Women and Children Safety SOS System IOT Based Witness Record 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 awearable "Smart band". This paper covers descriptive details about the design and implementation of "Smart band". The device consists of a trigger, Node MCU, GSM module (SIM900), GPS module(Neo-6M),IoTmodule(ESP32-CAM),pulse rate sensor and temperature 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 near by police station. The camera module starts to capture the image of the culprit and sends it to the registered mail address. IoT module is used to track the location continuously . The main advantage of this project is that this device can be carried everywhere since it is small.

KEYWORDS: GPS Tracker and GSM Module, IoT module, Camera

I. INTRODUCTION

In Today's World the safety of women is indanger especially in India. The rate of crimes against women is not decreasing but in fact increasing at analarming 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.   Students face incidents like child trafficking and kidnapping, when they are waiting to embark or disembark a school bus. Loaded with security apps for women, your smart phone can help you send emergency alerts to chosen people and also let people know about your whereabouts if anything goes wrong.Sometimes here might be a situation that when women had an accident in the late night and there are no one to help them, In such situations the person will not be able to tell the situation that he/she facing. And they do not know the basic first-aid details and to know the person where the incident has happened.Nowadays though there are many apps and devices evolved for women safety via smart phone which can be activated only by a touch or one click or shake the mobile.

II.LITERATURE SURVEY

[1]This paper suggests a smart shoe that not only helps women take care of themselves but also help them be fearless. This project makes use of GPS, GSM modules, a shock circuit and camera, that are interfaced with Raspberry Pi board and Arduino. Women facing any troubles or in any kind of danger, can immediately make use of this device, embedded in their shoe to escape from the dangerous situation and even harm the attacker.

[2] a smart security wearable device for women based on Internet of Things is proposed. It is implemented in the form of a smart ring (SMARISA) and comprises of Raspberry Pi Zero, Raspberry Pi camera, buzzer and button to activate the services. This device is extremely portable and can be activated by the victim on being assaulted just by the click of a button that will fetch her current location and also capture the image of the attacker via Raspberry Pi camera. The location and the link of the image captured will be sent to predefined emergency contact numbers or police via smart phone of the victim thus preventing the use of additional hardware devices/modules and making the device compact.

[3] The women protection application is designed to prevent crimes such as assault against kidnapping and stalking. The design of the Mobile Women Protection System (M-WPS), places the power in the user's hand to ask for help, so that these crimes can be prevented by providing timely help and support. In a situation, where the user is in trouble, she can simply shout a pre-defined safe-word that will be recognized by the proposed M-WPS. It will then send an automatically generated help request to the police control room and also to the pre- listed emergency contacts via Short Message Service (SMS). The second situation where the M-WPS acts smartly is as follows: When the user is travelling she can activate the system with continuous Global Positioning System (GPS) tracking. In case the user does not mark herself safe within the user specified duration, the proposed application generates a help request without the need of the safe-word. This duration could be the time the user usually takes to commute. The application is developed in an object-oriented manner. The design of the M-WPS is explained in this paper with the help of use-case, sequence and state-chart diagrams . These diagrams will help the future developers to better understand and improve the design of the M-WPS. The Default and the Active modes of the M-WPS could handle the above mentioned two scenarios respectively.

[4] In this paper, we have developed an intelligent women safety system using Radio Frequency Identification (RFID) and Global positioning system (GPS).The main idea here is using a active RFID tag with passive RFID reader to scan the information and this information is transferred to the AT89C52 microcontroller where in the contacts of around 4 to 5 people is stored in the data base. Once the information is received by the controller, it sends the message to the contacts through GSM module and the location is tracked through the GPS.The simulation is done in ISIS proteus.

[5] The main objective of this paper is to design and implement a highly reliable system for protecting women from being harassed. In this paper, we have developed an intelligent women safety system using Radio Frequency Identification (RFID) and Global positioning system (GPS).The main idea here is using a active RFID tag with passive RFID reader to scan the information and this information is transferred to the AT89C52 microcontroller where in the contacts of around 4 to 5 people is stored in the data base. Once the information is received by the controller, it sends the message to the contacts through GSM module and the location is tracked through the GPS.The simulation is done in ISIS proteus.

[6] This paper presents a women safety Android application which is developed by using a number of features in smartphones like GPS navigation, digital camera, high-speed internet connectivity and many more. The proposed work helps the user to get articles and reviews about the place by just holding the camera at the location. These articles and reviews are augmented with the real scene in the camera by integrating the augmented reality. Augmented reality can be integrated into women safety app using Wikitude SDK which helps to place articles and reviews related to the current location of the user. Along with articles and reviews, the recommendation about the place such as 'Safe Street' or 'Unsafe Street' is also provided to the user based on the available data. The articles, reviews as well as the recommendation given by the system help the user to decide how safe or how dangerous a particular street/place is. Furthermore, the user can send calls/messages to the police and the listed contact numbers using this app in case of emergency. The message contains details about the current location of the user. If the user wants to share his experience about the place, he can post his reviews through this app.

[7] This paper surveys about the security system for women and children which allows immediate responses in any harassment in public places, societies etc. Women all over the world are facing unethical physical harassment and Children cannot be left unattended at a social event or outside the home. Our project solves both the problems. A portable device which will have a pressure switch. As soon as an assailant is about to attack the women/child or when they senses any insecurity from a stranger, he/she can then put pressure on the device by squeezing or compressing it. Instantly the pressure sensor senses this pressure and a conventional SMS, with the victim's location will be sent to their parents/guardians cell phone numbers stored in the device while purchasing it, followed by a call. If the call is unanswered for a prolonged time, a call will be redirected to the police and the same message will be sent. The main feature of our system is less response time will be required for helping the victim.

[8] In this paper, an attempt has been made to develop a smart device that can assist women when they feel unsafe. This smart device will be clipped to the footwear of the user and can be triggered discreetly. On tapping one foot behind the other four times, an alert is sent via Bluetooth Low Energy communication to an application on the victim's phone, programmed to generate a message seeking help with the location of the device attached. The results obtained were analysed using Naïve Bayes classifier and this low cost device showed an overall accuracy of 97.5%.

[9] In this paper, we develop a smart mobile application, namely HearMe, with multiple unique features including lock screen access and instant siren on the receiver device. The modules of HearMe application can be accessed through hardware buttons in order to facilitate quick access to the victim woman. Another important feature of HearMe is to blow a loud siren at the receiver device even if the mobile is in silent mode, increasing the reliability of getting help from the family members or hospitaVpolice station personnel.

[10] It finds its application in the areas where actually cameras are not allowed. This device works with a principle that camera operates in the frequency range 0.1GHz to 3GHz, so RF signal detector detects the frequency range and if it is within this frequency range it alerts us with an alert light. A video camera can also be detected by this detector by extending the detecting range from 0.05 GHz to 3 GHz we can detect both camera and video camera. Once, it is detected it alerts us with a LED light and it an option to stop the camera transmission by creating strong interference between the camera and base station. This device also comes along with an eyeglass which can be used if alternating pulsating frequency or if recording camera is used where RF signal detector cannot be used. Cameras can be detected by flashing red light once viewed through optical glass viewport. The flashing light will reflect off the 'spy' camera's lens and will be able to spot it.

III. PROPOSED SYSTEM

In this system we have proposed that the addition of camera module which provides the witness proof. We use ESP8266 as controller which also has Wi-fi .ESP32-CAM as a camera module ,since it is small in size, It also has Wi-fi to send the captured image to the mail address.

The band has three inputs they are Trigger button, pulse rate sensor and temperature sensor. The GPS & GSM for location tracking and messaging services.
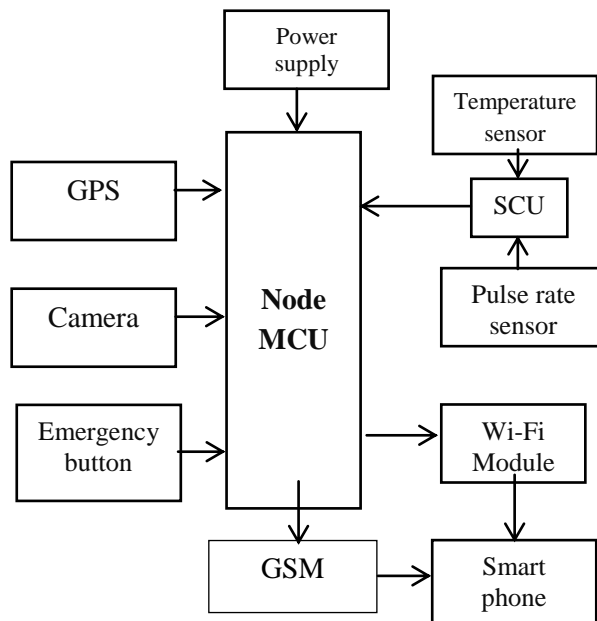The block diagram of our proposed system is as shown in Figure :

Figure 2: Block Diagram

The block diagramconsists of the following blocks. Battery 12v rechargeable battery is used to power the circuit. Node MCU is the low cost open source IoT platform.Node MCU (ESP8266) is a microcontroller board. Node MCU provides access to the GPIO (General Purpose Input/Output) pins. It consists of 30 input/output pins, 2 UART pins, a 40 MHz crystal oscillator, a USB connection, a power jack, an ICSP header, and a reset button. It contains everything that needto support the microcontroller.support the microcontroller.

Figure 3: Node MCU(ESP8266)

It is simply connected with a computer with a USB cable or power it with a AC- to-DC adapter or battery to get started. The Node MCU (ESP8266) has 4 MB of flash memory for storing.

GPS Module:

Figure 4: 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 isdirectly connected to USART of the microcontrollerprovides 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.

GSM module:

Figure 5: GSM module

GSM module is used to establish communication between a computer and a GSM-G\PRS system. Global System for Mobile Communication(GSM) SIM card is inserted within the mobile device to send and receive the messages

victimisationGPRS.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.

ESP32-CAM:

Figure 6: ESP32-CAM

IoTModule(ESP32-CAM) The Internet of things(IoT) has evolved due to convergence of multiple technologies,real-time analytics, machine learning, commodity sensors, and embedded systems the physical world into computer-based systems, and resulting in improved efficiency, accuracy and economic benefit.IoT is that the network of the physical devices, vehicles, buildings and alternative things embedded with physics, software, sensors, actuators and network property that modify to gather and exchange information.TheIoT allows objects to be sensed and controlled remotely across existing network infrastructure, creating opportunities for more direct integration. Camera incorporated in this system is used to capture the culprit, it is 5 megapixel camera

Temperature sensor:

Figure 7: Temperature sensor

It is an RTD(Resistance Temperature Detector) or a thermocouple, that collects the data about temperature from a particular source and converts the data into understandable form for a device or an observer. In this system it senses the body temperature of a person who wears it.

Figure 8: Pulse sensor

An alternate name of this sensor is heart beat sensor or heart rate sensor.The working of this sensor can be done by connecting it from the fingertip or human ear to arduino board. So that heart rate can be easily calculated.

The SCU is used to set the threshold value for both pulserate sensor and vibration sensor.If the output value from any of the sensor exceeds the threshold value the SCU will send the signal to the Node MCU

IV. METHODOLOGY

System Architecture This work develop a women's safety system which provides the current location details of the women in danger using GPS and GSM modules. IoT module will track the current location of the victim and update in the webpage. In addition to location tracking it also provides witness proof by capturing the image by the camera in the band. The proposed system of this project is shown in Fig.1. Workflow of the proposed System The workflow of the women safety and security is explained in this section. The flow chart of the proposed system is illustrated in Fig.4.2.1.

Step 1: Start.

Step 2: Switch ON the 12 Volt power supply.

Step 3: Emergency button is pressed.

Step 4: If GPS receives signal, GPS will start calculating the current latitude and longitude values of the victim and send it as SMS to the registered mobile number using GSM module.

Step5: The camera starts functioning and capture the image and send it to the registered email ID

Step 6: If any abnormal signal detected by both pulse rate sensor and temperature sensor, get the last location from GPS and send to GSM module.

Step 7: IoT module tracks the last location of the victim and that location is updated in the Webpage.

Step 8:ESP32-CAM capture the image of the culprit and send it to the registered mail address.

Step 9: Stop

V. RESULTS AND DISCUSION

The temperature sensor was tested and the result as presented in Table 1 shows that the system worked according to predetermined temperature value of 99°C. The device send the alert message with location to the mail id and mobile number. buzzer came ON indicating the presence of obstacle on the way of theuser.

A.Temperature sensor result:

S.NO	TEMPERATURE(°C)	SIGNAL
1	80	Not sent
2	85	Not sent
3	90	Not sent
4	95	Not sent
5	100	Sent

This pulse rate sensor is placed in a wrist it continuously detects the pulse rate of the person who wears it. If it reaches the threshold value of 105 heart beats per minute, then alert message is sent to the registered phone number and captured images is send to the registered mail address.

B.Pulse rate sensor result:

S.NO	PULSE RATE (per minute)	ALERT SIGNAL
1	90	Not sent
2	95	Not sent
3	100	Not sent
4	105	Sent

A emergency push button is employed in the smart band .If this button is pressed then the device gets activated and send the alert message and captured image is send to the mail address.

C.Emergency button result:

S.NO	STATE OF BUTTON	ALERT SIGNAL
1	Off	Not sent
2	On	sent

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 microcontroller gets the commands and the GPS will calculate the current latitude and longitude values of the victim.GSM module will send SMS which contains latitude and longitude values to the numbers already stored in the microcontroller and nearby police station. IoT module will track the current location of the victim and it will update the location on the webpage. The camera module capture the image and send it to the registered mail address.

VI. CONCLUSION

The proposed design will deal with critical issues faced by women and will help to solve them with technologically sound equipment and ideas. The merit of this work is provides safety and it also provides witness proof by means of photos. The crime against the women can be now brought to an end with the help of real system implementation of the proposed model.

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