

# Woman Security Assistance System with GPS Tracking System

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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, hardware comprises of a wearable “Smart band” that endlessly communicates with sensible phone that has access to the web. This paper covers descriptive details about the design and implementation of "Smart band". The device consists of a trigger, microcontroller (ATmega2560), GSM module (SIM900), GPS module (Neo-6M), IoT module (ESP-12E), Neuro Stimulator, Buzzer and Vibrating Sensor. In this project, when a woman senses danger she has to hold ON the trigger of the device. Once the device is activated, it tracks the current location using GPS (Global Positioning System) and sends emergency message using GSM (Global System for Mobile communication) to the registered mobile number and nearby police station. IOT module is used to track the location continuously and update into the webpage. Neuro Stimulator will produce non-lethal electric shock in emergency situations to detect the attacker, buzzer is used as an alarm to alert the nearby people so that they may understand that someone is in need and vibrating sensor will send the last location in case if the device gets defected. The main advantage of this project is that this device can be carried everywhere since it is small.

Today in the current global scenario, the prime question in every girl's mind, considering the ever-rising increase of issues on women harassment in recent past is mostly about her safety and security. The only thought haunting every girl is when they will be able to move freely on the streets even in odd hours without worrying about their security. This paper suggests a new perspective to use technology for women safety. “848 Indian Women Are Harassed, Raped, Killed Every Day!!” That's a way beyond HUGE number! We propose an idea which changes the way everyone thinks about women safety. A day when media broadcasts more of women's achievements rather than harassment, it's a feat achieved! Since we (humans) can't respond aptly in critical situations, the need for a device which automatically senses and rescues the victim is the venture of our idea in this paper. We propose to have a device which is the integration of multiple devices, hardware comprises of a wearable “Smart band” which continuously communicates with Smart phone that has access to the internet. The application is programmed and loaded with all the required data which includes Human behavior and reactions to different situations like anger, fear and anxiety. This generates a signal which is transmitted to the smart phone.

The software or application has access to GPS and Messaging services which is pre-programmed in such a way that whenever it receives emergency signal, it can send help request along with the location co-ordinates to the nearest Police station, relatives and the people in the near radius who have application. This action enables help instantaneously from the Police as well as Public in the near radius who can reach the victim with great accuracy.

**Keywords** –Safety for women and child.

## I. INTRODUCTION

In Today's World the safety of women is in danger especially in India. The rate of crimes against women is not decreasing but in fact increasing at an alarming rate especially harassment, molestation, eve-teasing, rape,

kidnapping and domestic violence. Many preventive measures have been taken by the government to stop these misbehaving activities but still has not affected the growing rate of these crimes and has remained unaffected. The problem of sexual harassment in work place is increasingly coming out day-by-day. Sexual harassment at a workplace is unwanted behaviour of a person that

causes discomfort, offence or distress to the other. Majority of such cases are happened to woman by men working at high position in an organization. Women is getting kidnapped at every 44 minutes, raped at every 47 minutes, 17 dowry deaths every day. The fear of harassment against women is not only the condition at outside but it may also happen at homes, Women are not so physically fit as compared to men so in case of a need a helping hand would be a boon for them.

## II. LITERATURE SURVEY

Many unfortunate incidents have been taking place in woman's case. Problems may come from any direction such as women walking on the road after the work, going to super market or many other reasons for which they go alone. People at home are not sure of their return safely. Another factor is woman die without knowing the reason as they attend excursions and industrial trips conducted by the organizations. It happens due to attacks on woman but not suicides. In 2013 there happened an incident which is a gag rape in New Delhi in the case of 23-year-old woman in bus at 9:30 PM. Another incident that has taken place at Mumbai in the case of woman who is leaving her native place after Christmas holidays has been kidnapped and killed. These are some of the problems that have taken place in the day to day life of women. In order to overcome such problems faced by women the I Safety (women security apps) mobile based application is not only necessary to use but also plays a pivotal role with android software.

## III. EXISTING SYSTEM

This work had proposed that it will intimate the parents and police about the current location of the women. A GPS system is employed to trace the present position of the victim and a GSM is employed to send the message to the pre-defined numbers. This work had proposed about that anytime a woman senses danger, so she has to turn ON the device. Once the device is activated, it tracks the current location of the women using GPS and sends emergency messages using GSM, to already registered mobile number and the police control room. The ECG sensor checks the pulse of victim and in abnormal health situation the device also sends current GPS location. This work had proposed about the violence against women (VAW). We have designed and presented a skeleton of a user-friendly mobile application named Women Empowerment which can contain totally different laws associated with VAW and additionally contains different health tips for women, which can facilitate will help the rural as well as urban women. It includes emergency system, which will be active by the victim woman once they area unit in peril. This work had proposed about new model for women security, Once the switch is pressed the current location of women is collected and sends through GMS to the numbers registered in the Arduino, L293D is

used to drive dc motor, buzzer and shock system also used in this device.

This work had proposed about that when the device is activated, tracks the location of the victim using GPS and sends emergency messages using GSM, to three emergency contacts and the police control room and additionally generates an electrical shock to injure the assaulter for self-defence. This work had proposed that the user can get quick and immediate help in any emergency situation. It makes use of GPS technology. The System refers the Global Positioning System to trace out the position of the person who is in danger. The message is sent to the emergency contacts into the application. This work had proposed when the switch is pressed the device will get activated. If the pressure sensing element sense the physical pressure the message are send to contacts with the live recording through GSM. Buzzer is provided within the device, when the device gets activated the buzzer produces high sound in the surrounding. So, that the people in the surrounding may hear the sound and come for rescue. Spy-camera starts functioning when device activates and capture the video of present location and the data is stored in SD card. This work had proposed the implemented in the form of a partial wearable and partial portable system, the information is passed to RFID reader which communicates with PICmicrocontroller and through GSM the "help" message is distributed to predefined contacts. This work had proposed to provide security to working and nonworking Women's, When she press the trigger of this key then at that time the ARM7 start working the first GPS is trace the location of the women and with the assistance of GSM the message will be sent to the registered number that is saved in the SIM. The modification of this system Emergency key is also their whenever women feels she is in danger at that time she presses emergency key then buzzer makes a loud sound. This work had proposed, a smart band is capable of storing few contact numbers. The device is activated when SOS button is clicked for two seconds. It is programmed that when the device is activated, it immediately sends the alert messages like " I am in danger, please help me" with long beep sound with high volume at the receiver side even it is in silent profile along with location using GPRS, it also record the movement, pulse measurement, rating continuously in the internet. It contains the secret webcam in the locket captures the culprit photo which is directly uploaded to the server. This work had proposed an Android Application is used to find the location and send the location to the group of people stored in the phone, Track your phone, Immediately the location of the victim will be tracked and messages will be sent to emergency contacts. The screaming alarm unit will get activated and simultaneously, it produces siren sound to indicate danger. This work had proposed GPS will track the current location and send it via SMS to the registered emergency contact numbers, it also record audio and

video, it also has additional process like making call to the user after receiving the notification, generate electric shock for self-defence.

There are many electronic devices and systems which are to be used for the providence of security for women. Spy cameras are the most popular method for providing security which is unreliable. Today's existing systems are of wired systems and most of them are alarming systems which is unconventional and cannot communicate effectively.

#### IV. PROPOSED SYSTEM

The proposed system is specially for the women safety and overcomes the disadvantages of the present existing systems. In this proposed system, when the women are in danger it can be intimated immediately to the control rooms. Transmitter part contains ECG sensor, and vibration sensor. They collect the signal information from women's body and give it to the processor. After processing, it transmits the signal over network to receiver which will be present in the control rooms. The instant mic and amplifier strengthen the voice the women scream or shout above the threshold limit.

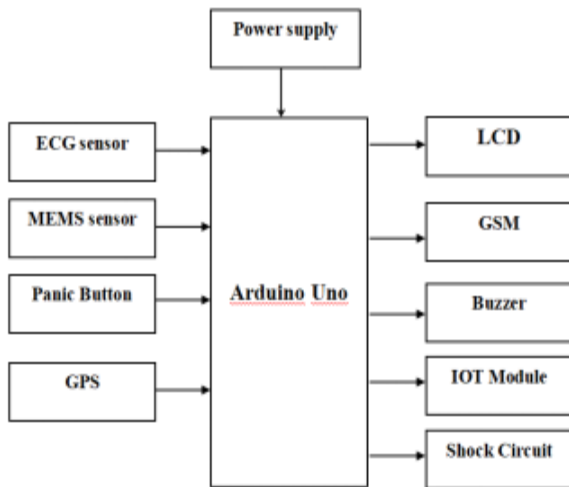


Fig.1. Block Diagram.

##### 1. Arduino Uno:

Arduino/genuino Uno is a microcontroller board based on the atmega328p (datasheet). It has 14 digital input/output pins (of which 6 can be used as pwm outputs), 6 analog inputs, a 16 mhz quartz crystal, a usb connection, a power jack, an icsp header and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a usb cable or power it with a ac-to-dc adapter or battery to get started. You can tinker with your Uno without worrying too much about doing something wrong, worst case scenario you can replace the chip for a few dollars and start over again.

"Uno" means one in Italian and was chosen to mark the release of Arduino software (ide) 1.0. The Uno board and version 1.0 of Arduino software (ide) were the reference

versions of Arduino, now evolved to newer releases. The Uno board is the first in a series of usb Arduino boards, and the reference model for the Arduino platform; for an extensive list of current, past or outdated boards see the Arduino index of boards

##### 2. Electrocardiogram sensor:

The heart functions as a pump for circulating blood to the body by repetition of contraction and enlargement. The cardiac electric potential is produced in the body during heart contraction. Electrocardiogram can be measured by leading these electrical signals to other body position and amplify.

Specifications:

ECG - Range : 0~5mV

Resolution : 5μV

Pulse - Range : 47 ~ 250bpm

Resolution : 1bpm

##### 3. MEMS sensor:

An accelerometer is a micro-electromechanical device that measures acceleration forces. These forces may be static, like the constant force of gravity pulling at our feet, or they could be dynamic - caused by moving or vibrating the accelerometer. There are many types of accelerometers developed and reported in the literature. The vast majority is based on piezoelectric crystals, but they are too big and too clumsy. People tried to develop something smaller, that could increase applicability and started searching in the field of microelectronics. They developed MEMS (micro electromechanical systems) accelerometers.

##### 4. Global System for Mobile Communications(GSM):

GSM module is used to establish communication between a computer and a GSM-GPRS system. Global System for Mobile Communication (GSM) SIM card is inserted within the mobile device to send and receive the messages victimization GPRS. The GSM SIM card number is registered with the system. With increasing usage of GSM, network services square measure expanded on the far side speech to include several alternative custom applications, machine automation and machine to machine communication. It operates at either the 900MHz-1800MHz frequency band.

##### 5. ESP8266 WIFI IOT Module:

These modules include 1MB (8Mbit) of flash memory, twice the size of the older blue coloured ESP-01 module. The ESP8266 Serial/UART to Wi-Fi module is a great way to connect your Arduino or other microcontroller projects to a Wi-Fi network. Create your next internet of things (IOT) project with affordable network connectivity by implementing this module into your design. The module has the ability to run independent of a host controller.

The eight-pin header includes two GPIO pins that allow for direct connection of the module to sensors, peripherals, or host controller.

Check out our ESP8266 breadboard adapter to use your ESP8266 module with a breadboard

The ESP8266 has 3.6V tolerant I/O's so you will need a logic level converter to connect it with higher voltage devices such as Arduino

The ESP8266 requires 3.3V power so you may need a 3.3V voltage regulator to provide the correct voltage, depending on your setup .

### 6. Global Positioning System(GPS):

The Global Positioning System is a location tracker. It tracks the current location in the form of longitude and latitude. The GPS 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 USART of 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 SMS. So, Internet is mandatory.

### 7. 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 unit most popular over seven sections and different multi segment LEDs. LCDs are economical; simply programmable and don't 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.

### 8. Buzzer:

A Buzzer or electronic device an audio signalling device, which can be mechanical, mechanical device or electricity. Usually piezo speakers (buzzers) are used "piezo buzzer" is basically a tiny speaker that you can connect directly to an Arduino. The piezo buzzer produce 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.

## V. PROJECT WORKING

An Uno microcontroller controls the system architecture of the wearable with an Arduino Uno boot-loader. A 5-pin header allows for power (+3 V) and ground connections as well as providing access to TX, RX, and reset pins of the Controller. The women/child safety

wearable device, which depicts the various technologies and technological standards used. Such as the GPS module upon being triggered by the Arduino GSM shield. The GSM shield is used as an interface to send the data received by the Arduino via SMS to a smart phone over GSM. The GSM shield functions as a trigger for the Arduino Uno to request data from its various modules. If an SMS text with distinct characters is sent to request the current location or GPS coordinates is sent to the Arduino GSM shield via the user's smart phone, then the GSM shield triggers the Arduino to request the current GPS coordinates. ECG sensor is used for checking the medical condition of the women and also MEMS Sensor is used for detecting the fall of the women due to accident or attack on her. Along with sensor Panic button is used for alarming if anything is suspected. For self-defence we are using Shock circuit that will make the attacker away from the women.

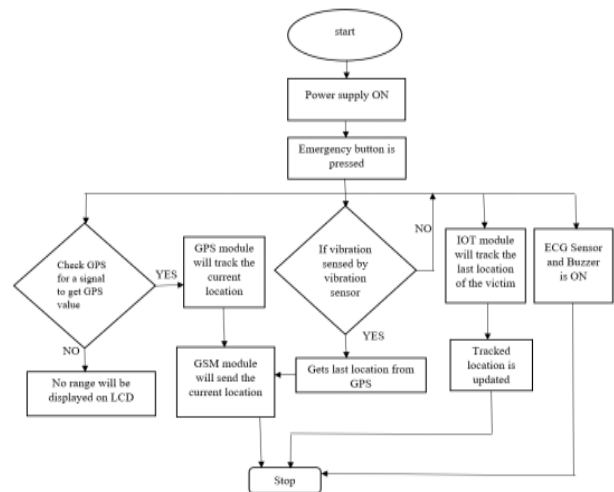


Fig.2.Flow chart .

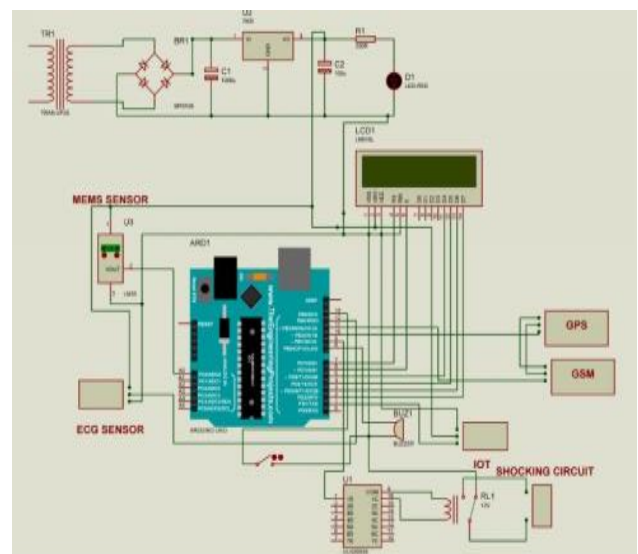


Fig.3. Schematic Representation.

## VI. RESULT

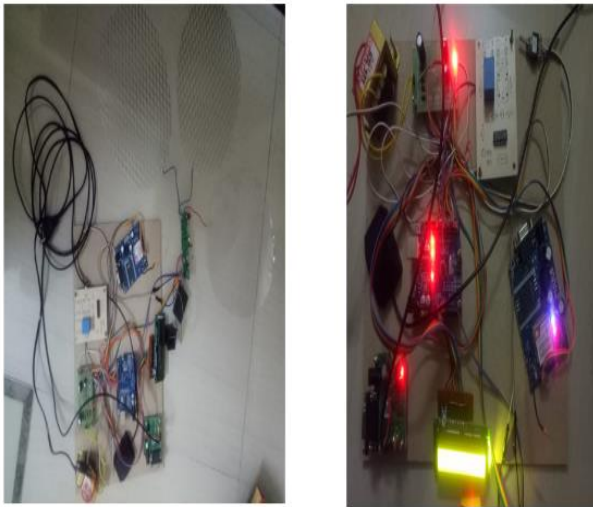


Fig.4. Snaps of the hardware kit and execution.

## VII. CONCLUSION

The women's safety device is the most economical solution for the problems faced by women in India. It provides the trusted contacts with real time location which in turn is a distress message that makes it possible to prevent major casualties. In this project work, we have studied and implemented a complete working model using a microcontroller. The programming and interfacing of microcontroller have been mastered during the implementation. This work includes the study of GSM and GPS modems using sensors.

The biggest advantage of using this project is, whenever the signal is transmitted, we will be getting the location from GSM modem to our mobile numbers so that one can save the women who is in threat.

## VIII. ADVANTAGE OF PROPOSED SYSTEM

1. Tracking of Women / Childs is possible
2. Flexible to carry to any place for which we travel
3. Easy coding and maintenance
4. Not much expensive

## IX. FUTURE SCOPE

By encrypting the GOOGLE MAPS in the GPS sensor, it can detect the area instead of latitude and longitude location.

By using Nano sized materials, the kit size gets reduced. Using wireless GPS modem and wireless panic button, carrying of the kit to place to place can be avoided. More effective system can be designed by adding motion detector technology

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