

MINI-PROJECT TITLE

WOMEN'S SAFETY WRIST WATCH

T. E. Information Technology

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DECLARATION

We declare that this written submission represents our ideas in our own words and where others' ideas or words have been included, we have adequately cited and referenced the original sources.

We also declare that we have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in this submission.

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Date:

CERTIFICATE

This Internet of Things Lab Mini-project Women's Safety Wrist Watch by Shruti Gupta ,Yash Gupta and Sonal Holankar is completed in all respects and was successfully demonstrated on 15 December 2020.

Name : -----

Signature :-----

(Internal examiner)

Name : -----

Signature :-----

(External examiner)

Name : -----

Signature :-----

(Head of the Department)

Date:

Place:

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Chapter 1

Introduction

The Internet of Things can connect devices embedded in various systems to the internet. When devices/objects can represent themselves digitally, they can be controlled from anywhere. The connectivity then helps us capture more data from more places, ensuring more ways of increasing efficiency and improving safety and IoT security. The IOT can be defined as :”A dynamic Global Network Infrastructure with self configuring capabilities based on standard and interoperable communication to protocol where physical and virtual things have identities, physical attributes ,and virtual personalities and use intelligent interfaces and are seamlessly integrated into the information network ,often communicate data associated with user and their environment.

IoT is a transformational force that can help companies improve performance through IoT analytics and IoT Security to deliver better results. Businesses in the utilities, oil & gas, insurance, manufacturing, transportation, infrastructure and retail sectors can reap the benefits of IoT by making more informed decisions, aided by the torrent of interactional and transactional data at their disposal.

Nowadays, personal safety has become a significant problem for everyone, especially women. We come across many headlines reporting cases of sexual assault, molestation, etc. The count of victim is gradual increasing. Recent survey made by WHO indicates 35% of women, globally are facing some form of abuse & physical violence. We are probably living in the worst time our modern society has ever seen in terms of women security. We aim to make women feel as strong as ever and strong enough to fight the parasites of our society, strong enough to fight the odds, strong enough to protect themselves against any sexual assaults.

We aim at giving power to those without whom we cease to exist. Our idea is to design a system which shall make every place and every hour safer for women again. The device (smart wrist watch) can be easily carried and could be taken whenever someone senses danger. A system which shall re-establish how very gregarious mankind is. This system shall geotag and send SOS alerts to the nearest police station, close contacts and also alert people in and around the venue of the crime, everything just at a click of a button. The idea is to make up for the time it takes police to arrive at the location.

Chapter 2

Literature Review

[1]Helen,Fatima Fathila,Rijwana,Kalaiselvi.V.K.G,“A Smart Watch For Women Security Based On IOT Concept Watch Me”

They used a heartbeat and temperature sensor.Gps and Gsm module connected via bluetooth to the smart phones and ring the alert messages to the police station,friend and family.The advantage of this system is useful to women.small device easy to carry.They mentioned future scope as the this system can be modified by using addition of sensors and modules.

[2]Jismi Thomas,Maneesha K J , Nambissan Shruti Vijayan,Prof.Divya R,“TOUCH ME NOT- A WOMEN SAFETY DEVICE”

They used the button that can attach to cloth or bag.when pressed button starts capturing the pictures and sends an alert to the family. They used GSM,GPS,arduino,camera 0v7670 and alarm module.The main advantage of this system is easy to wear clothes or bags as they used sophisticated components.and their future scope of this project is not mentioned.

[3]M. Kavitha,V. Siva Chidambaranathan ,”Women Self Protecting System Using Internet of Things”

They used flex sensor,heartbeat sensor,reed switch and temperature sensor.They get data from sensor and compared with pre data and send alert messages to pre registered locations.The advantage of this project is they used different sensors like flex and force sensor.So that there is no human intervention.And the future scope of this project is they can be made with wireless devices with additional research and few sensors added to the device.

[4]Muskan,Teena Khandelwal, Manisha Khandelwal, Purnendu Shekhar Pandey “Women Safety Device Designed using IoT and Machine Learning”

This Proposed system contains various sensors to get data and send it to arduino.They also use ML algorithms and Through cloud send data to GSM and GPS modules and they will send alert messages to nearby locations. The main advantage of this project is that the device achieves women's safety in an emergency even if there's no internet.They mentioned the future scope of the project as they can use a zigbee and mesh network which helps to send vital information.

[5]V. Hyndavi,N.Sai.Nikitha,S.Rakesh,”Smart Wearable Device For Women Safety Using IOT”

The proposed system used pressure,temperature,and pulse rate sensors to getdata .They also used buttons to activate the device whenever a woman felt an emergency and a buzzer was added to alert people around her.The advantage of this project is that the proposed system is cost efficient,adaptable and easy to carry.They mentioned future scope as the proposed system can be developed with further capabilities with audio and video devices.

Reference	Methodology	Advantages	Future Scope
[1]	They used a heartbeat and temperature sensor.Gps and Gsm module connected via bluetooth to the smart phones and ring the alert messages to the police station,friend and family.	It is useful to women. small device easy to carry.	This system can be modified by using addition of sensors and modules.
[2]	They used the button that can attach to cloth or bag.when pressed button starts capturing the pictures and sends an alert to the family. They used GSM,GPS,arduino,camera 0v7670 and alarm module,	It is easy to wear clothes or bags. They used sophisticated components.	Not Mentioned.
[3]	They used flex sensor,heartbeat sensor,reed switch and temperature sensor.They get data from sensor and compare with pre data and send alert messages to pre registered locations.	They used different sensors like flex and force sensor.So that there is no human intervention.	They can be made with wireless devices with additional research and few sensors added to the device.
[4]	This Proposed system contains various sensors to get data and send it to arduino.They also use ML algorithms and Through cloud send data to GSM and	The device achieves women's safety in an emergency even if there's	They can use a zigbee and mesh network which helps to send vital information.

	GPS modules and they will send alert messages to nearby locations.	no internet.	
[5]	The proposed system used pressure,temperature,and pulse rate sensors to getdata .They also used buttons to activate the device whenever a woman felt an emergency and a buzzer was added to alert people around her.	The proposed system is cost efficient,adaptable and easy to carry.	The proposed system can be developed with further capabilities with audio and video devices.

Chapter 3

Problem Statement

To develop an IOT based system that can be useful for Women's security purposes. It consists of a GPS module for tracking location, arduino, SIM900 modem (at receiver side) which is to be placed in the victim's bag. A wearable safety device (watch-which acts as a transmitter) having a SOS button which when activated sends an alert call and SMS with location to the victim's family and nearby police station also the buzzer is activated to alert the surroundings of the victim.

Chapter 4

System Design and Requirements

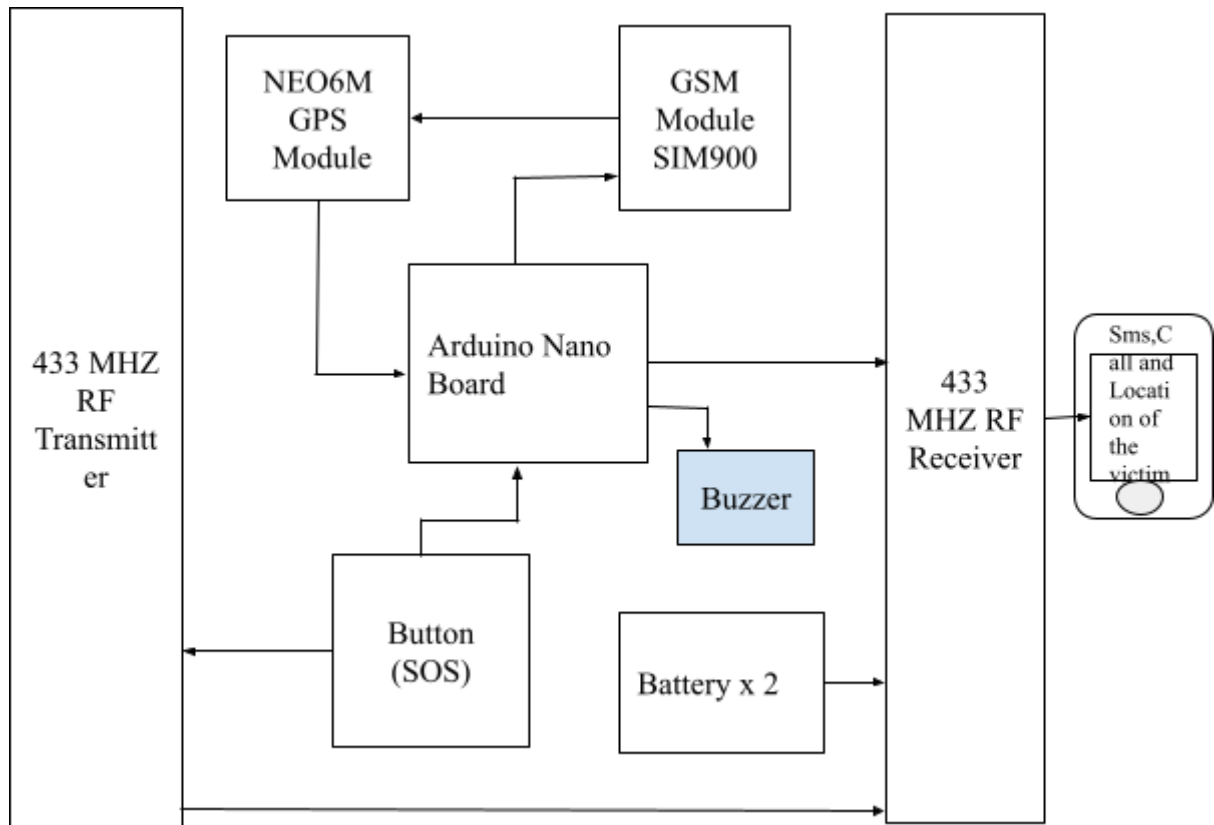
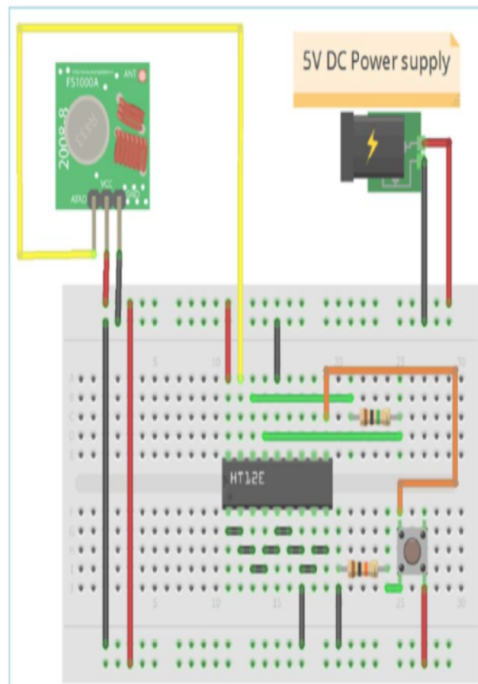
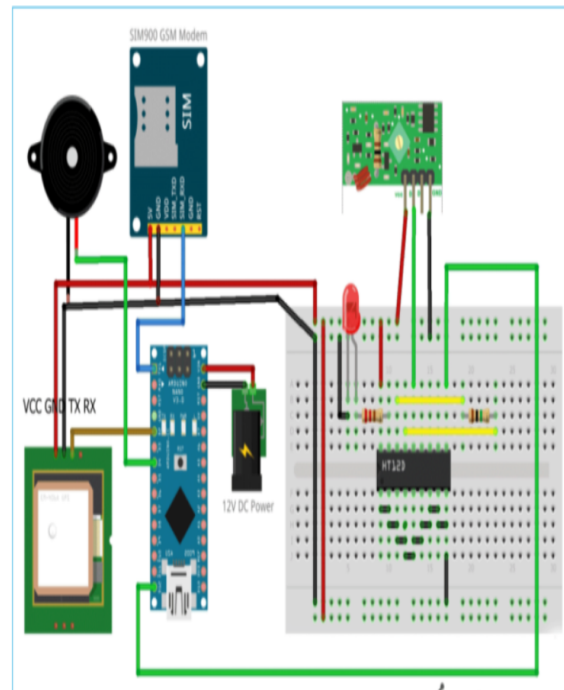


Fig.No. 1 System Design.



Transmitter



Receiver

Fig.No. 2 Circuit Diagram.

System Requirements

Hardware Requirements			
Sr	Component	Number	Cost(Rs.)
1	SIM900 Modem	1	1 x 1300 = 1300
2	Arduino Nano Board	1	1 x 370 = 370
3	NEO6M GPS Module	1	1 x 800 = 800
4	433 MHZ RF Transmitter & Receiver	1	1 x 190 = 190
5	Button	1	1 x 10 = 10

6	Battery	2	$2 \times 60 = 120$
7	BreadBoard	1	$1 \times 250 = 250$
8	Jumpers	1	70
Software Requirements			
	Software	--	Cost
1	OS: Windows 10	--	--
2	Arduino IDE	--	Free
	Total		3,110

Chapter 5

Results



Fig.No.3 Power supply is given to the circuit.

DESCRIPTION : We connected all the components and wires to the arduino board and gave the power supply to the circuit.



Fig.No.4 Then we press the SOS Button at the transmitter side.

DESCRIPTION : After giving the power supply to the circuit, we pressed the SOS button at the transmitter side and then all components started working.

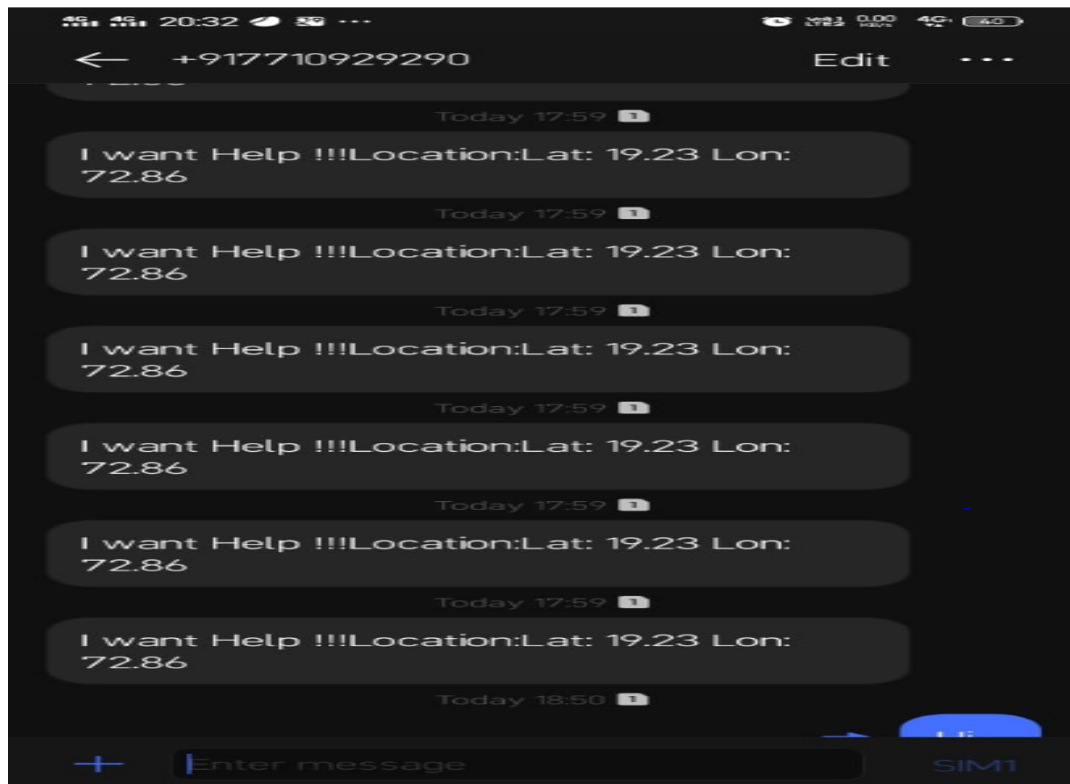


Fig.No.5 In response a message is sent to the victim's family members and the nearby police station.

DESCRIPTION : This diagram shows that the text message is sent to the victim's family members and the nearby police station which shows that the system is working and it provides safety.

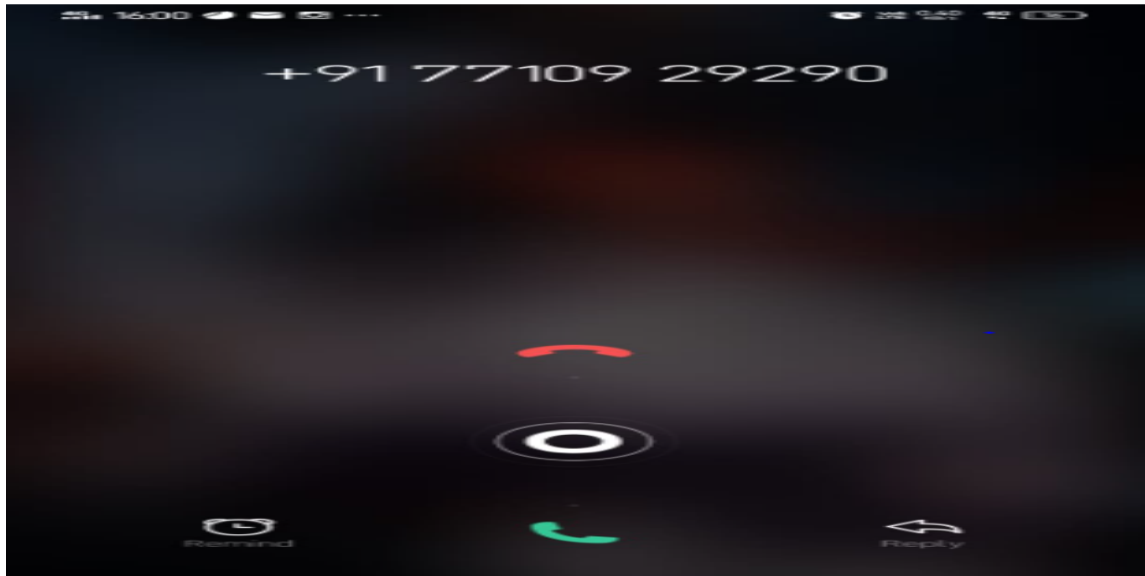


Fig.No.6 Also In response a call is sent to the victim's family members and the nearby police station.

DESCRIPTION : This diagram shows that the call also is sent to the victim's family members and the nearby police station which shows that the system is working and it provides safety.



Fig.No.7 Represents the final circuit.

DESCRIPTION : This diagram shows our final project circuit with all components and wires.

Chapter 6

Conclusions and Future Scope

Our effort behind this project is to design and fabricate a gadget which is so compact in itself that provides an advantage of the personal security system, the emergency response system which is helpful for women in the incidents of crime. It is a low cost system which can store the data of the members in the particular locality and provide immediate alert in case of crime against women. This provides women security.

Being safe and secure is the demand of the day. The proposed system is to ensure the security of the women in the society by providing automatic sensing of threats and sending alert messages to the relatives and the police station using Internet Of Things. We can also interface this system with Smart Phone or Mobile and laptop. We can use this safety device in hand bags, luggage, vehicles etc. By using Nano size materials, the kit size gets reduced. Using a wireless GPS module and wireless panic button the carrying of the kit can be avoided.

References

[1]Helen,Fatima Fathila,Rijwana,Kalaiselvi.V.K.G,“A Smart Watch For Women Security Based On IOT Concept Watch Me”,Second International Conference On Computing and Communication Technologies(ICCT),2017.

[2]Jismi Thomas,Maneesha K J , Nambissan Shruti Vijayan,Prof.Divya R,”TOUCH ME NOT- A WOMEN SAFETY DEVICE”,International Research Journal Of Engineering and Technology(IRJET), Feb 2020.

[3]M. Kavitha,V. Siva Chidambaranathan ,”Women Self Protecting System Using Internet of Things”,Department of Electrical and Electronics Engineering Sathyabama Institute of Science and Technology Chennai, India, 2018.

[4]Muskan,Teena Khandelwal, Manisha Khandelwal, Purnendu Shekhar Pandey “Women Safety Device Designed using IoT and Machine Learning”,Computer Science and Engineering, BML Munjal University, Haryana, India,3 Sepetember 2018.

[5]V. Hyndavi,N.Sai.Nikitha,S.Rakesh,”Smart Wearable Device For Women Safety Using IOT”,International Conference on Communication and Electronics Systems (ICCES),11 July 2020.

a) Arduino Nano Board , Available : www.arduino.cc/ArduinoBoardNano.

b) SIM900 Modem , Available :
<https://lastminuteengineers.com/sim900-gsm-shield-arduino-tutorial/>

c) NEO6M GPS, Available :
<https://lastminuteengineers.com/neo6m-gps-arduino-tutorial/>

d) 433 MHZ RF Transmitter & Receiver, Available :
<https://lastminuteengineers.com/433mhz-rf-wireless-arduino-tutorial/>

e) Arduino IDE Software, Available : <https://www.arduino.cc/en/software>

Annexure I

Arduino / Raspberry Pi Code

Safety Watch Code :

//use a softwareserial for GSM The Rx of GSM will be connected to pin 10 and Tx will be connected to pin 9
//sendsms2() has been written such that it uses software serial for GSM communication

```
#include <LiquidCrystal.h>
#include <TinyGPS++.h>
#include <SoftwareSerial.h>
static const int RXPin = 3, TXPin = 2;
static const uint32_t gps_baudrate = 9600;
TinyGPSPlus gps;
SoftwareSerial soft(RXPin, TXPin);
//use a softwareserial for GSM
SoftwareSerial mySerial(9, 10);
String textMessage;
float Lat, Lon;
void setup()
{
  pinMode(12,INPUT);
  pinMode(4, OUTPUT);
  soft.begin(gps_baudrate);
  //Serial.begin(19200);
  mySerial.begin(19200);
  Serial.begin(9600);
}
void loop()
{
  int key = digitalRead(12);
  while (soft.available() > 0)
  {
    gps.encode(soft.read());
    if (gps.location.isUpdated())
    {
      Lat = gps.location.lat();
```

```

    Lon = gps.location.lng();
  }
  else;
}
if(key==1)
{
  digitalWrite(4,HIGH);
  sendsms2();
  digitalWrite(4,LOW);
}
{
  Serial.println("Calling through GSM Modem");
// set the data rate for the SoftwareSerial port
mySerial.begin(9600);
delay(2000);
mySerial.println("ATDxxxxxxxxxx;"); // ATDxxxxxxxxxx; -- watch out for
semicolons at the end!!
Serial.println("Called ATDxxxxxxxxxx");
// print response over serial port
if (mySerial.available())
Serial.write(mySerial.read());
}
}
// set the data rate for the SoftwareSerial port
void sendsms()
{
  Serial.print("AT+CMGF=1\r");
  delay(100);
  Serial.println("AT+CMGS =\"+918169489176 \r");
  delay(100);
  Serial.println("I want Help !!!Location:" + String("Lat: ") +String(Lat) + "
"+String("Lon: ") + String(Lon));
  delay(100);
  Serial.println((char)26);
  delay(100);
  Serial.println();
  delay(5000);
}
void sendsms2()
{
  mySerial.println("AT+CMGF=1\r"); //Sets the GSM Module in Text Mode
  delay(1000); // Delay of 1 second

```

```
    mySerial.println("AT+CMGS=\"+918169489176\""); // Replace x with
mobile number
    delay(1000);
    mySerial.println("I AM IN DANGER,HELP!! "); // The SMS text you want
to send
    delay(500);
    mySerial.println(Lat,3); // The SMS text you want to send the number
denotes the decimal point till which want the floating point number
    delay(500);
    mySerial.println(Lon,3); // The SMS text you want to send
    delay(500);
    mySerial.println((char)26); // ASCII code of CTRL+Z for saying the end of
sms to the module
    delay(1000);

}
```