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Women safety system using Raspberry Pi

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ABSTRACT

In today's world, women come across many situations that make them feel unsafe. Women from various walks of life face situations that make them feel threatened in different environments. Sixty-six per cent of women has reported sexual harassment in the year 2010 in New Delhi. It has also been proven that in urban environments, women are more prone to experience harassment especially in developing countries. In such situations, the aid of a safety device that will inform the victim's family members or the authorities (in severe situations) may help women feel safer, confident and reduce the chances of harassment. Though there are a few Smartphone based solutions for the same, it might not be possible for the victim to reach for her phone in some situations without the knowledge of the perpetrator. In this approach, the focuses on a security system that is designed merely to serve the purpose of providing security to women so that they never feel helpless while facing such social challenges. An advanced system can be built that can capture the video of the event as well as send the emergency messages of the victim through GSM to respective mobile numbers. The idea to develop a smart system for women is completely comfortable and also easy to use as compared to existing women security solutions such as infamous mobile apps, bulky belts and a separate garment that are just very abstract and obsolete.

Keywords— *GSM, Video streaming, Raspberry Pi 3B*

1. INTRODUCTION

In recent years, acts of a violence and assault against women are rising. With the escalation of female employees in industries and other sectors of the commercial market, it is now- coming to a necessity for females to travel at late hours and visit distant and isolated locations as a part of their work. However, the exponential increase in assault and violence against women in the past few years is posing a threat to the growth and development of women. Protection isn't the only measure that can suffice against this increasing abuse. A security solution that creates a sense of safety among women needs to be developed. In instances of attack, it is largely reported that women's are immobilized. Therefore there is a need of a simpler safety solution that can be activated as simply as by pressing a switch and can instantly send alerts to the near ones of the victim. This project focuses on a security system that is designed uniquely to serve the purpose of providing security and safety to women. The objective of research work is to create a portable safety device for women, which provides following facilities 1. Alerts family and friends by sending emergency message 2. Captures the images/video of the attacker to maintain a proof for legal actions.

2. LITERATURE REVIEW

In this paper[1] such device is designed which is a portable one which can be activated as per the requirement of the individual which will locate the victim using GPS and with the help of GSM emergency messages can be sent to the respective locations as per the design. The gadget provides an alarm system, call for help, and electric shock to get rid of the attacker.

This paper [2] suggests a new perspective to use technology to protect women. The system contains a normal belt which when gets activated, tracks the location of the victim using GPS (Global Positioning System) and sends emergency messages using GSM (Global System for Mobile communication), to the three emergency contacts and the police control room.

This paper [3] describes a GPS and GSM based vehicle tracking and women employee security system that provides the combination of GPS device and specialized software to track the location of the vehicle as well as provide messages and alerts with an emergency button trigger. The information of vehicle position provided by the device can be viewed on Google maps app.

In this [4] proposed system with the push of one button, people can alert selected contacts that the person is in danger and share the location. With this personal safety app, you'll never walk alone. The personal safety application needs the name and number of the person who is to be contacted in times of emergency. Users can add multiple people's mobile numbers in the emergency contacts list. These are the people who will receive notifications in case of an emergency. All it needs is the user's action to trigger an SOS button provided and it shoots messages as fast as the device can manage. This app also provides necessary first-aid measures that should be

taken at the time of emergency situations.

In this [5]literature focus is on creating a safety system that brings about a solution that ensures both defence and creation of a seamless pathway to initiating legal procedures, if any; have to be taken by the victim. We expect to create a partial wearable that can provide a complete security solution and become a utility that softens the restlessness among women and their family members. The objective of this literary work is to create a safety system in the form of a portable safety device for women that do the following tasks: 1. Alerts family and police and gives location coordinates of the woman being attacked. 2. Incorporates a defensive mechanism by giving a mild shock.

3. PROPOSED SYSTEM

It is proposed to women safety using Raspberry Pi. As shown in figure 1 below, the device intends to work in two sections. In the first section, if a woman is subjected to attack by an adversary, then a switch has to be pressed manually, by her (which will be ideally located at a convenient location on the body). This switch will trigger the controller (raspberry pi) to capture the image/video of the attacker and transmit it through duplicity. Attempts are being made to develop a method by which this image can be transferred on a web server. In Second section, emergency message "Please Help" will send to the pre-decided cell phone numbers (typically the family and the friends) via GSM module.

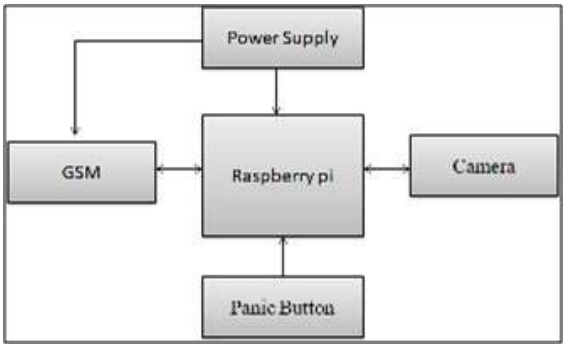

Fig. 1: Block diagram of women safety system

4. METHODOLOGY

4.1. Raspberry Pi

The Raspberry Pi board comes equipped with an SD card. This slot permits us to insert an SD card and that can use it as our devices. The SD card is the main storage device for a raspberry pi board like as hard disk of a personal computer. The Raspbian operating system is loaded on to the raspberry pi board. It also has onboard memory between 256MB the various components on the Raspberry Pi board. The Raspberry Pi is a single computer board has credit card size, which can be used for many tasks as the normal computer does, like spreadsheets, games, word processing and also to play HD video.

4.2. Power supply

This is a 5v Micro USB power connector into which you can plug your compatible device.

4.3. GSM

The SIM800L module supports quad-band GSM/GPRS network, available for GPRS and SMS message data remote transmission. The SIM800L communicates with the microcontroller via UART port, supports SIMCOM enhanced AT Commands. It also has a built-in level translation, so it can work with the microcontroller of higher voltage more than 2.8V default. Apart from, the board also supports A-GPS technique which is called mobile positioning and gets the position by the mobile network. This feature makes it a tracker module.

4.4 Panic button

A panic alarm is an electronic device designed to assist in alerting somebody in emergency situations where a threat to persons or property exists. This device gets activated when an individual call for help.

4.5. Camera

The 5MP Raspberry Pi 3 Model B Camera Module Rev 1.3 with Cable equips flexible cable for attaching with Raspberry Pi 3 Model B. The high-definition 5MP camera delivers outstanding photos but can also shoot video. The lightweight camera module allows it to be used in more practical roles, such as a hidden camera. This Raspberry Pi Camera Module is a custom designed add-on for Raspberry Pi.

5. RESULT

Fig. 2: Hardware implementation of video streaming

Fig. 3: Image of online video streaming

In some of the cases, the system can provide useful evidence. Since the system can do online video streaming of incidences after pressing the panic button the first time which can act as the evidence. The figure 2 shows the hardware implementation of video streaming and figure 3 shows the result of online video streaming.

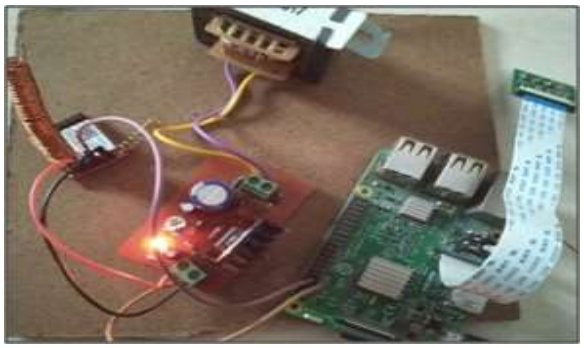

Fig. 4: Hardware implementation of SMS sending

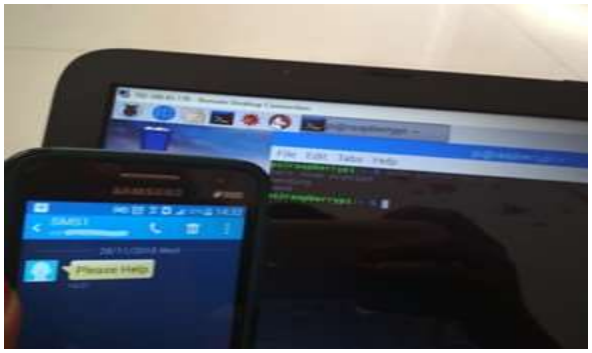

Fig. 5: SMS sending using GSM

The emergency message will send after pressing panic button the second time. This will send message "Please Help" to saved contact numbers. Hardware implementation and the result of SMS sending are shown in figure 4 and figure 5 respectively.

6. CONCLUSION

This type of idea plays an important role towards providing the fastest way of safety for women. The proposed design will deal with critical issues faced by women in the recent past and will help to solve them through using safety devices. This work was focused on developing a smart low-cost device to help women, feel them safer and prevent the occurrence of rape, harassment and other dangerous situations. The project would aid in enhancing the safety and security of all despondent and badgered women and children.

It can be concluded that the system helps to support gender equality by providing a safe environment to women in the society, and allows them to work till late nights. Anyone before doing any crime against the women will be deterred and it helps to reduce the crime rate against the women.

7. REFERENCES

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