

# WEARABLE WOMEN SECURITY ASSISTANCE DEVICE

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**Abstract :** Any uncertain situation could stop a business in a few seconds. So be aware and prevent it by pressing an awareness button. As we see day by day large number of women are getting assaulted, kids are getting abducted as well as sometimes senior citizens finds themselves helpless due to health issues. In order to control these and provide safe environment for each and every one, this pocket friendly prototype is developed. This paper covers detail idea of Design and Implementation of Wearable Security Assistance Device. It consists of Microcontroller, GPS module, GSM module, Mic, Speaker, Buzzer and Battery.

So this evaluation is based on prototype, whenever women finds insecure can alert to registered number like friends, family and nearest police station through pressing awareness button, as soon as button is pressed it starts tracking the place of women using GPS (Global Positioning System). GPS starts establishing link with nearby one of 24 orbiting satellite and alerts by sending emergency message along with latitude and longitude coordinates, so that one can track the location using google maps and immediately after message, the call is made, if first receiver accepts call the communication will start by using mic and speaker and if the receiver don't accept the call after the delay of 50-60 seconds another contact number will get a call. Also from the instance when button is pressed the buzzer will start giving alarms in the specific region, so that at worst conditions, anyone available can provide help to needy person.

The main advantage of this device is small, multifunctional and easy to use device with calling facility. The success for implementing this device will be carried out by providing safe environment to each and every one.

**Keywords:** Security, Awareness button, GPS, GSM, Calling facility, Messaging, Microcontroller, MIC, Speaker

## I. INTRODUCTION

As there are alarming numbers of crime against woman in densely populated cities, women security is threatened. Even cooperate women find it uncomfortable working for night shifts, so security is one of the important factors, which should be taken into account. Daily, many tasks or circumstances which have terrible consequences on individual. These risks must obviously be reduced as much as possible and by all available means. In this century, Indian women are found working in all fields like aeronautics, space, politics, banks, schools, sports, businesses, army, police, and many more. We cannot say that the country don't have any women concern, still we cannot ignore positive points for women in India.

Day by day technology is growing and effective efforts are too taken, still human being is facing a problem, but now government is also taking steps forward for safety purpose, so it's our duty, that each individual should also make practises of such activities and be self-independent to find solutions on our problem. So the main purpose of this device is to intimate the parents and police about the current location of the women. A GPS system is used to trace the current position of the victim and a GSM modem is used to send the message to the pre defined numbers.

## II. Related Work:

Various applications are developed like With U, Women safety, Raksha, redevy which provides tap button, once we tap on button messages are sent to registered contacts, but at uncertain time if our mobile is not charge or opening app took much time or in between if application hangs up, which will lead to an serious risk, based on these terminology various systems are also developed including functionalities like in order to provide security within short distance around 5 metres using Super heterodyne Transmitter and Receiver, where continuous frequency is transmitted and received by receiver, as soon as button is pressed, certain break takes place in transmission and message is delivered to respective contacts[7]

A wristband called Nymi, developed by Toronto-based company Bionym, confirms the wearer's identity through electrocardiogram (ECG) sensors that monitor the heartbeat, and then communicate that authentication to your devices ranging from I Pads to cars [8].

Also various system are developed using GPS and GSM module for global security consisting Line of Sight connection, synchronise with mobile, required authentication procedure for every one minute.

GSM and GPS based vehicle tracking system is currently used. This system consists of GPS module attached to a button in the vehicle. In case of emergency, the switch attached to the GPS can be pressed. The GPS that is used here is Teltonika FM1100 [1-3]. When any problem occurs the employee travelling in the vehicle presses the switch attached to the GPS. GSM module attached to this GPS and switch is used to send the message to a special team of the organization. Although this system seems to be efficient, at times there are some drawbacks because the drivers may not be trustworthy. Another existing method is an application based prototype [2]. It is interfaced with GPS, GSM and a spy camera. The user must register the emergency numbers. This is an android app which provides all facilities but it has a disadvantage that if the mobile phone of the victim is thrown away by the opposing person, this model cannot be used efficiently.

To overcome these disadvantages we propose a model. As wearable security assistance system provides calling facility as Mic and speaker is already placed in same device so once the call is made and accepted, he/she can able to recognise the situation and can provide help as soon as possible.



fig.1: wearable security assistance device prototype

III. Proposed Work:

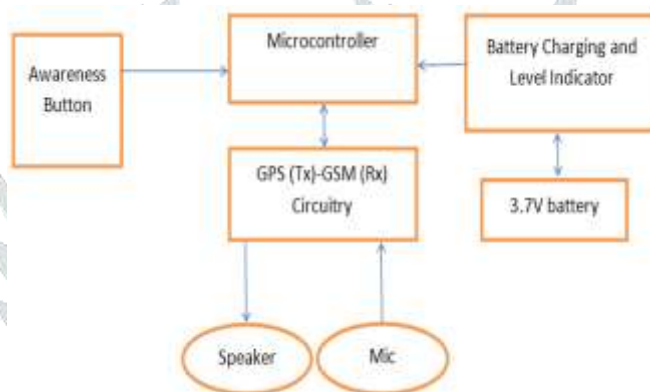


fig.2 block diagram of wearable security assistance device

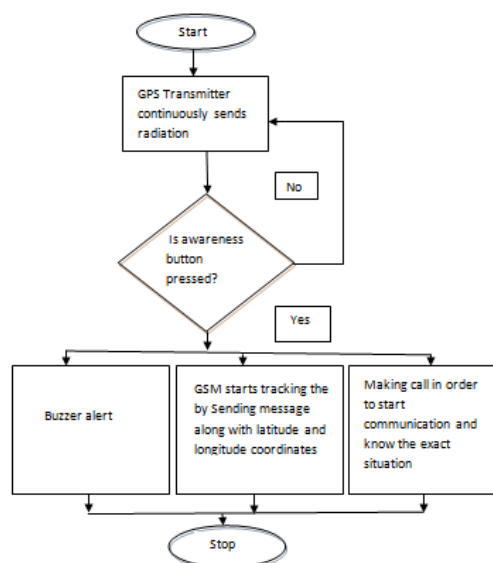


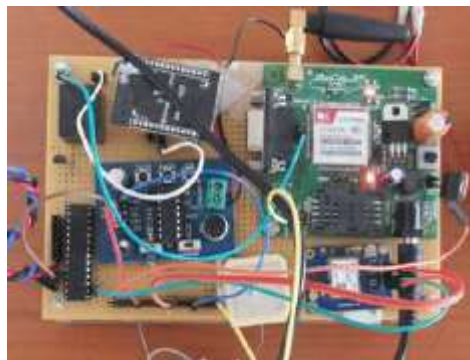
fig.3 flow chart

The microcontroller acts as an embedded computing system and controls the activities of all the subsystems. It is interfaced with Emergency Switch, GPS Transmitter, GSM MODEM, and Speech Circuit. In case of emergency the trigger button is pressed [1]. The system tracks the location information from the GPS and prepares a text SMS containing the present location information and send SMS through GSM modem to the police control room and distress message to the pre programmed mobile number. Using the information supplied by this system, the location using GPS and can be traced through Google maps [4-6]. Thus one will be safe and will feel protected.

Global System for Mobile Communication (GSM) SIM card is a device to send the location obtained through GPS. The GSM SIM card number is registered with the system. In this proposed device the GSM acts as a receiver while the GPS acts as a transmitter. The received values from the transmitter are sent as an SMS to the few predefined emergency numbers. The receiver pin of GSM is interfaced with 16th pin of the microcontroller. The supply voltage is about 3.7V which is supplied from the voltage regulator circuit.

The micro-controller continuously senses the awareness switch status, If the switch is press, it enters into GPS location collection loop. Where in this loop micro-controller sends the AT command to GSM module and place request to send current latitude and longitude information, where GPS establish a link with any one of the nearest 24 orbiting satellites, as value is obtained, micro-controller enters into call and message loop, through message on can follow the google location and immediately after message, the call is made, if first receiver accepts call the communication will start by using mic and speaker and if the receiver don't accept the call after the delay of 50-60 seconds another contact number will get a call. In calling application supports accessibility of voice transmission and reception. So that it will be easy for one to help others.

The program is coded in Embedded C language and is built using MPLAB software further it is tested in PROTEUS software. For GSM module virtual terminal component is to check the output of the GSM.



*fig.4 pcb configuration*

#### **Advantages:**

- Small Device and easy to carry.
- One to many use, as emergency number is registered and there is no user authorization for device.
- Along with message calling facility is also available with certain specific timer delay of 50-60 seconds.
- Easy to maintain.
- Provides High performance with Low cost.
- Environmental friendly device.

#### **Applications:**

- The device can be used for the safety of Women, Children's, Senior citizens and physical challenged people.
- The device can be used as a legal evidence of crime with exact location information for prosecution.

#### **Future Scope:**

- Video streaming can be made available, by increasing size of device.
- More compact size can be made available by using GPS and GSM modules used in mobile phones.
- Solar cell can be used as an alternative to battery.

#### IV. Result

The prototype is developed in order to provide complete secure environment using GSM and GPS modules and also to reduce the rate of women assaulted, children's abducted, helplessness of senior citizens situation and physically challenged people. If the condition arises that individual don't see message, still one can be able to help early and for sure to another by Calling facility, where communication will take place and one will get an idea of current situations using Microphones and speaker. Also Buzzer alert is provided to aware the public regions in case of emergency.

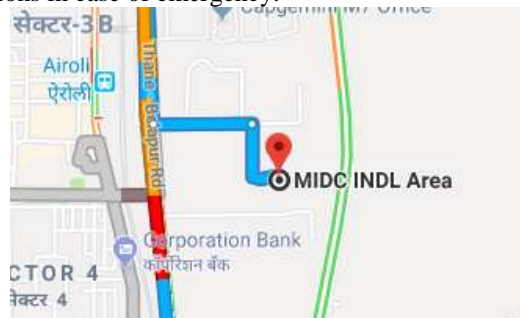


fig.5 navigation map to dummy victim

#### V. Conclusion

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