

## **Women's Safety Device and Health Monitoring**

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**Abstract:** According to the reports of WHO, NCRB-social-government organization 35% women all over the world are facing a lot of unethical physical harassment in public places such as railways-bus stands-foot paths-schools etc. We are looking forward for the day when every women's will be able to move freely without any fear in the world. We bring our focus on our personal security. This paper mainly covers the details about the design and implementation of the prototype model of an electronic gadget which has used or the potential to serve as a safety wear in the coming years. The pulse sensor checks the pulse of the person in abnormal health details and also to find the GPS location using this sensor to ambulance at every 15 sec in form of SMS. GPS receiver gets the location information from the satellite in the form of latitude and longitude.

**Keywords:** ARDUINO, Pulse sensor, Tilt sensor, GPS, GSM, Vibration sensor, Emergency Button, Buzzer.

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### **1.1 Literature Survey**

Women's security is a critical issue in today world and its very much needed for every for every individual of an issue. Many unfortunate incidents have been taking places in women cases. Problem may come from any direction such as women walking on the road after the work, going to job or many other reasons for which the go alone.

People at home are not sure of their return safely from the market or other works. In 2013 there is big incident which is a gang rape in New Delhi the case 23year old women in bus at 9.30 PM. Another incident has taken place at Mumbai in case of women who leaving her native place after Christmas holiday has been kidnapped and killed. These are some of the problems that have been taken place in the day to day life of women.

India is most dangerous country in the world for women, and the worst country in for women among the G20 countries.

### **1.2 Problem Statement**

In the latest horrific incident in Pollachi, we have shocked the all-over Tamil Nadu and warned us about women's safety and security. In regards to issues, people have different means of the protection we need now a days. Finally, the tools should be introduced to ensure the protection of the wear we made with different technologies.

### **1.3 Problem Solution**

This is a system that is provided for the women's security system made by ARDIUNO. The system has a security tools that can be help women in the trouble to track emergency callers to send information through SMS to Police Station and their families. The notifications during the incident by two methods. One is pressing the button on the device and another one is notify the heartbeat sensor every 15 secs and send the signals nearby Police station.

### **1.4 Hardware Architecture**

#### **1.4.1 Arduino Uno**

The microcontroller used an ATmega 328p Microcontroller. It is a single chip microcontroller. "UNO" means one in Italian and named to mark the upcoming release of ARDUINO 1.0. These development boards are known as ARDUINO Modules, when are open-source prototyping platform. The simplified micro-controller board comes in a variety of development board pack. The ARDUINO IDE, which utilizes the embedded C programming language. The community that design and Utilizes the micro-controller-based designs.

The microcontroller can be divided into two parts

- Software
- Hardware

The hardware consists of the following features the USB plug which is used to upload the program into the board. It can also be used as a source of power supply. The plug supplies a regulated voltage of 5V. In case it is sufficient, an external power supply of 9V to 12 V. The reset button is used to reset the microcontroller in order to run a fresh program. There are 3.3V and 5V power pins to ARDUINO.

Fig 1. ARDUINO UNO ATmega 328P



The software consists of the following features the sending the Commands and Instructions to communicate with and run the ARDUINO. The command area constitutes the menu tools like File, Edit, Sketch, Tools and Help. The program can be saved by clicking on the save button. Embedded C languages is the most common language used to develop the code or program. By default there is setup the program in ARDUINO Board. There is loop subroutine present in the board. The message which shows in the state of the execution of the program.

#### 1.4.2 GSM Module

GSM (Global System for Mobile communications, originally grope special mobile). GSM module or a GPRS module is a chip or circuit that will be used to establish communication between a mobile device or computing machine and a GSM or GPRS system. The modules consist of a GSM module or GPRS modem powered by the power supply circuit and communication interfaces (like RS-232, USB 2.0 and others).



Fig 2 SIM Module

It requires a SIM (Subscriber Identity Module) card just like mobile phones to activate communication with the network. The dimensions of the module are 24\*24\*2.6 mm, weighting 3.30g. The supply voltages range from 3.4V-4.4V. The operating temperature ranges from 40°C-85°C. The specification for GPRS data is the maximum downlink / Uplink speed is 85.6kbps. These ports are TX, RX, Ground and 5V power supply. The RX, TX ports are the ports which will be connected to the ARDUINO microcontroller. It will be send the signal

when the women press the button. GPS is used to locate d the longitude, latitude of the victim. The latitude and longitude of the location is tracked and the location is sent.

### 1.4.3 Vibration Sensor

Vibration sensors SW-420 are used for touch and vibration measurement with adjustable potentiometer. Whenever a women's moves, there will be acceleration. A vibration is generated when it is physically accelerated. They were track the vibration every 20sec. If any noted vibration on the field then signals sends to the nearby Police station.

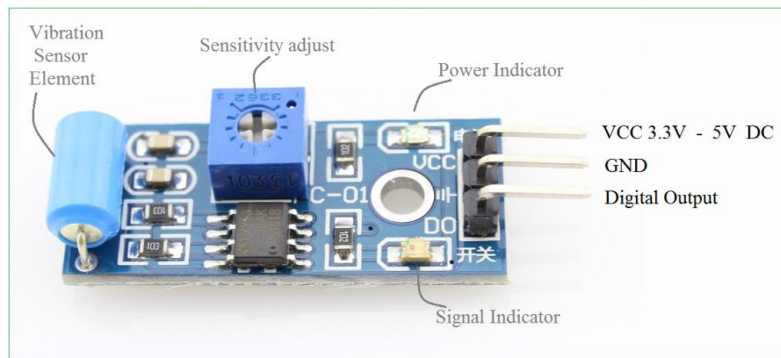


Fig 3 Vibration sensor

### 1.4.4 Tilt Sensor

Tilt sensor with the interfacing “Mercury switch” / Tilt sensor with ARDUINO UNO. It is an electronic device that detects the orientation of an object and gives the high Output or Low Output. We are controlling a LED and Buzzer according to the output of the Tilt sensor in the circuit. These are low budget and easily used. If there is an any inclination or orientation, the records will be recorded for the every 20sec and there is any bad issue, action will be taken.



Fig 4 Tilt Sensor

### 1.4.5 Heartbeat Sensor

Heartbeat sensor means that heart contracts and expands while pumping blood, the sound is heard while doing work on somethings. The sensor module contains a IR pair which actually detect heart beat from the blood.

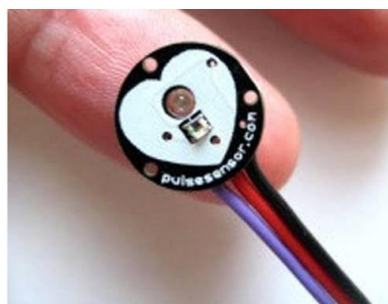


Fig 5 Heartbeat Sensor

When its concentration in the body changes. The average heartbeat range is 72 per minute, if the heartbeat rate is too low it means there are some bad health issues and a high heartbeat means some tension occurs. So heavy change in the heartbeat rate, every 20 seconds monitoring the system and sending the signals to the nearby police station.

#### 1.4.6 BUZZER

It is used as an alarm system to generate the alarm signal loudly for helping process. So the nearby people that they may understand that someone is in problem.

#### 1.5 Advantages

- ✓ Easily tracks a woman's location.
- ✓ The buzzers help to gain nearby people attention.
- ✓ Affordable not so expensive.

#### 1.6 Disadvantages

- ✓ Heavy in nature.
- ✓ Will not give proper output if connections are lost.
- ✓ To track a woman's location internet connection is a must.

#### 1.7 Working System

The system which can be transmitted the signals to the nearby Police station. After giving power supply to the device and when a woman is in a danger and needs self-defence she can press the working model switch allotted to her. By pressing the switch the system will activate the source immediately the signals are sent to the ARDUINO board, it processes these signals and immediately the information is sent to the user and nearby Police station. A GSM modem sends an SMS to predefined mobile numbers with the location of the victim via GPS and GSM. Whenever the woman is unable to press the button, the sensors can be used to operate the circuit automatically every 20 seconds of her heartbeat and physical activities to check the source.

#### 1.8 Model Program

```
#include<samples.h>
samples lcd(4,5,6,7,8,9);
#define x a1
#define x a2
void main();
{
int xsamples=0;
int ysamples=0;
int main();
{
    get gps();
    show_coordinate();
    lcd.clear();
    lcd.print("Sendind SMS");
    send();
    serial.println("SMS Sent");
    delay(2000);
    lcd.clear();
    lcd.print("system ready");
}
}
```

#### 1.9 Future Scope

As the main aim in the world is to ensure women's security, this model can achieve our aim to slow down the harassment of women. It is very useful for rural areas and women benefit most from themselves. It is very low price and women can easily wear the technology. This system can be more advanced by adding calling features also location to send nearest police station.

### **1.9 Conclusion**

While the society may or may not be changes in the minds to set the device will be help to feel women safety and independent. This may be help in emergency times. The paper that shows complete women safety during public transport and other works. And proposed system gives self-defence to the women. The women's safety device is most economical solution for the problems faced by women in India.

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