

Women's Security using Wrist Band

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Abstract— Nowadays, women and children safety is a prime issue of our society. The count of the victim is increasing day by day. In this paper, we are proposing a model which will develop a self defense system especially for women to ensure the safety and to protect themselves from present day physical harassments. We have used different sensors like the knock sensor, temperature sensor, 3-axis accelerometer. We have also used GPS which will help to detect the location of the device. GSM used in the model is used to send the alert message to predefined number, police station. We have proposed embedded microcontroller based device ARDUINO which will help to continuously monitor values of different sensors and GPS used in the device.

Key Words: ARDUINO, Switch, GSM, GPS, sensors

I. INTRODUCTION

The status of women in India has gone through many great changes over the past few years. But still, women are facing social challenges and are often victims of abuse and violent crimes. Hundreds and thousands of incidents of physical abuse are happening to women every day.

The basic approach in this paper is to intimate instant location and along with a message to a predefined number like parents, friends, media, and women cell to avoid unfortunate incidents. The Nirbhaya case in Delhi triggered the whole nation was the greatest motivation for this idea. At the present scenario, Women are competing with men in every prospect of society [1]. Women contribute fifty percent to the development of our nation. But the women have fear of getting harassed and killed. All these types of women harassment cases are increasing day by day. So it is very important to ensure the safety of women.

In this paper proposed the model of a band will provide a required safety to women so that they can do late night work. Proposed model contains various sensors which will measure different parameters continually. IoT (internet of things) is a relatively new and fast-developing concept. By using IoT-based technology guardians, relatives and police can monitor and track different sensors value and position of a device. A device is wearable and so it is easy to carry.

II. BLOCK DIAGRAM

Power-supply: 5v supply is used for Microcontroller, GSM and GPS module while the 3.3v power supply is used for various sensors. Sensors will continuously send their values to the microcontroller. The microcontroller will compare the design is implemented using an embedded

microcontroller, in a modular form to be adaptable to different types of location tracking. Based on the total design of the system, the hardware and software of the system is a real-time monitoring of the women's body condition and location details in order to provide immediate help. The lady can protect herself by pressing the switch thereby it produces the electric shock and helps to deter the person harassing her. The software is developed in embedded C language to demonstrate the system capability in providing real-time response. Using the location information supplied by this system, the location is traceable using GPS through Google Maps.

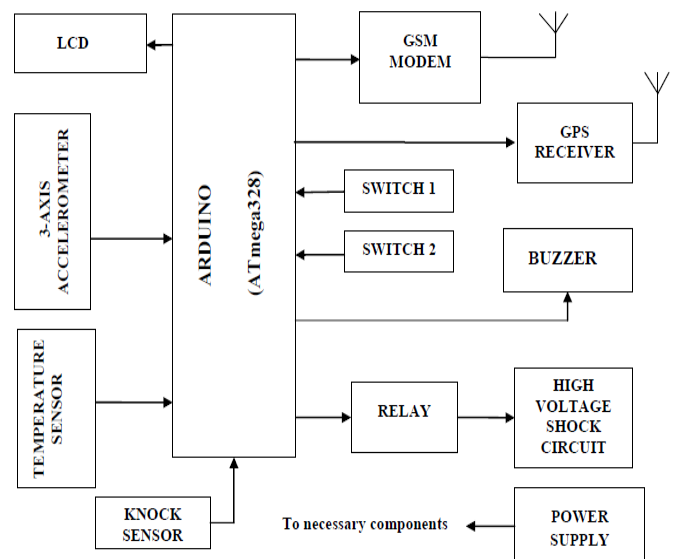


Fig1: Block diagram of women security system

III. HARDWARE

Hardware component used in device are as follows:

i) **Ardino:** The Atmel 8-bit AVR RISC-based microcontroller combines 32 kB ISP flash memory with read-while-write capabilities, 1 kB EEPROM, 2 kB SRAM, 23 general purpose I/O lines, 32 general purpose working registers, three flexible timer/counters with compare modes. It also has two UART port which used for GSM and GPS systems.

ii) **GPS:** GPS stands for global positioning system. GPS is used to track the device. GPS gives a position of a device in terms of latitude longitude and altitude. GPS is used to track moving device using satellite signal. When GPS is used there is communication between GPS transceiver and GPS satellite.

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iii) *3-axis Accelerometer*: An accelerometer is an electromechanical device that will measure acceleration forces. These forces may be static, like the constant force of gravity pulling at your feet, or they could be dynamic - caused by moving or vibrating the accelerometer.

iv) *GSM*: GSM stands for global system for mobile communication. GSM is a cellular technology which is used for voice and data transmission. GSM operates in-band of 900 MHz to 1.8 GHz. Through GSM it is possible to transmit SMS.

v) *Knock Sensor*: The **knock sensor** is located on the engine block, cylinder head or intake manifold. This is because its function is to sense vibrations caused by engine knock or detonation. The PCM uses this signal to alter the ignition timing and prevent detonation. It will compare this information with its preset tables to identify a valid knock or ping. If a ping is sensed, it will *retard* the ignition timing to protect the engine from this damaging pre-ignition.

vi) *RELAY*: The relay is used to switch between the GSM and the ZigBee module. This is connected to the TX pin of the microcontroller ATMEGA8. The relay first connects the TX pin directly to the GSM thus enabling communication via GSM services. Then it switches the TX pin to the ZIGBEE module which can then be used to communicate to the receiver through the ZigBee network



Fig-2: GPS location on map

IV. WORKING

Proposed Model is wearable model. After giving power supply to device, sensors on device will start taking readings. If switch 1 is pressed it obtains location information from the GPS and prepares a text SMS containing the present location information and sends SMS through GSM modem to the pre-programmed mobile number. Once the message is sent to the pre-defined number it displays "sent" instruction in the LCD, and if it's not send then it displays "error" instruction in the LCD. Similarly if switch 2 is found to be pressed, it activates the buzzer to make loud shouting sound to catch the attention of the nearby people for help. It also prepares the high voltage electric shock circuit to be ready to give a non-lethal shock to the attacker. On the other case if any of the parameter values are abnormal or any variation is detected, then also it obtains location

information from the GPS and prepares a text SMS containing the present location information and sends it to the predefined number or pre-programmed mobile number.

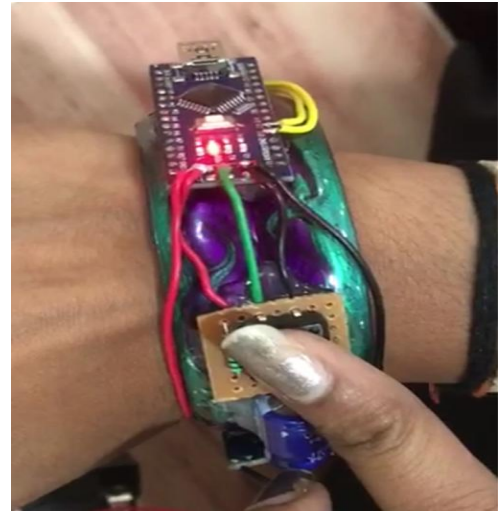
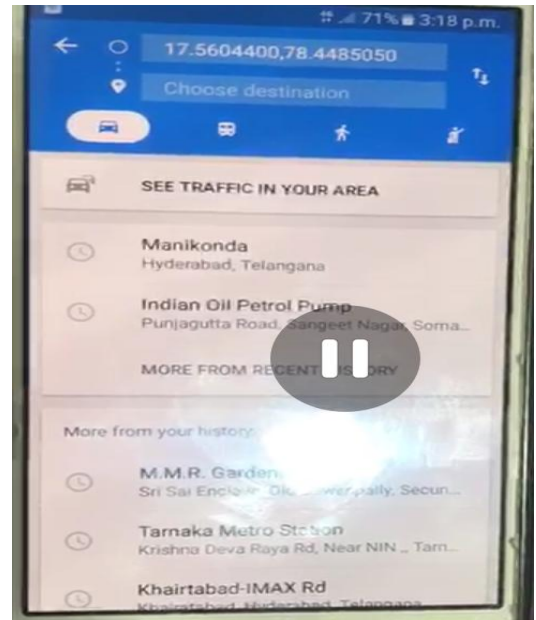


Fig-3: Device Module



V. CONCLUSION

The proposed system is a short term measurement for the present day harassment against women with variety of features. It gives immediate alert to the predefined number in case of any crime which provides women security. It is certainly a short term and preventive solution. The creation of a hardware and software prototype has achieved two objectives: validation of the proposed architecture and checking whether the utilized technology is appropriate for the system. This system will help its users in difficult situation. This system is highly sensitive and easy to handle. Its quick action response will provide safety and security to individual user.

VI. FUTURE SCOPE

In future, we can implement a camera on the band, in which the image of the attacker can be captured easily and act as solid evidence against the crimes. An additional pepper spray if used makes it a short term preventive solution against the attack.

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