Wearable Human Safety Device

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ABSTRACT: Human safety has been a big concern and it has been the most important duty of every person. There is no chance of the welfare of the world unless the condition of the human is improved. Since the ancient time, humans are given most respected place in the society. It is estimated that 35% of the women have experienced physical and/or sexual violence at some point in their lives. This project considers security issues of both men and women and provide a solution using embedded technology .Our proposed fall detection senor and arch pulse circuit with GPS modules to provide a location based information also a small measure of improvement proposed in this work, adds to the better performance of these devices and lead to better women safety.

KEYWORDS: Raspberrypi, GPS module,Electric shock generator, Picamera,Wifi module.

I.INTRODUCTION

In Today's World the safety of women is endanger 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, and 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.

Jobs that women and men do, their working conditions and how society treats them is not always the same. These factors may affect the hazards women face at work and the approach that needs to be taken to assess and control them. Factors to consider include: women and men have traditionally been concentrated in certain jobs and therefore may face hazards particular to those jobs women and men may be physically and biologically different in terms of their reproductive makeup women and men may have different responsibilities outside the workplace.

Working women are more likely to be exposed to hazards like issues around lifting or exposure to chemicals at work and at home because they have traditionally had greater domestic and caring responsibilities. Women are: more likely to be in low-paid, unsafe work and this may affect their working conditions and the hazards they are exposed to more likely to stay in the same job longer than men so may have a longer exposure to the hazards that are present • more likely to work in jobs where trade union representation is weaker and there may be less worker consultation and participation which is an important factor in successful risk prevention. Making risk assessment more gender sensitive the law requires employers to assess the risk of work-related ill health arising from work activities. They must also ensure that these risks are removed or proper control measures are in place to avoid them where possible – and reduce them so far as reasonably practicable. Employers should take an "all round" approach to risk prevention, recognizing the gender differences that relate to work, including sexual harassment, discrimination, involvement in decision-making in the workplace and many women's work/life balance issues. Psychosocial hazards Women are generally at higher risk of exposure to psychosocial hazards including bullying, discrimination, and sexual harassment, which all contribute to work-related stress. Some face additional risks if they are, for example, Black, disabled, younger, older, lesbian, gay, bisexual or Trans, as well as being women.

II.RELATED WORK

The concept of monitoring of human activity was first introduced by S.C.Mukhopadhyay et al.The Method was involved with using of wearable sensor like temperature, pulse sensor.
 The concept of heart rate and oxygen level monitoring for babies was introduced by Owlet Smart Sock et al and he named it as Owlet Baby care system, Heart rate sensor was used in his work. The concept of analyzing the moisture level stability and sensitivity for the skin was done with moisture sensor, hybrid thin film by S.Xu et a.This work was inspired by Z.Zhu and based on this, heintroduced photo patternableet al.[6]. The concept of creating interface that lies between epiderm of our skin and its ion concentration was made by Z.Zhu et al[9],and it is the wearable sensing tool.

III.METHODOLOGY

1.HARDWARE DESCRIPTION

a) RASPBERRY PI:
In our devicewe use Raspberry Pi 3
Feature
- Quadcore1.2GHZ Broadcom BCM2837, 64 bit CPU
- 1GB RAM
- 40 PIN Extended GPIO
- Full size HDMI
- CSI Camera Port for connecting Sensor has an abnormal is the Location navigating or location Value.
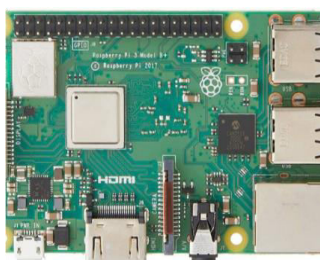

Fig1: Raspberrypi 3

b) PI CAMERA

Fig 4: pi camera

- The module has a 5mega pixel focus
- 1080p30, 720p60, and VGA90 video
- Modes just us stills catch.it joints through a 15cm strip link to the CSI Port on raspberry pi.

c) GPS(Global Positioning System)
- GPS is the location tracking device.
- It finds the victim's location based on the latitude
IOT the longitude values of sensor from the GPS satellites.

Fig3:GPSmodule

d)PANIC BUTTON

- This is emergency switch for user input.
- This is standard 12mm square momentary button**.**
- If the victim is in danger, by pressing the switch,

the device gets activated along with buzzer.

Fig4:Panic button

e)POWER SUPPLY

Power supply is an electrical device.It converts electric current to correct voltage, current and frequency. It generates 12V power to our device

Fig5: Power supply

f)NON LETHAL ELECTRIC SHOCK GENERATOR

The non-lethal electric shock generator includes a firing elements, propellant, a battery, a boost module, a high voltage rectifier control and discharge module (HVGCM), a tele control module, a proximity module, two barb Electrode.
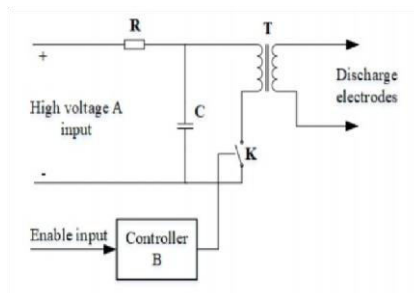
Fig6:Shock generator

g) WIFI MODULE

- ESP8266 is the self-contained SOC with integrated
- TCP/IP protocol stack,that gives microcontroller access to your WI FI network.

Fig 7: WiFi module

- Capable of either hosting an application or offloading all WiFi networking function from another application processor.
  - ESP8266 supports apps for VOIP app and Bluetooth coexistence interfaces.
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IV.PROPOSED SYSTEM-WORKFLOW

The main aim of this paper is human safety and security using raspberry pi. For this purpose, python programming is use,The raspberry pi is integrated with a GPS, relay, WIFI module, camera, non-lethal electric shock generator. When a human is in danger the alert will send automatically, manually to the concerned authorities. Furthermore utilizing voice information this will help human in and not in that situation to press the button that time she just uses to say help then SMS alert with location and captured image will send to the guardian's/police.
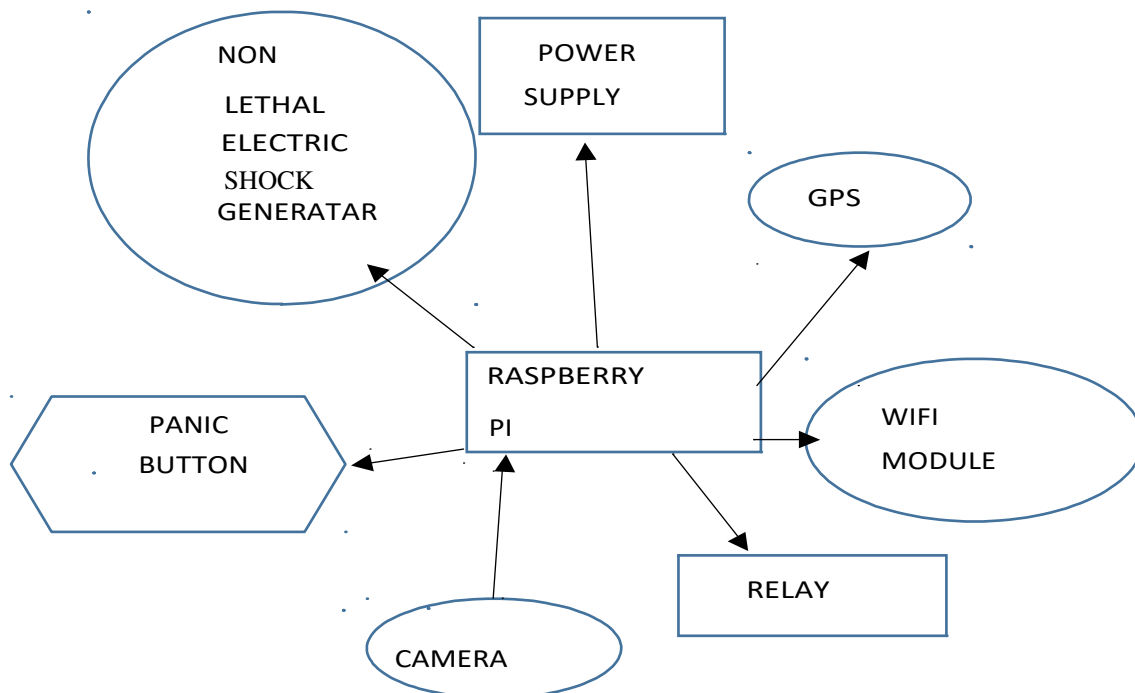
Fig8:Block Diagram of Wearable human Safety Device

In some cases when we see something happen unusually then also it exceeds the above threshold in this condition, we using another button to send the message that I am safe. That purpose we using two button in some cases the above

condition some time not work means we also using a button then SMS, image, and location will send to concerned authorities. Expect this sometime women is not able to press the button if above two condition will not be done then we are using a voice data which is the major advantages for both man and women.

V.EXPERIMENTAL RESULTSAND DISCUSSION

This section represents the performance of the project model with the use of hardware raspberry pi and to obtain results we are using python as the programming language with the use of this software we get the outcome of our project. The SMS alert shown in below figure.
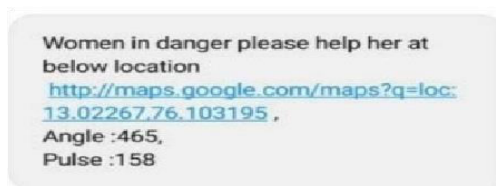

Fig9:SMS Alert

Fig Message send

Current location, and the captured image will send to concerned authorities. In our project we are using three ways for helping women first as automatically when temperature and heart tare exceeds above the threshold and second by pressing a button and also through voice. In all conditions, it sends alert to concerned authorities.

Fig10: Location sent

V.CONCLUSION

In this project, remote safety monitoring system for the human safety based on smart home gateway is proposed. The system has good scalability and operates easily. It can provide long-term and continuous monitoring. In consideration of the mass data generated in the monitoring process using pulse, fall detection. Demonstration of the system validate that the whole system is effective and has the prototype shows the possibilities of applying the techniques to the real time monitoring system. The main purpose of the work is to provide safety and security to the women in danger situation. The button is pressed by a women when she feels insecure. Once the button is ON, the raspberry pi gets the commands and the GPS will calculate the current latitude and longitude values of the victim. The calculated values send as SMS which contains URL values who's having the IP Address of the network in the nearby well-wisher or police station. The SMS send to the registered mobile numbers are shown in. IOT module will track the current location of the victim and it will update the location on the webpage. The raspberry pi also turn ON the nonlethal electric circuit that apply electric shock to the attacker.

VI. FUTURE WORK

The Scope for Further Studies of the project is very essential in order to make the design system more advanced. In the designed system the enhancement would be connecting more sensors to internet which measures various other health parameters and would be beneficial for pregnant women monitoring i.e. connecting all the objects to internet for quick and easy access.

Establishing a Wi-Fi mesh type network to increase in the communication range. The scope of this system will include the intelligent system which will take   the decisions or actions according to the conditions prevailing. So that

the doctor's interaction with the system will be minimized which will lead to less human efforts for the monitoring. This will allow farer to vilipend the nominal warnings as system will take care of it, which will be a lucrative deal for the end user. Since the project is a prototype that was developed under some limitations and in short time, there are some tasks that should be done in the future and would develop the system to a more mature state. These steps are described below.

The development of the platform board is necessary in order to make it more robust, thus manufacturing the board is important for the future progress of the system.

A modular design that should give the opportunity to users of using energy sources, connectivity and sensors as modules could be a very useful and easy to-use solution.

A potential support of different platforms could also be an addition in the system that could spread the usage of the system with already applied solutions.

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