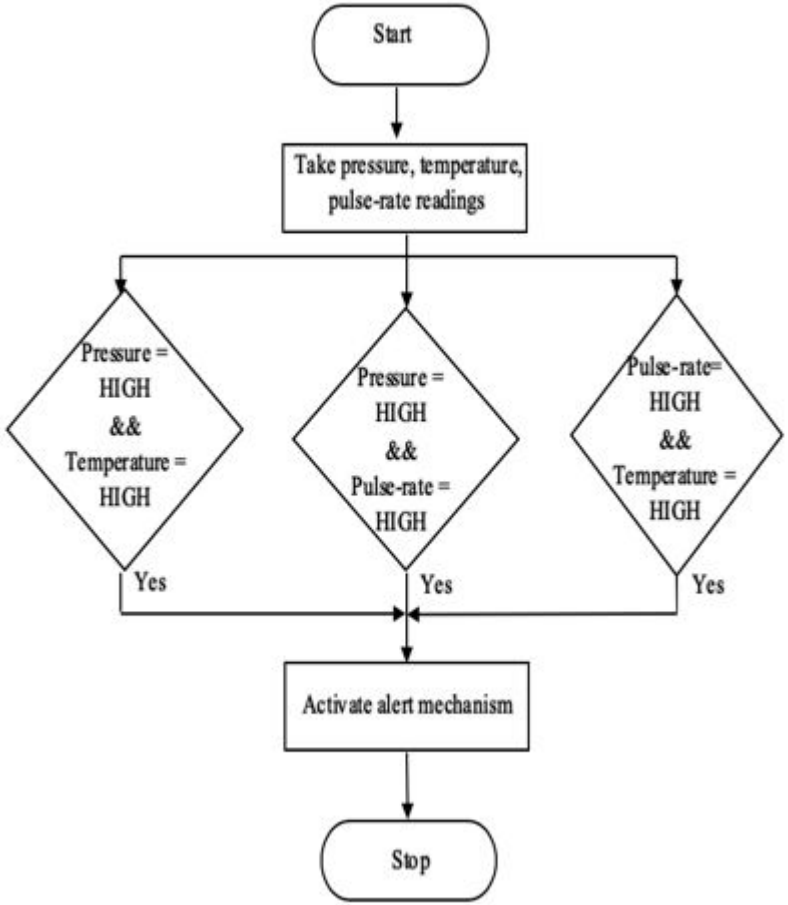


Manual Mechanism Execution:



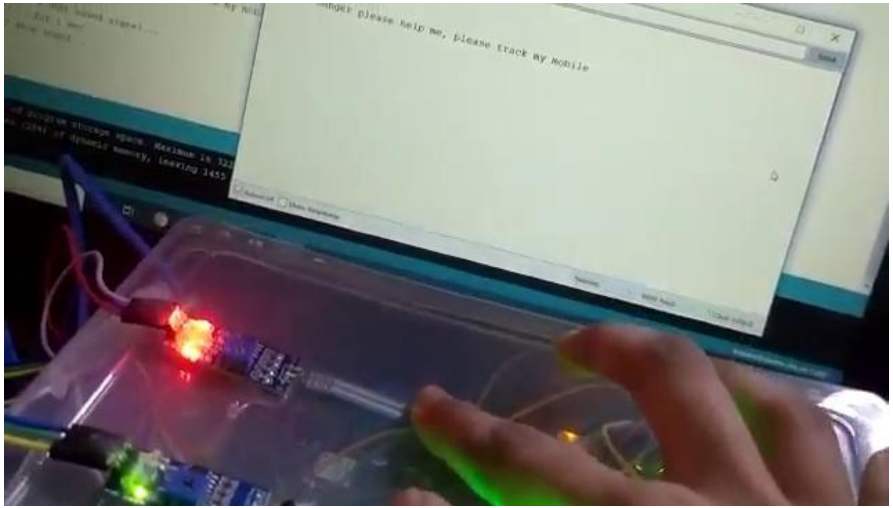
Automated mechanism:

- A pressure, temperature and pulse-rate sensor is used to automate the alert mechanism.
- Automation of manual method helps when there is no chance to press the button.

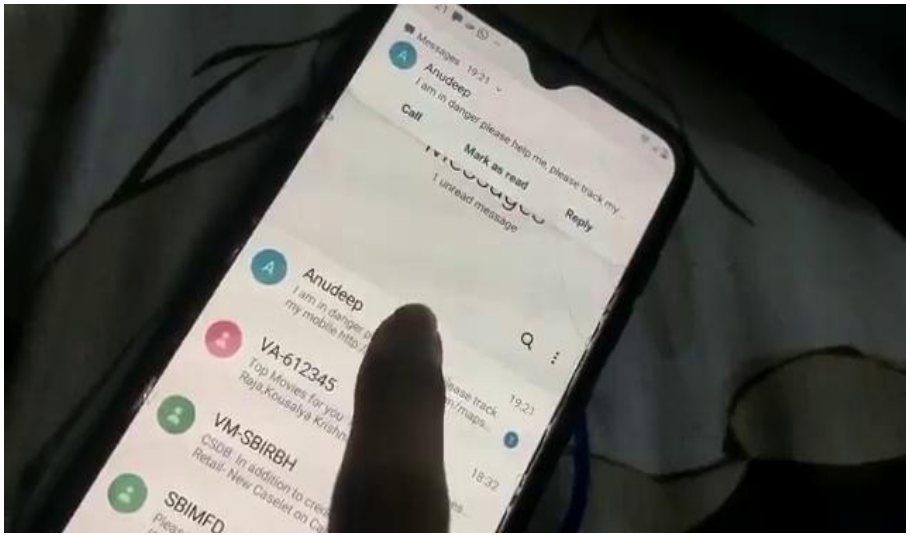


Automated Mechanism Execution:

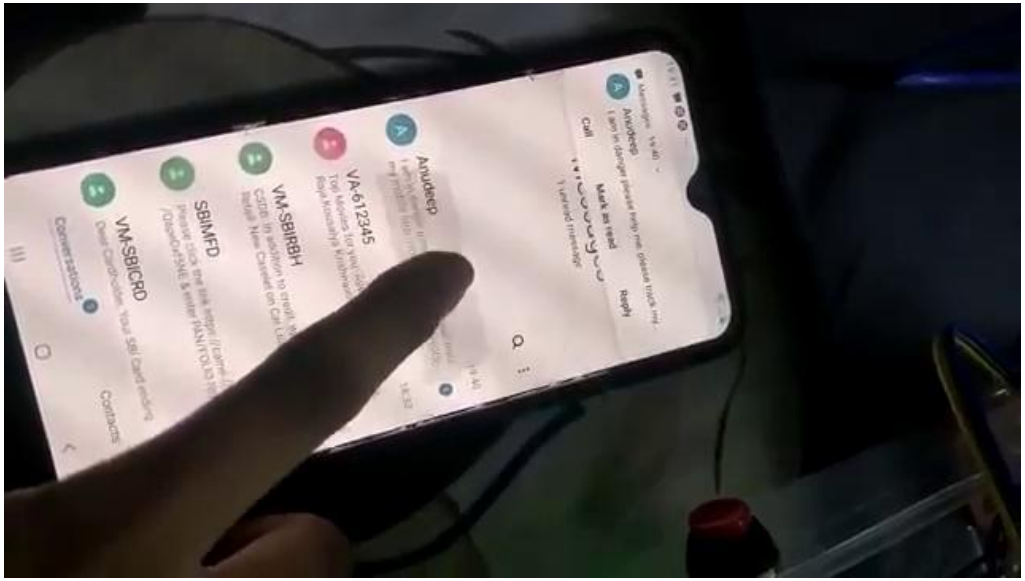
Pressure Sensor:



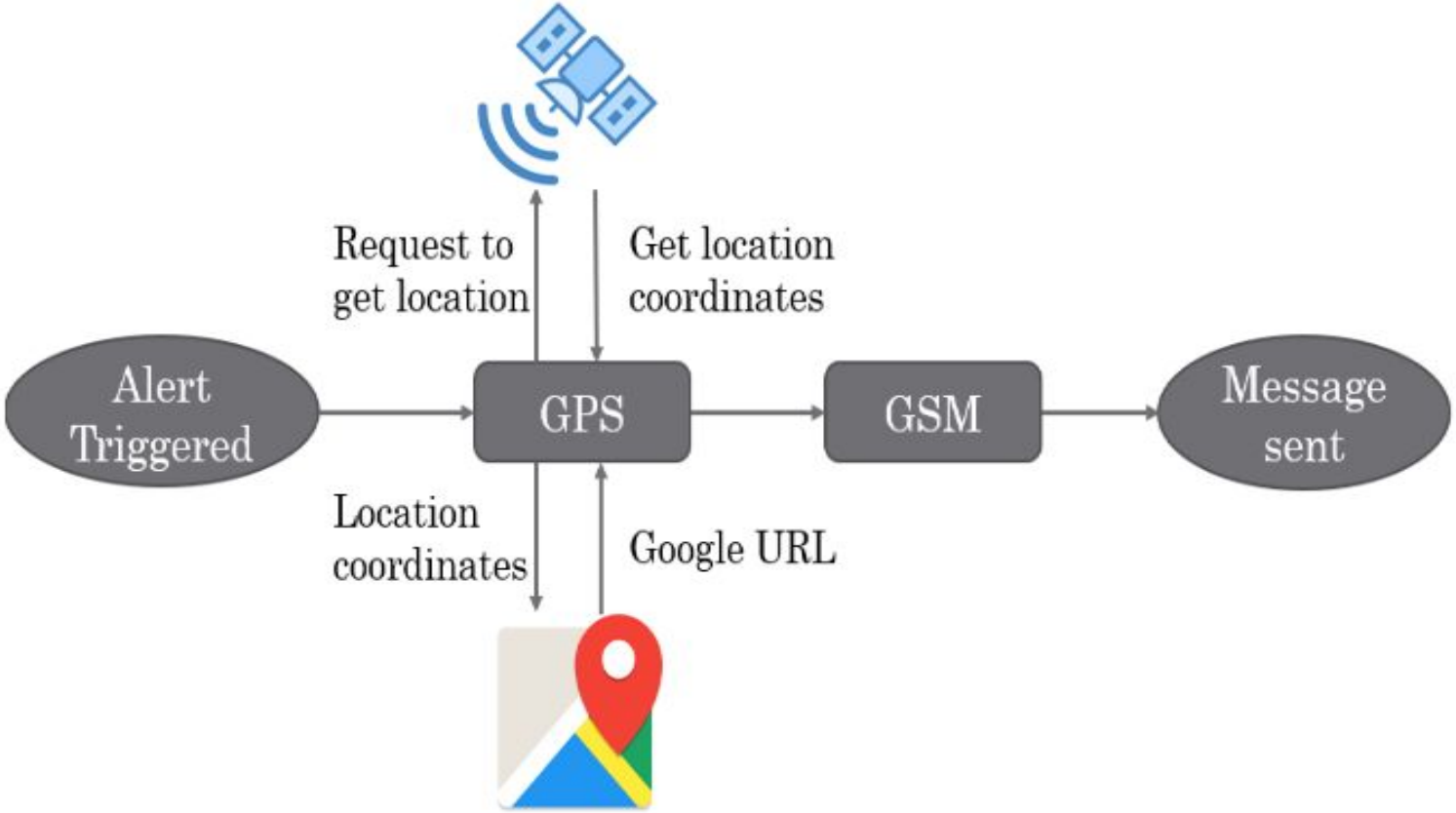
Pulse-Rate Sensor:



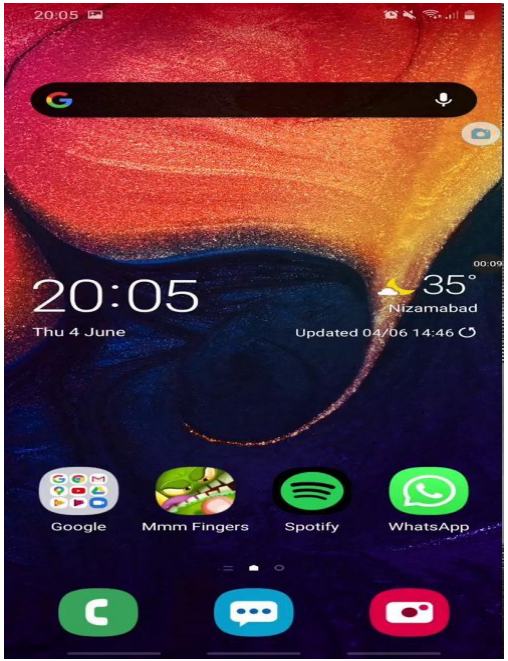
Temperature Sensor:



Alerting Mechanism



Alerting Mechanism Execution:



Implementation

Modules used

1. **SoftwareSerial** :The SoftwareSerial library has been developed to allow serial communication on digital pins of the Arduino.

- Functions used

  begin():Sets the speed (baud rate) for serial communication.

  write():Prints data to the transmit pin of software serial port as raw bytes.

  print():Prints data to the transmit pin of software serial port.

2. **PulseSensorPlayground.h**

- This is an open source library which uses interrupts to calculate BPM(Beats Per Minute).
- #define USE_ARDUINO_INTERRUPTS true
- Functions Used:

    pulseSensor.analogInput(PulsePin)

    pulseSensor.getBeatsPerMinute()

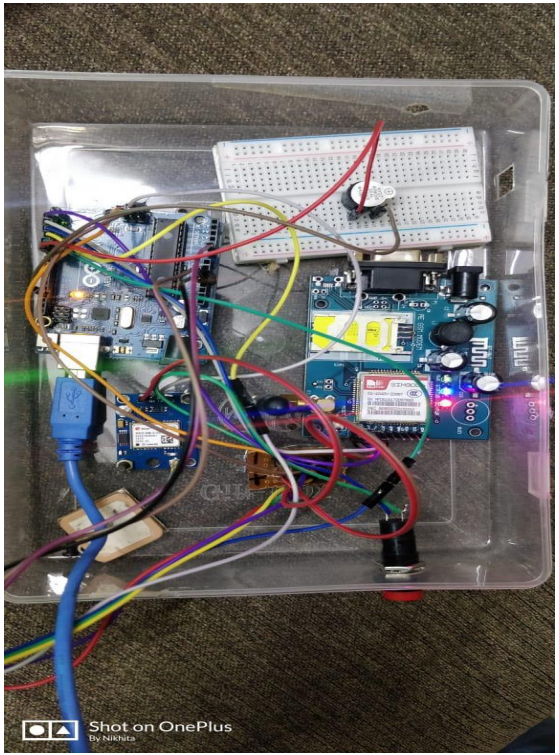
GSM commands

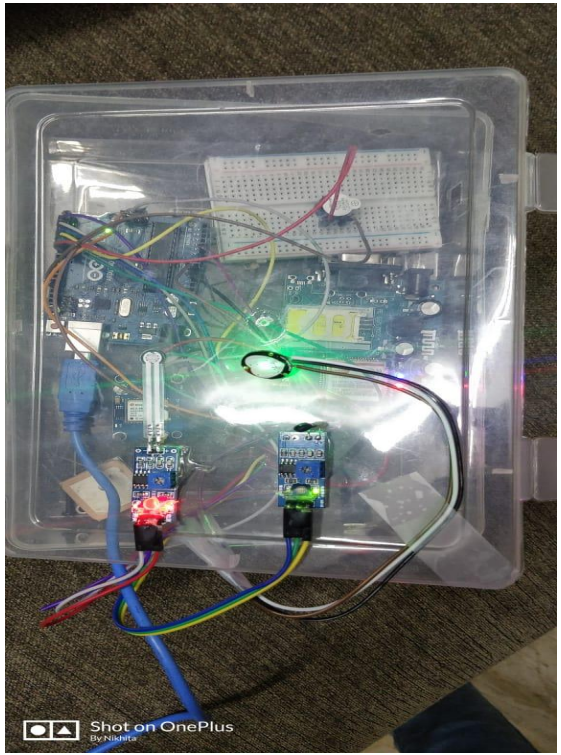
- The AT+CMGF command sets the GSM modem in SMS Text Mode or SMS PDU Mode.

  AT+CMGF=<mode>
- The AT+CMGS command sends an SMS message to a GSM phone.

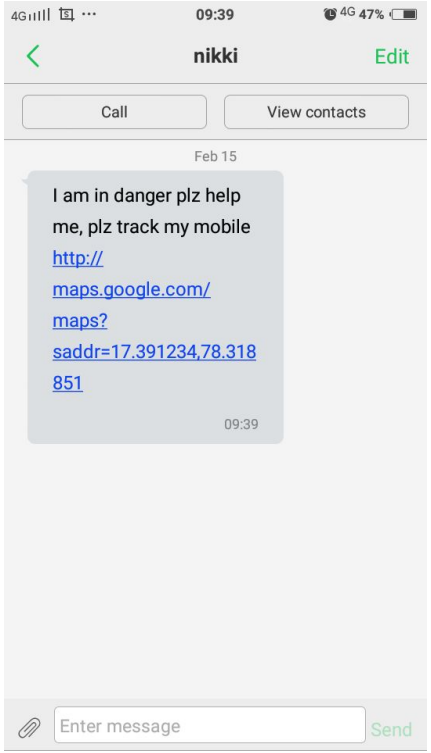
  AT+CMGS=<number><message><CTRL-Z>

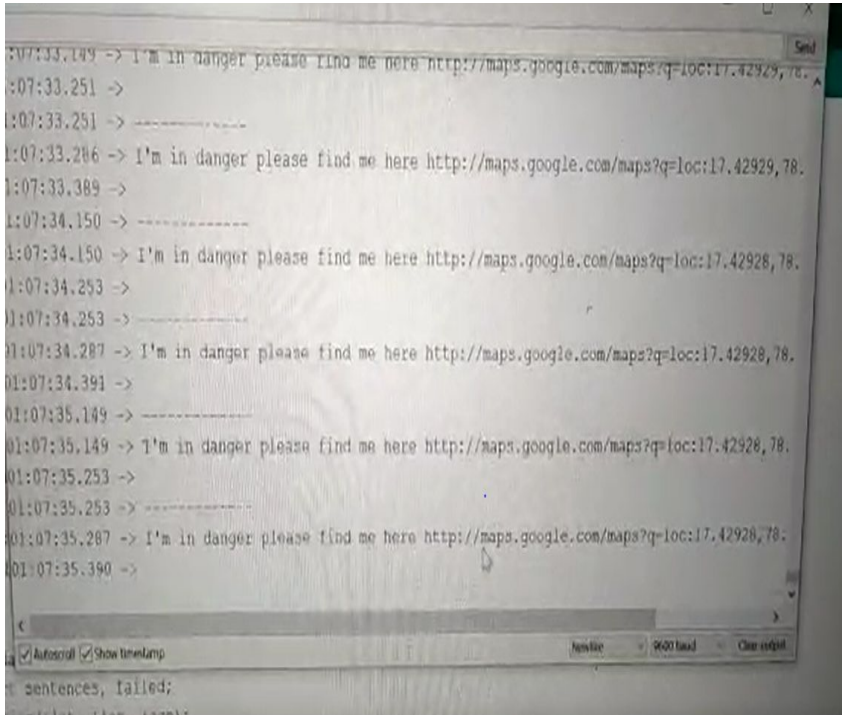
Model





Results


09:39
47%
nikki
Edit
Call
View contacts
Feb 15
I am in danger plz help me, plz track my mobile
http://maps.google.com/maps?saddr=17.391234,78.318851
09:39
Enter message
Send


:07:33.251 ->
:07:33.286 -> I'm in danger please find me here http://maps.google.com/maps?q=loc:17.42929,78.
:07:33.389 ->
:07:34.150 ->
:07:34.150 -> I'm in danger please find me here http://maps.google.com/maps?q=loc:17.42928,78.
:07:34.253 ->
:07:34.253 ->
:07:34.287 -> I'm in danger please find me here http://maps.google.com/maps?q=loc:17.42928,78.
:07:34.391 ->
:07:35.149 ->
:07:35.149 -> I'm in danger please find me here http://maps.google.com/maps?q=loc:17.42928,78.
:07:35.253 ->
:07:35.253 ->
:07:35.287 -> I'm in danger please find me here http://maps.google.com/maps?q=loc:17.42928,78.
:07:35.390 ->
Autoscroll
Show timestamp
sentences, failed;

Innovations

- Automated the process of calling for help.
- Conjunction of sensors for obtaining better accuracy.
- Integrated both manual and automated mechanisms.

Advantages

- Cost Efficient
- Doesn’t need human intervention
- No dependencies
- Can be customized into a wearable

Conclusion

- A smart device which contains pressure,temperature and pulse rate sensors along with GSM and GPS module for women safety.
- Emergency alert message is sent to the dear ones with URL of the location coordinates.

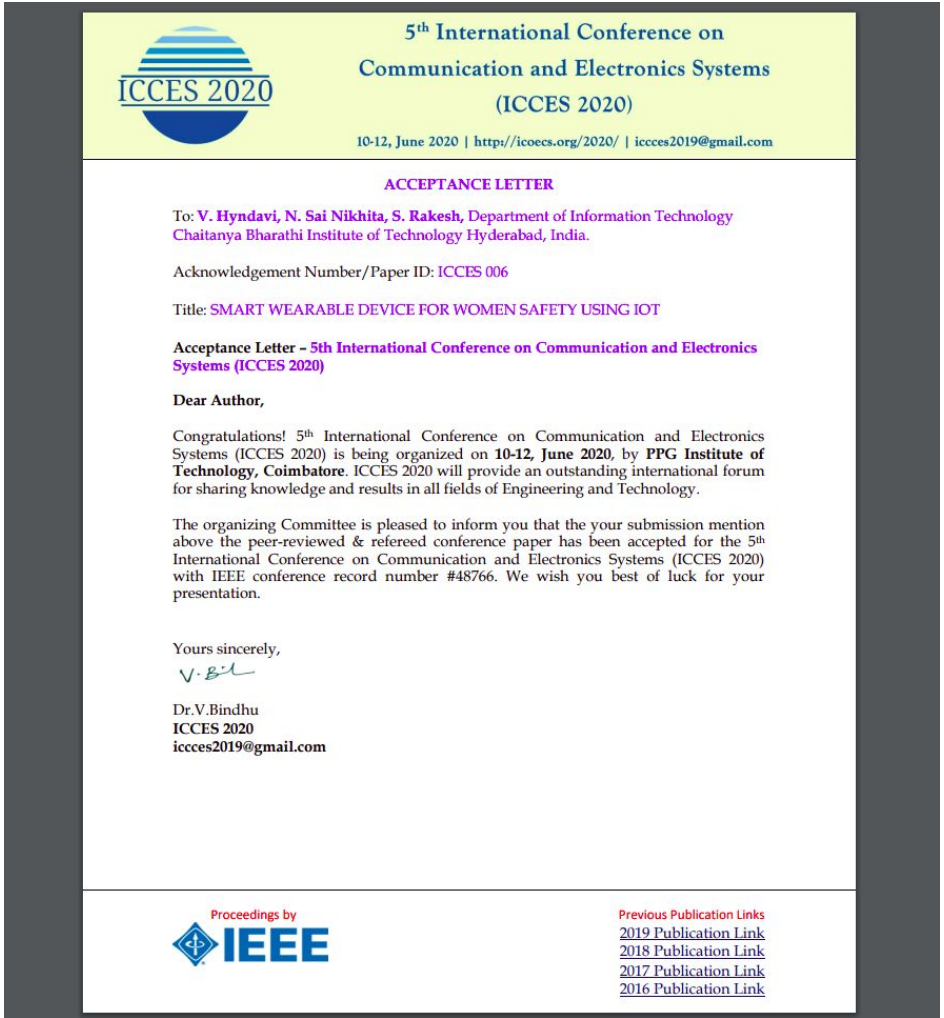
Future Scope

- Customize the prototype to a wearable.
- Increasing the accuracy of the model by using better sensors.

Research paper

- Conference: 5th International Conference on Communication and Electronics Systems(ICCES 2020).
- Indexing: IEEE, SCOPUS
- Conference Dates: 10-11 June ,2020
- Accepted papers will be submitted for inclusion into IEEE Xplore.

Acceptance Letter



5th International Conference on
Communication and Electronics Systems
(ICCES 2020)

10-12, June 2020 | http://icoecs.org/2020/ | iccces2019@gmail.com

ACCEPTANCE LETTER

To: **V. Hyndavi, N. Sai Nikhita, S. Rakesh,** Department of Information Technology
Chaitanya Bharathi Institute of Technology Hyderabad, India.

Acknowledgement Number/Paper ID: ICCES 006

Title: SMART WEARABLE DEVICE FOR WOMEN SAFETY USING IOT

Acceptance Letter – 5th International Conference on Communication and Electronics Systems (ICCES 2020)

Dear Author,

Congratulations! 5th International Conference on Communication and Electronics Systems (ICCES 2020) is being organized on **10-12, June 2020**, by **PPG Institute of Technology, Coimbatore**. ICCES 2020 will provide an outstanding international forum for sharing knowledge and results in all fields of Engineering and Technology.

The organizing Committee is pleased to inform you that the your submission mention above the peer-reviewed & refereed conference paper has been accepted for the 5th International Conference on Communication and Electronics Systems (ICCES 2020) with IEEE conference record number #48766. We wish you best of luck for your presentation.

Yours sincerely,

Dr.V.Bindhu
ICCES 2020
iccces2019@gmail.com

Proceedings by IEEE

Previous Publication Links
2019 Publication Link
2018 Publication Link
2017 Publication Link
2016 Publication Link

First Page of Paper

SMART WEARABLE DEVICE FOR WOMEN SAFETY USING IOT

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***Abstract*— The crimes against women have been rising significantly in the previous decade. Nowadays we often hear about molestation, eve-teasing and rape cases of women even in the public places of the society. The thought of moving freely in society without being worried about security is the major concern nowadays. So, there is a need for a device which informs our friends or relatives in time of need. This paper introduces a smart device to automatically detect any emergency and send SMS with the location of the person to the relatives or helpline number. This device contains sensors like pressure sensor, temperature sensor and pulse-rate sensor to automatically detect if the person is in any danger and then uses a GPS module to access the location of the user instantly and GSM to send messages. The device also has a switch that is attached to any of the accessories so that the person can press it when there is an emergency.**

Keywords*— *Pressure sensor, Temperature sensor, Pulse-rate sensor, GSM, GPS, Internet of Things (IoT), Smart Device, Women Safety.

I. INTRODUCTION

Women are the most integral part of any economy primarily responsible to shape the future of country. Many crimes against them are not being reported because of the society's hypocritic point of view. Various types of humiliations and mistreatment is being faced by the victims who try to report their assaults from society. Only one of four cases lead to conviction trails in India.

Proper precautions should be taken to in order to build a best solution to this problem. So his paper proposes an IOT based smart wearable for safety of women. The device is used to automatically detect such situations and inform the related persons. It not only helps women escape the critical situations but also ensures to provide justice to the women by helping them in times of need.

II. RELATED WORK

The research of S. A. More [1] discusses about using temperature sensors and pulse rate sensors to automatically detect a chance of a possible situation and notify family and friends using a mobile application. [2] discusses the usage of image processing to detect any possibility of danger and proposes various solutions to protect herself. In [3] the authors developed a device which employed PIC16F876A microcontroller and a SIM808 module, which has GPS, GSM and GPRS support which are used to notify the friends safe device. In this system, the message is sent to pre stored mobile numbers which consists of body posture of the victim along with her location. In [6] independent triggering of android application and arm device takes place with the help of synchronized Bluetooth connection. The audio and video that have been recorded are sent to the phone numbers which are pre-set in the application along with the location in the form of a call and also a message to alert them. In [7], an android app is developed which gives the location of the woman in danger by giving fake phone calls, video forwarding, location and first-aid information. In [8], body vibrations, heart rate and body temperature are sensed using sensors by the help of a reliable security device which consists of ATMEGA8 controller with Arduino tool and advanced sensors. In [9], three sensors namely heartbeat ,temperature and accelerometer are used. These sensors are used to detect if there are any anomalies and a message to alert the dear ones is sent using GPS and GSM module.

III. EXISTING SYSTEM

In the existing system, there is no way to monitor the crimes occurring against women. However, there are some places where CCTV cameras are fitted, and the recording is stored. They are used only to act after everything has happened.

The only way for them to ask for help is to use their mobile phone to send a message to their friends and family. In that crucial moment, for most of the women it is difficult to get a hold of their mobile phone. Even if they do, it is difficult to send a message quickly before anything brutal happens. It is also very unreliable.

The disadvantages of existing systems are as follows:

- Not very reliable
- Need manual effort
- Expensive

IV. PROPOSED SYSTEM

The security of women is the most important concern these days. So, the necessity to build a system which provides security by responding faster. Our proposed system is a wearable for women which contains pressure, temperature and pulse-rate sensors along with GSM and

Bibliography

[1] Naeemul Islam , Md. Anisuzzaman , Sikder Sunbeam Islam , Mohammed Rabiul Hossain , Abu Jafar Mohammad Obaidullah “Design and Implementation of Women Auspice System by Utilizing GPS and GSM”. 2019 International Conference on Electrical, Computer and Communication Engineering (ECCE), 7-9 February, 2019

[2] Mohamad Zikriya, Parmeshwar M G, Shanmukayya R Math, Shraddha Tankasali, Dr. Jayashree D Mallapur “Smart Gadget for Women Safety using IoT (Internet of Things)” International Journal of Engineering Research & Technology (IJERT), ISSN: 2278-0181, NCESC - 2018 Conference Proceedings

[3] S. A. More, R. D. Borate, S. T. Dardige, S. S. Salekar, Prof. D. S. Gogawale “Smart Band for Women Security Based on Internet of Things (IOT)” International Journal of Advance Research in Science and Engineering, Volume No 6,Issue No. 11, November 2017