

## Women's safety using IOT

Sonal Juvale<sup>1</sup>, Prof. Pragati Mestry<sup>2</sup>

VIVA SCHOOL OF MCA, VIVA Institute of Technology, Mumbai

**Abstract** - The idea behind women's safety is widely used for women's security and safety with various IOT features such as GPS, GSM, Various types of sensors, Bluetooth etc. The different sensor is used to detect heartbeat, temperature and sudden changes in the movement of the women. The GPS is helping to detect the location of the device and GSM used to send the alert message to relatives and police station. There are using various IOT based technology for the women safety and security such as smart band and smart locket. Smart locket is used for the capturing the criminal photo and used for the proof. The smart band used for the detecting the motion and sending the alert message to the guardian and police station.

**Keywords**—Bluetooth, GPS, GSM, safety, security, sensors.

### I. INTRODUCTION

The problem behind the existing system is an issue related to women's safety and security. The women harassment and killing cases are increases day by day in the world. We can't change society but we can increase the security and safety of women by using modern IOT based technology. This paper focuses on security related to the women so that they never feel helpless while facing such social issues. The proposed model contains various sensor to detect the motion of the women. By using IOT based technology relatives and police can monitor and track different sensor and position of a device. There is different technology for the purpose of women security and safety. First IOT based technology is wearable smart band connected via Bluetooth, GPS and WIFI which track the information and communicate with the smartphone through the internet. Second IOT based technology is smart locket in which user click on the button are residing on the pendant when an emergency situation occurs.

Crime against women:

#### 1.1 Domestic violence:

It is not physical violence, it is the behavior of which is to gain power and control over a woman. Kick, biting, bass beat, throwing objects shove preventing are an example of domestic violence.

#### 1.2 Criminal Violence:

Criminal violence is a crime in which offender to force upon a victim. Intimidation, Sexual Abuse, Control, Rape, Seizure, Kidnapping and Slay, Acid Attack is criminal violence.

To overcome these type of women security issues and ensures their safety some techno-savvy mechanisms are needed in society. This paper illustrates how IoT based technology is used to provide women with safety.

### II. METHODOLOGY AND MODULES

In smart band we can including the number of sensors detecting the person heartbeat via health monitoring, motion and temperature sensor, with the help of mobile computing we are using GPS, GSM integrated with smart band is connected Bluetooth and Wi-Fi to connected to the smartphones through internet to give alert notification to police station and guardians to protect our self. [3]

## 2.1 GPS/GSM module:

This system that uses a GSM module and the GPS module is used to track and trace the information through the internet by TCP/IP connection and the sending alert message on the owner mobile. All the tracking details are stored in the external database. The GSM module receives SMS for location and the micro controller checks the location and match those location inside the database with the data received from the GPS. The matched location detail is sent to the user as an SMS using GSM module thus completing the request.

GPS is used to track the position of the user when the signal from the user is collected via GSM and cop track the signal received and find the location to arrive.

## 2.2 Pulse rate sensor

Pulse rate sensor is used in the appliance to detect the pulse of the user. when the targeted pulse rate is achieved in an emergency situation then those sensors provide the security to the user via the smart band. The pulse rate sensor senses the heart rate differs for each and every feeling Pulse rate sensor calculate value per 10 seconds and those calculated data send to the microcontroller for comparing with the data are maintained in the database. Pulse rate sensor works in four frequencies range from 1.2GHz to 1.6GHz.



Fig 1: Plus rate sensor

## 2.3 Motion sensor:

The motion sensor is used in the appliance to sense the movement of the user. To detect the movement of the user we are using the ultrasonic sensor. The ultra-sonic sensor gives the information about person present near the women. The ultrasonic sensor senses the threshold of 2 meters. If anyone comes near the girl or women under 2 meters range then Arduino will perform the operation. Motion sensor forms an important component of security.

## 2.4 Bluetooth Module:

Bluetooth module is used to connect smart band with a mobile phone. Bluetooth required less power consumption so it will be sensing the low range of a signal. Data transmission rate operate in frequency range 2.4GHz (ISM band) and transfer data in the 10m range on the user mobile app.

## 2.5 Temperature sensor:

Temperature sensor plays a vital role in the smart band to check the human health condition which will digitally display the body temperature of the user.

### III. PROPOSED SYSTEM OF SMART BAND

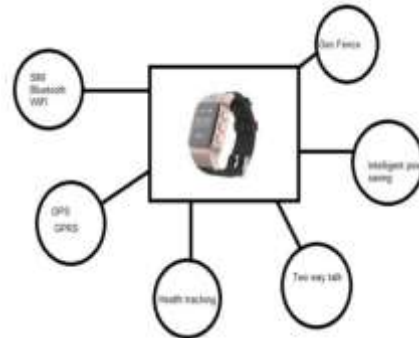


Fig 2: Proposed system model

#### 3.1 Geo-fencing technique:

Geo fencing is a location-based service in which mobile app uses WIFI, RFID, and GPS to perform the reprogrammed action when a user enters and exit the specified location. This technique helps the user to send an alert message to relatives, guardians and nearest police station when a user enters or leave the specified location.

#### 3.2 Intelligent power saving:

Intelligent power saving system is used to reduce the charging of the smart band. This technology saves the charging of the smart band. This technique uses power when it will be needed.

#### 3.3 Health tracking:

In the smart band technology, we use various sensor to detect the health of the user. The first sensor is used in the smart band is a temperature sensor which plays a vital role in the smart band to check the human health condition which will digitally display the body temperature of the user. The second sensor are used in the smart band are pulse rate sensor is used in the appliance to detect a pulse of the user. when the targeted pulse rate is achieved in an emergency situation then those sensors provide the security to the user via the smart band. The pulse rate sensor senses the heart rate differs for each and every feeling Pulse rate sensor calculate value per 10 seconds and those calculated data send to a micro controller for comparing with the data are maintained in the database.

#### 3.4 SIM Card:

The smart band technology uses various techno-savvy features to provide powerful security to the women. The SIM card is inserted in the smart band to store the contact details, using this SIM card user send and receive the call to and from the family members, relatives, and guardians. Those contact details are used in the emergency situation to contact relatives, guardians and so on. There is a panic button in the smart band. When the user clicks on the panic button then sends the alert message to the contact numbers are stored in the SIM card.

#### 3.5 GPS:

GPS technology is used in the smart band to track the location of the user. There is a panic button in the smart button. When the user clicks on the panic button then WIFI and GPS track the nearest location of police station then alert message going to the nearest police station. When getting the alert message to the police than police track the location of the women through GPS.

#### IV. WORKING MODEL OF SMART BAND



**Fig 3: Working of smart band**

Proposed Model of women safety and security are a smart wearable band. The smart wearable band is introducing for the women safety and security purpose. There are various sensors to sense the movement and temperature of the user and use various techno-savvy features such as Bluetooth, GPS, WIFI. In this technology first giving power supply to the device. When any emergency and abnormal condition have happened then user are click on the panic button then sensors on the device will start taking readings. The output of the input data taking from the sensors is continuously sent to the micro controller. After receiving the data from the sensor, the micro controller will compare this reading with the threshold values given to it. This threshold values can different from person to person. After comparing this threshold values, Micro controller will send "Help" message to the police station, family members and relatives. Through GPS and WIFI track the position of the nearest police station in the area. After finding the nearest police station position then those "HELP" message is sent to the police station, after receiving the message to the police station then police track the position of the women through GPS and WIFI. Using IoT technology we can continuously monitor changes in sensors values and various features. At the receiver side device like a laptop, mobile phone, raspberry pi etc. can be used to see the exact position of the user and this device are connected mobile app operates on a mobile phone, laptop and so on over the internet. [1][4]

#### V. PROPOSED SYSTEM OF SMART LOCKET



**Fig 4: Proposed model of a smart locket**

##### 5.1 Bluetooth:

The pendant is connected by Bluetooth to the user's smartphone. Using Bluetooth user has to be pre-identified the numbers of the guardians in her smartphone through the safer app.

##### 5.2 Battery:

The pendant is connected to the safer mobile App. This pendant charge with any micro USB and it can only take 15 minutes to charge the device. The battery life of the device will be 7 days,

##### 5.3 Camera:

The camera is residing in the pendant to capture the picture when the user double-clicks the button.

**5.4 Button:**

The button is residing on back of the pendant. Those buttons are used in an emergency situation.

**VI. WORKING MODEL OF SMART LOCKET**

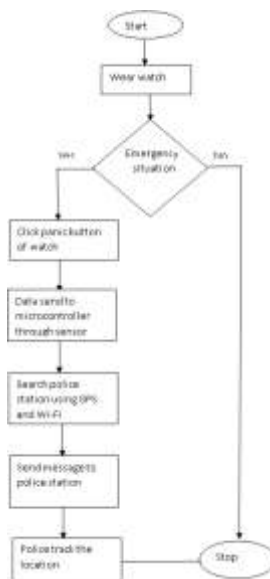


**Fig 5: Working of a smart locket**

The smart locate are introduced for the purpose of women safety and security. When the user buys the pendant, the user needs to download the app and sync the app with the jewellery, then after syncing the app then add guardians or people would like to reach out in the emergency or abnormal situation. When the user in an emergency situation then the user needs to double click on the button are residing the back of the pendant. This device works on the push button technology. When a user clicks on the button then chip embedded in the pendant will get activated. This chip will send an automated alert to the registered numbers of the user guardians, friends, and nearest police station. The recipient able to track the position of the user through GPS. In case there is no app or no internet connection, the alert is sent via SMS. Using this App, Share Live Location with Friends When user will be feeling unsafe while traveling, they will be able to see you moving on the map. [1][5][6]

**VII. FLOWCHART OF WOMEN SAFETY**

**7.1 Flowchart for the smart band**



Description of the flow chart

Step 1: start

Step 2: Women wear the watch

Step 3: Then check the condition, if any emergency situation occurs when she is pressing the watch button.

Step 4: After pressing the button, data send to the microcontroller through the sensor

Step 5: Then using the GPS and Wi-Fi search the police station

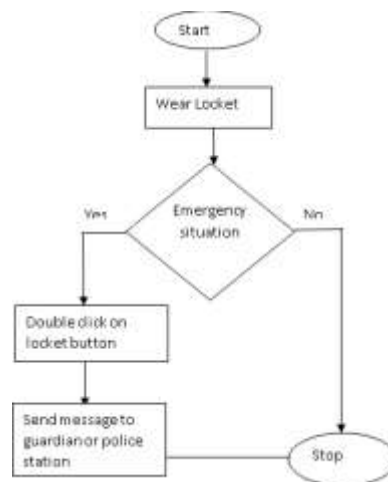
Step 6: Send a message to the police station

Step 7: After sending the message Police track the location

Step 8: If no situation occurs the process will be stopped

Step 9: Stop

## 7.2 Flowchart for a smart locket



Description of the flow chart

Step 1: start

Step 2: Women wear the locket

Step 3: Then check the condition, if any emergency situation occurs when she is pressing the locket button.

Step 4: After pressing the button, send the helping message to the guardian or police station

Step 5: If no any situation is occurred then go to the stop

Step 6: Stop

## VIII. ADVANTAGE

- Safety Device which can be carried by every woman for the safety purpose.
- This smart band provides ultra-low power consumption.
- This device compacts in size, so every woman can easily handle properly.

- This technology also provides wireless connectivity such as Bluetooth, GPS, and WIFI.
- It is easy to understand the functionality of the technology.
- It is easy and fast to install.
- It is easy to maintain the smart band.
- It is available in the market with low cost with high performance.
- It gives fast response in emergency and normal situation.
- The smart band technology provides a user-friendly environment to the user.
- Smart locket uses for the capturing the photos and those photos are used for the proof. [2]

#### **IX. DISADVANTAGES**

In smart band technology, one of the disadvantages will be a network error. If the network is not available in the mobile app then this technology is not working properly because is not track the location of the user through WIFI and GPS. [2]

#### **X. FUTURE WORK**

We can add a camera to the smart band for capturing the attacker pictures and add recording video & audio for the evidence purpose. I give suggestion this features also add in the future in the smart band for human safety.

#### **XI. CONCLUSION**

This paper focuses on women safety and security. Smart devices provide many advantages for women security. The smart locket uses for the capturing the criminal photos and also use for the proof. The smart band use to track the location of the user and also detecting the motion and heartbeat of the user. Here we try to solve the problem of women harassment and safety, by using different types of IOT based technology like the smart band and smart locket. Using this IOT based technology women life is made easy and happy.

#### **REFERENCES**

- [1] Vamil B. Sangoi, "Smart security solutions," International Journal of Current Engineering and Technology, Vol.4, No.5, Oct-2014.
- [2] International Journal of Application or Innovation in Engineering & Management, Volume 3, Issue 4, April 2014.
- [3] "Smart Gadget for Women's Safety" Akanksha Chandrasekar, Shraddha Chavan, Yojana Mokal, Payal Jha, Pournima Kadam, International Journal on Recent and Innovation Trends in Computing and Communications Volume:4 Issue:1
- [4] A. Helen, M. Fathima Fathila, R. Ri jwana and Kalaiselvi. V.K.G," A SMART WATCH FOR WOMEN SECURITY BASED ON IOT CONCEPT 'WATCH ME'", Department of Information Technology y, Sri Sairam Engineering College, West Tambaram, Chennai, 978-1-5090-6221-8/17/\$31.00\_c 2017 IEEE.
- [5] <https://inc42.com/startups/smart-safety-wearable-safer/>
- [6] <https://www.techinasia.com/safer-is-smart-jewelry-to-keep-women-safe>.