

# A Smart Gadget for Women Security based on IoT Concept

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**Abstract:** Today in the current global scenario ,women are facing many problems like women harassment .We propose to have a device which is the integration of multiple devices. The main aim of the device is to provide security for women. In this project we using the sensors like Pulse rate sensor, Flex sensor, Temperature sensor, Accelerometer, Sound sensor, Microcontroller(ESP32), GPS, LCD display, Buzzer, Blynk Cloud and Blynk app. When the women faces the threat out of 5 sensors if any 3 sensors crosses its threshold value, the signal will be sent to the microcontroller and the GPS will track the live location of the victim, Buzzer will provide beep sound when the sensors are activated and the values of the sensors will be displayed on LCD screen.The cloud will store the sensor values which is further used for monitoring and the notification named “DANGER” will be sent to the Blynk app which will help the victim’s parents to find her.

**Keywords::** Pulse rate sensor, Flex sensor, Temperature sensor, Accelerometer, Sound sensor, Microcontroller, GPS, LCD display, Buzzer, Blynk Cloud, Blynk app, DANGER.

## I. INTRODUCTION

In today’s world women and girls still feel unsafe to travel alone whether it is a day or night. Now a days women are attacked by men irrespective of their ages. Women are facing various problems which include theft/robbery, rape, molestation, eve-teasing and various other difficulties. In fast going world womenharasement is an important issue. For that emergency communication system organized for the primary purposesupporting of one way and two way communication of emergency information of victim/individuals to group of members.

Keeping this in mind, a device has been modeled which offers a hands-on help to the women in danger. In this paper the device consists of various sensors which will measure different parameters continually, a ESP32 microcontroller with a integratedwifi which will receive the signal from the sensors and the GPS used to track the live location of the victim, LCD display is used to display the sensor values whereas Buzzer is used to provide a beep sound.

There will be Blynk cloud which is used to store all the sensor values and it can be further monitored. Blynk app which is an application used in mobile phones, so when women is in danger and when she needs a help, we get a notification in the app as “DANGER”.

The victim can share her app’s credentials with her family andfriends , as she gets into the trouble, her family/friends will be notified through the app.

## II. METHODOLOGY

### System architecture

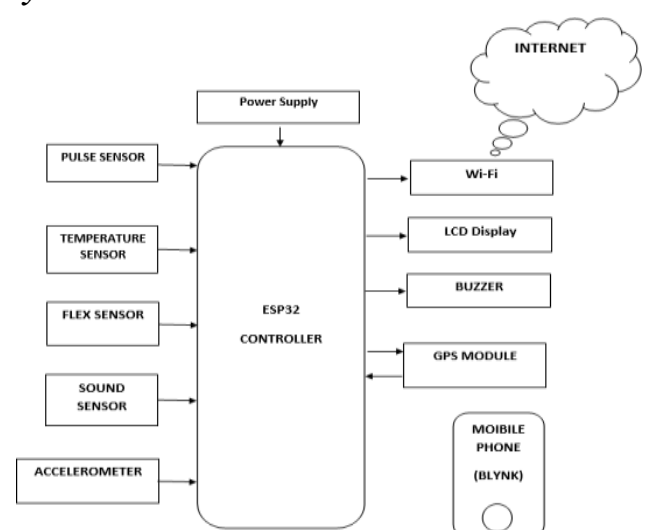


Fig.1. System Architecture

The principle behind this is to detect the body parameter with signals from the corresponding sensor which are in contact with the body and these sensors output the electrical signals to the controller, the controller receives the signal from the sensors. When a women faces a threat in order to save herself, she will make use of this smart gadget this is how it works. The device will be consisting of biosensors such as temperature sensor, pulse rate sensor, flex sensor, sound sensor, MEMS accelerometer. These sensors gets activated automatically when the women is in danger. So these sensors sense the threshold value and sends it to the ESP32 which works as a microcontroller. Power will be generated to it. This ESP32 Controller will sends the signal to the GPS module to track the live location of a victim. This GPS in turn sends the live location of a victim to the ESP32. Later microcontroller will send the

threshold value of all sensors to the wifi. Through the wifi we can monitor the values, Later the values will be stored in the cloud, through cloud we will fetch the values to the blynk app. In blynk app we will get the notification. Out of five sensors, if 4 sensors gets activated buzzer sounds the beep sound.

### III. IMPLEMENTATION

#### *GPS Module*

The Global Positioning System Is a location tracker. It tracks the current location in the form of longitude and latitude. The GPS Coder Module will use this information to search an exact address of that location as the street name, nearby junction etc. which is directly connected to the microcontroller provides reliable positioning, navigation, and timing services to worldwide users on a continuous basis in all weather, day and night, anywhere on or near the Earth. . In case if GPS is disabled then the system will only send the longitude and latitude through cloud So, Internet is mandatory.

#### *Buzzer*

A Buzzer or electronic device an audio signaling device, which can be mechanical, mechanical device

or electricity. Usually piezo speakers (buzzers) are used "piezo buzzer" is a tiny speaker that you can connect directly to an Arduino. The piezo buzzer produces sound based on reverse of the piezoelectric effect. These buzzers can be used to alert a user of an event corresponding to a switching action, counter signal or sensor input.

#### *LCD*

**Liquid Crystal Display** screen is associated in nursing electronic display module. A 16x2 LCD display is basic module and it is commonly used in various devices and circuits. These modules are a unit most popular over seven sections and different multi segment LEDs. LCDs are a unit economical; simply programmable and do not have any limitation of displaying special & even custom characters (unlike in seven segments), animations and so on. The command register will store the command instructions given to the LCD. A

command is an instruction given to LCD will do a predefined task like initializing it, clearing its screen, setting the cursor position, controlling display etc.

#### *Blynk app*

Blynk is a toolset for all makers, badass inventors, designers, teachers, nerds and geeks who would love to use their smart phones to control electronics like Arduino, Raspberry Pi and similar ones. UPD: Blynk also works over USB. Blynk works over the Internet. Therefore, the one and only requirement is that your hardware can talk to the Internet.

#### *Pulse rate sensor*

The Pulse rate or Heart Beat sensor is used to measure the heart beat rate or the pulse, based on optical power variation as light is scattered or absorbed during its path through the blood as the heart beat changes.

#### *Temperature sensor*

We can measure the body temperature using various temperature sensors. For instance, LM35 which has

series of precision integrated circuit sensors whose output voltage is linearly proportional to the Celsius temperature. It operates linearly  $\pm 10.0\text{mV}/^\circ\text{C}$  scale factor with  $0.5^\circ\text{C}$  accuracy. In emergency cases body temperature [10] varies drastically which can trigger module for rescue.

### *Flex sensor*

This flex sensor is a variable resistor like no other. The resistance of the flex sensor increases as the body of the component bends. Sensors like these were used in the Nintendo Power Glove. They can also be used as door sensors, robot whisker sensors, or a primary component in creating sentient stuffed animals.

### *Sound sensor*

The sound sensor module provides an easy way to detect sound and is generally used for detecting sound intensity. This module can be used for

security, switch, and monitoring applications. Its accuracy can be easily adjusted for the convenience of usage. It uses a microphone which supplies the input to an amplifier, peak detector and buffer. When the sensor detects a sound, it processes an output signal voltage which is sent to a microcontroller then performs necessary processing.

### *Accelerometer*

An accelerometer is an electromechanical device that will measure acceleration forces. These forces may be static, like the constant force of gravity pulling at your feet, or they could be dynamic-caused by moving or vibrating the accelerometer. In this system we use the triple axis accelerometer sensor which is used to measure the acceleration produced from the victim who is in tragedy.

## IV. WORKING OF PROPOSED SYSTEM

This is the system setup of this module. It consists of Power supply, microcontroller, pulse rate sensor, temperature sensor, flex sensor, accelerometer sensor, sound sensor and the WiFi shield enabled with GPS, LCD and Buzzer. In this system power

supply is turned on then the sensors will be sensed the information like heart beat rate, temperature, flexibility, gesture and sound from the victim. These values are checked to the threshold values which is predefined in the microcontroller. The values are not exceeding the threshold value then the output status will show as Normal. If anyone of the value is to be exceed then the status will turned into Abnormal. Then the buzzer will be alarmed and the process will be shown in the LCD display. For that abnormal alert the microcontroller will be send the information to the WiFi shield which is enabled with GPS. Then the WiFi shield send the information to the IoT devices. On the IoT screen Track Google Map option will show, if we click it the location will be traced. So in this system we can identify the location with the body parameters. It also used for adults and unhealthy people.

### Circuit diagram

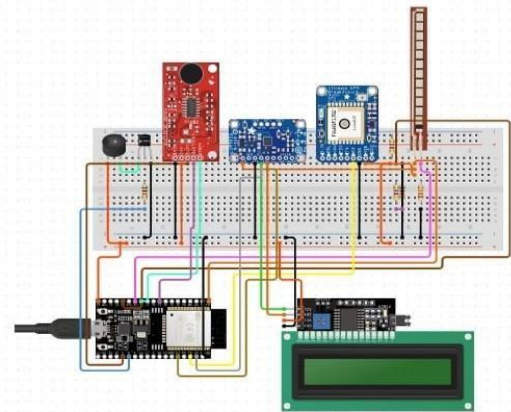


Fig.2. Circuit diagram

## V. CONCLUSION

This Project proposed the system for security of women. With the help of the wireless method which will communicate and alert the messages sent to the pre-installed blynk app with the secure medium. When the button is pressed information of the user is collected by the sensors and then information will send to the predefined app along with sensor values. This system will be helpful for speed up the monitoring for women health by using the GPS tracking Mechanism. Latitude and location will be sent to the preprogramed app, and this will help to save the time and victim gets help without any loss

of time. The project is to ensure that security for the women by providing automatic sensing of problems, threats and sends danger messages and position of the victim to the relatives using Internet of Things. In future enhancement this module can be implemented as, when the button in the band is pressed camera will automatically capture the images and it will collect the information of the user.

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