

IOT Based Women Safety Using Raspberry Pi

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Abstract- Every day, every woman, young girls, mothers and women from all walks of life are struggling to be safe and protect themselves from the roving gaze of the horribly insensitive men who molest, assault and violate the dignity of women on a daily basis. The streets, public transport, public places in particular have become the dominion of the hunters. Due to these atrocities that women are subjected to in the present scenario, 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.

Keywords- Safety and security, harassment, killed, raped, emergency, IOT, sensors, GPS, police station, etc.

I. INTRODUCTION

IoT includes many different systems like smart cars, wearable devices and even human implanted devices, home automation systems and lighting controls; smartphones which are increasingly being used to measure the world around them. Similarly, wireless sensor networks that measure weather, flood defenses, tides and more. There are two key aspects to the IoT: the devices themselves and the server-side architecture that supports them. The motivation for this wearable comes from the increasing need for safety for little children in current times as there could be scenarios of the child getting lost in the major crowded areas. This paper focuses on the key aspect that lost child can be helped by the people around the child and can play a significant role in the child's safety until reunited with the parents. Most of the wearable available today are focused on providing the location, activity, etc. of the child to the parents via Wi-Fi and Bluetooth. But Wi-Fi and Bluetooth seem a very unreliable source to transfer information. Therefore it is intended to use

SMS as the mode of communication between the parent and child's wearable device, as this has fewer chances of failing compared to Wi-Fi and Bluetooth. The platform on which this project will be running on is the Arduino Uno microcontroller board based on the ATmega328P, and the functions of sending and receiving SMS, calls and connecting to the internet which is provided by the Arduino GSM shield using the GSM network. Also, additional modules employed which will provide the current location of the child to the parents via SMS. The second measure added is SOS Light indicator that will be programmed with Arduino UNO board to display the SOS signal using Morse code. The different modules stay enclosed in a custom designed 3D printed case. In the scenario, a lost child can be located by the parent could send an SMS to the wearable device which would activate the SOS light feature on the wearable. Therefore alerting the people around the child that the child is in some distress and needs assistance as the SOS signal is universally known as the signal for help needed. Additionally, the wearable comes equipped with a distress alarm buzzer which sets to active by sending the SMS keyword "BUZZ" to the wearable. Hence the buzzer is loud and can be heard by the parent from very considerable distance. Also the parents via SMS can receive accurate coordinates of the child, which can help them locate the child with pinpoint accuracy. Some of the existing work done on these similar lines are for example the low-cost, lightweight Wristband Vital which senses and reports hazardous surroundings for people who need immediate assistance such as children and seniors. 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 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. people can get an alert that something wrong is going on and they can provide necessary help.

II. EXISTING SYSTEM

1. Among the poorest countries in violence, India has an abhorrent record in all kinds of sexual harassment.
2. Indian women are in perpetual surveillance, like a nation on a terrorist alert.
3. Grotesque reports of abuse of children, child rape of eight years of age and trafficking of women have occurred.
4. We also built a country where women are learning how contend to existential anxieties.
5. There are a few pre-existing applications that do deliver a message to your saved friends, and Inone of them will be powerful and fast enough, and according to the poll, the existing technology doesn't make most women feel comfortable.
6. In certain cases, it is reported that women do not file a lawsuit it against accused for just a variety of reasons, such as not knowing the proper jurisdiction to report it or feeling ashamed/guilty about the incident.
7. Keeping the same concern in mind many developershave come up with innovative applications. Few of such applications are as follows VithU App: This is an emergency app initiated by a popular Indian crime television series “Gumrah” aired on Channel [V]. In this app when the power button of the Smartphone is pressed twice consecutively, it will begin sending out alert messages with a link to the location of the user every two minutes to the contacts fed into the app.

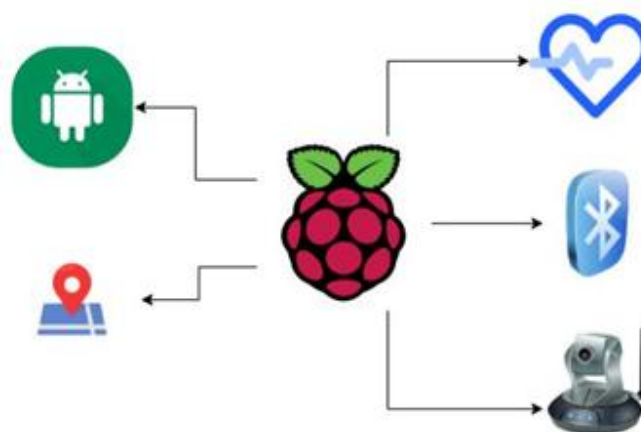
III. PROPOSED SYSTEM

The main purpose the project is to provide highly reliable security system for the safety of women

- The proposed system is based on advanced sensors.
- The basic aim of the system is to develop a low cost solution for GPS based women tracking system (women safety system).

- An emergency button is fixed on the device at a particular position. Whenever women is in any kind of trouble she will press the emergency button. After the button is pressed, image will be captured through the USB camera fixed in the device. Location will get tracked in the form of latitude and longitude. Notification email will be sent immediately to the relatives of user and police in which image captured, help message and location will be send.
- BP sensor is used to check the pulse rate of the women, if the pulse rate of women if high than 120 bpm than the buzzer alarm fixed in the device will start beeping , so that the nearby people can get an alert that something wrong is going on and they can provide necessary help.

IV. SYSTEM ARCHITECTURE



V. MODULES

CAMERA MODULE:-

After the alert by button click, capture the image by camera to keep a record and sent to the nearest police station and relative. Image is also stored in the database.

LOCATION MODULE:-

The current location of the victim is shared to police station and relatives in the form of coordinates that is the latitude and longitude.

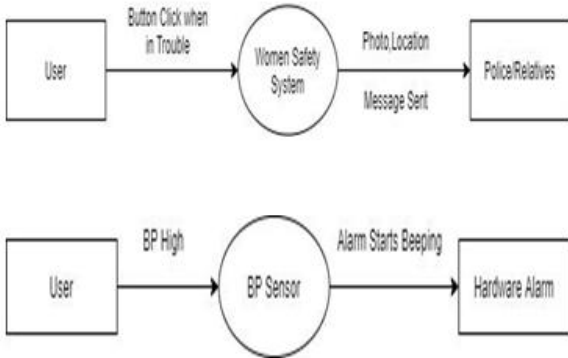
NOTIFICATION:-

The current location of the victim, image of the person, and message is shared to police station and relatives via mail.

BP SENSOR:-

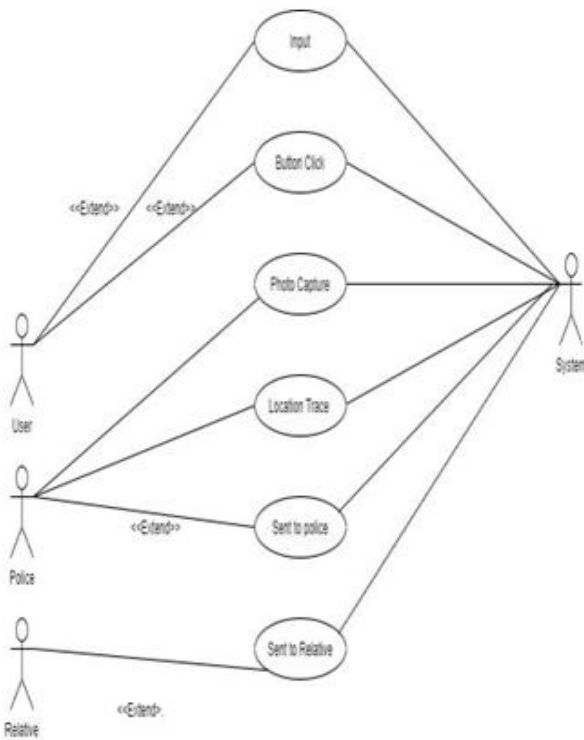
Check the pulse rate of the women if it is high than 120 the buzzer will start beeping.

DATA FLOW DIAGRAM

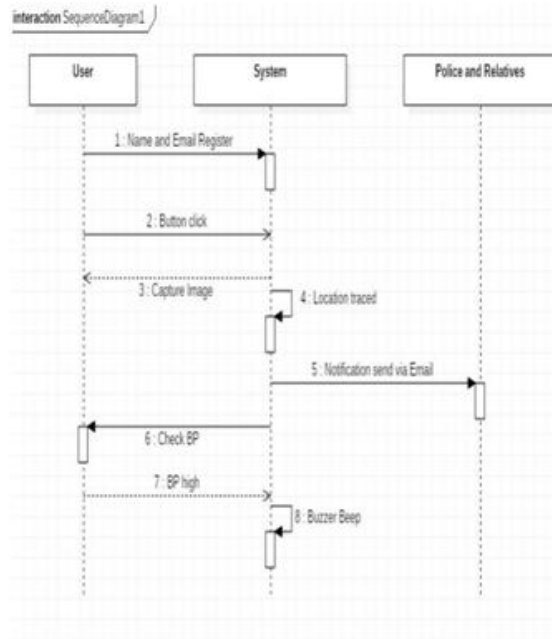


VI. MODEL IN UML

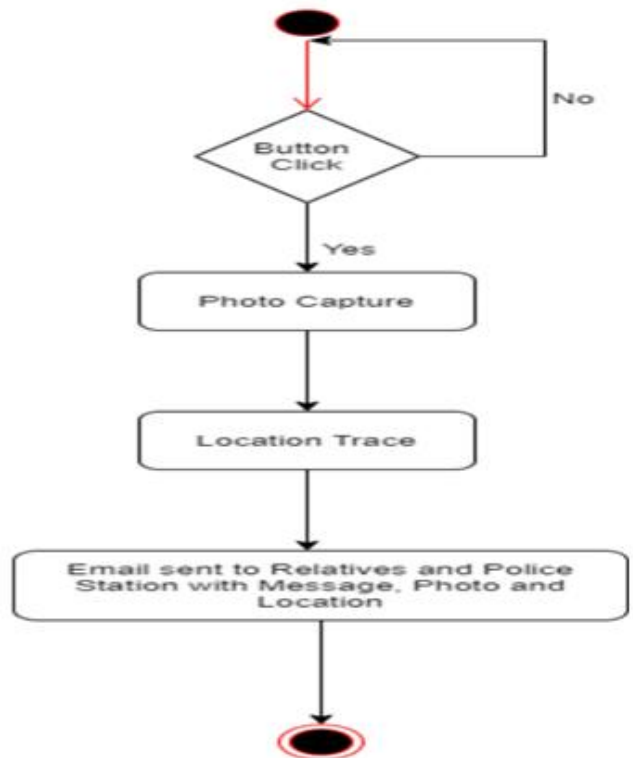
USE CASE DIAGRAM



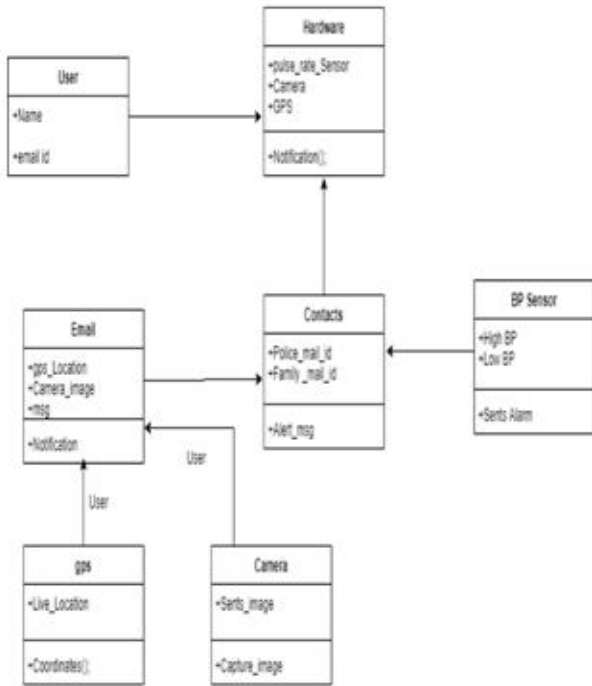
SEQUENCE DIAGRAM



ACTIVITY DIAGRAM



CLASS DIAGRAM



Project Setup

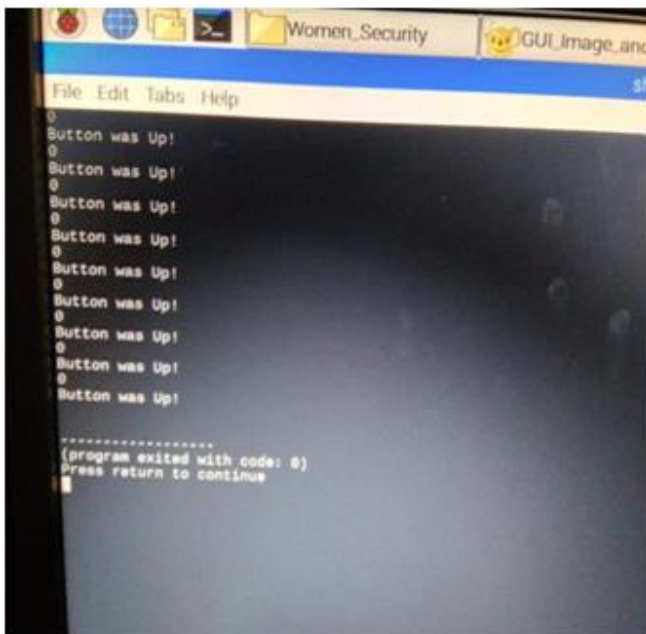


Raspberry Pi

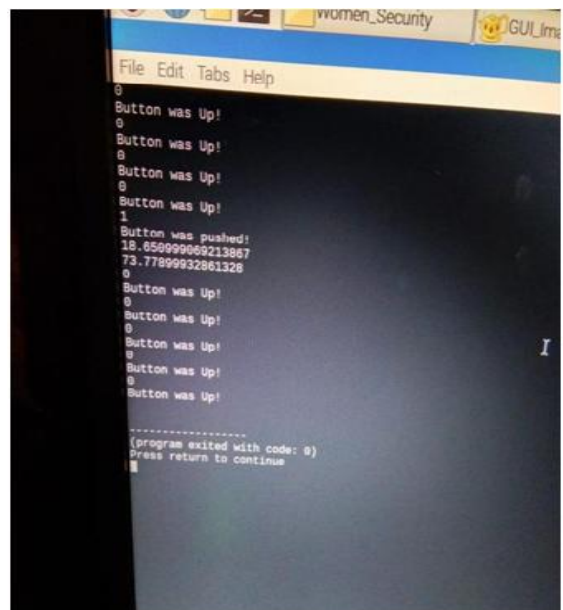
VII. APPLICATION

- Women Security in Society
- Police Department for

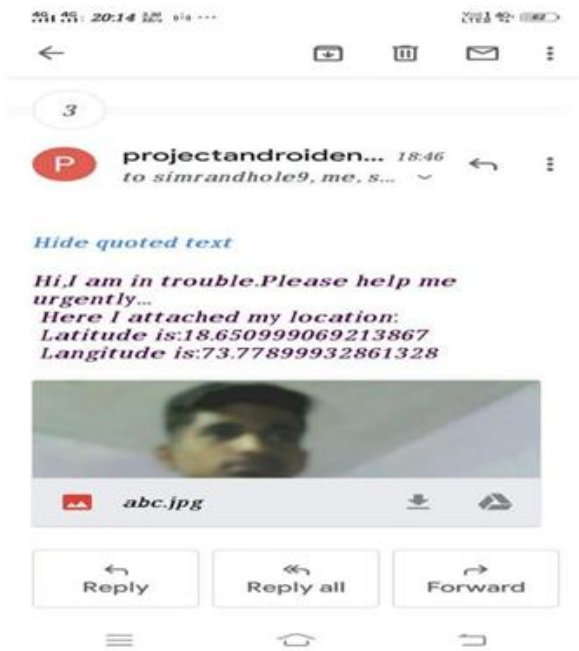
VIII. RESULTS



Button not press



Button pressed



Mail format

IX. CONCLUSION AND FUTURE WORK

- In this project, We totally focused on women Security.
- Here , We proposed hardware and software for more accuracy.
- Pulse rate Sensor and Image with microcontroller gives more security with respect to other system
- In future, System will add more module i.e. Image processing for object detection.

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- [7] G. P. HELMERS, ALARM HAND BAG, APPLICATION FILED mu. 7. 1914, Patented Aug. 3, 1915, GEBHARD P. HELMEBS, OF BALTIMORE, MARYLAND, "ALARM HAND-BAG", Patented Aug. 3, 1%15, Application filed January 7, 1914. Serial No. 810,766.
- [8] U.S. Pat. No. 3,683,114 issued to Egan et al. discloses an automatic dialing and reporting system which is responsive to an alarm condition. The Egan et al. device seizes a telephone line and initiates automatic transmission over the telephone line.
- [9] U.S. Pat. No. 4,044,712, Aug. 30, 1977 to Goodman and Jaremus requires active, overt action to trigger the Pressurized Fluid Powered Horn after the attacker makes his intentions known. Nor has the device provided for any deterrent value through broadcast, by bright warning orange coloring, that it is being utilized.
- [10] U.S. Pat. No. 4,759,309 discloses a passive air, gas aerosol or pressurized fluid activated personal self-protection screech alarm device that is armed prior to the person utilizing it entering into a potentially dangerous area or situation