

IOT based Women Security System using Raspberry Pi

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Abstract: *The term "Smart Bracelet" mainly refers to the wearable devices that monitor and record a person's Security. Tracking physical activity and proves constructive to the women in danger and helps them to fight such odds. However, little information exists about the comparability of wearable trackers women's location. This device is a real-time, portable, Scrabble system that consists of a button that triggers the Raspberry-Pi, which sends the alert message, and our device check pulse rate and pulse rate is high then victims current location with a recorded image of the crime and also produces a high frequency alarm to draw the attention of others. Although this device has been designed primarily for women security, it can also benefit other members of the society including elderly people, a girl child or anyone who faces an unsafe situation.*

Keywords: Raspberry Pi, Pi camera, Pulse rate sensor, ESP 12E

I. INTRODUCTION

It is quite apparent that there is a striving need for women security in the country. It is now possible to intelligently apply the benefits of current technology to resolve societal issues. Aims to apply the current trend in technology, i.e., Internet of Things (IoT) to eliminate fear filled lifestyle of female folks. The Internet of Things (IoT) is an ecosystem of connected physical objects that are accessible through the internet. A Raspberry-Pi based wearable device called the Smart bracelet that proves constructive to the women in danger and helps them to fight such odds. The main objective of the system is to intimate an instant location and a help message through an Android app to a registered number of contacts and the police. So that untoward incidents could be prevented and to provide real time evidence for swift action against the perpetrators of the crime. So here we propose wearable Women's security system that constantly monitors user's location, pulses rate and sends message to police and emergency contacts through a wearable bracelet.

A Smart bracelet is a unique device that helps the user's safety through this bracelet. This bracelet is a real-time, portable, Scrabble system that consists of a button. The main need of system is to intimate an instant location through an android app to register number of contacts and the police. It provides the user another way to interact with an android Smartphone. By late 20th and early 21st century, improvement in technology helped in equipment. Smart bracelet were basically a step counter wear on the wrist but now due to the advanced electronic sensors placed within it, it can perform various functions, like fetching location, sending messages, images of user, warning you to get out of women's insecurity, everything can be done easily. Smart Bracelet have positive effect on Women's Security. These devices help an individual to secure their life. The use of smart phones with Smart bracelet helps to record and monitor activities such as location, heart rate, Images of victim times as there could be scenarios of the child getting lost in the major crowded areas. This paper focuses on the 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 micro controller 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.

II. METHODOLOGY

When user feels unsafe she just need to press button. Fetches the GPS location of the phone and send the current location and alert message and image link to friends, police, family.

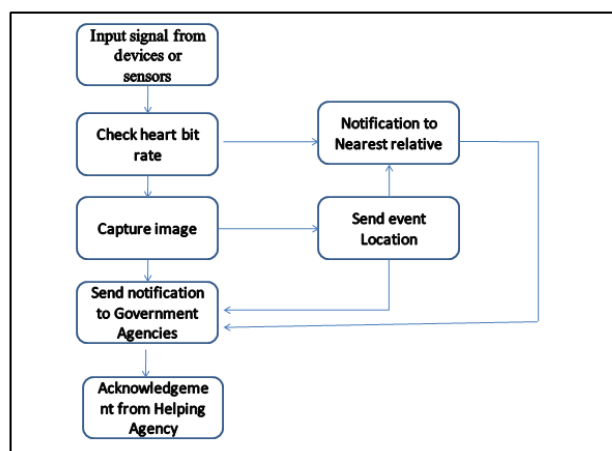


Figure 1: Workflow of proposed system

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 some safety and security to women like giving electric shock to the attacker. The proposed system of this project is shown below

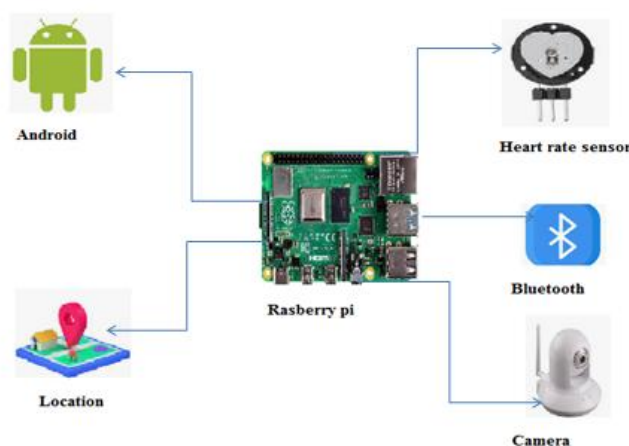


Figure 2: System Architecture

III. MODULE

User In this module Women / Children login to an android Smartphone and when women / Children feel unsafe, our device will first check the pulse rate, the pulse rate is high, so our device will take a photo of the victim and send it to the

police department to provide the current position of the women / Children, and this information will also be sent to the parent.

3.1 RaspberryPi

The Raspberry Pi is a little, modest, small PC on a solitary circuit board, and has been structured so that it expends less force than the normal PC. The raspberry pi comprises of the small-scale USB power, show port, miniaturized scale SD opening, HDMI, port, sound video jack, CPU, GPIO pins. Through the miniaturized scale USB power, the force flexibly for the raspberry pi is given. With the assistance of the SD card it can store mas stockpiling. The SD card of the advanced mobile phone that is utilized for the computerization and also can be embedded

3.2 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 is directly connected to USART of the microcontroller provides 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.

3.3 Pi Camera

The Raspberry Pi camera module can be utilized to take superior quality video, just as stills photos The module has a five-megapixel fixed-focus camera that bolsters 1080p30, 720p60, and VGA90 video modes, just as stills catch. It joins through a 15cm strip link to the CSI port on the RaspberryPi.

3.4 Heart Rate Sensor

An optical heart rate sensor measures pulse waves, which are changes in the volume of a blood vessel that occur when the heart pumps blood. Pulse waves are detected by measuring the change in volume using an optical sensor and green LED. Adopting an optical filter optimized for pulse wave detection in the sensor block minimizes the effects of ambient light such as red and infrared rays. This enables high quality pulse signals to be acquired, even outdoors.

3.5 Buzzer

A Buzzer or electronic device an audio signaling device, which can be mechanical, device or electricity. Usually piezospeakers(buzzers) are used "piezi buzzer" is basically a tiny speaker that you can connect directly to an Arduino. The piezo buzzer produce sound based on reverse of the piezoelectric effect. These buzzers can be used to alert a user of an event corresponding to a switching action, counter signal or sensor input.

3.6 IoT Module (ESP-12E)

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 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. The IoT allows objects to be sensed and controlled remotely across existing network infrastructure, creating opportunities for more direct integration.

IV. APPLICATIONS

- This technique further uses URL of the image and alert message to inform the family and police personnel.
- It works as a safety bracelet by constantly monitoring the state of user's security using the data from pulse monitor sensor
- It is used to monitor a person's security, location of victim, sends messages to police, emergency contacts.
- It will send images to police and emergency contacts after pressing button.
- It monitors your heart, pulse rate.

- It helps in keeping a record of persons Security.

V. RESULT AND DISCUSSION

The main objective of this is to provide reliable security for women when they are alone or feel unsafe and it can control amount of crime. 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. The calculated values via GSM module will send SMS which contains latitude and longitude values to the numbers already stored in the microcontroller and nearby police station. GSM will send SMS to the registered mobile numbers for every 1second. The SMS send to the registered mobile numbers are shown in Fig.3.1. And display message on the LCD. IoT module will track the current location of the victim and it will update the location on the webpage. The microcontroller will switch ON the buzzer in the device, so that nearby people may come to know that someone is in danger and they will come to rescue. The microcontroller also turn ON the neuro-simulator that applies electric shock to the attacker.



Figure 2: Working Module of Proposed system

VI. CONCLUSION

The existing systems are not powerful enough to prevent crimes against Woman. Main purpose of the system is fast process, low cost of development, acceptable quality, accurate tracking. This paper put forth a technique where a woman, when in danger, can instantaneously intimate to the concerned authorities. The proposed technique uses to check pulse rate of women pulse rate is high then our device and Smartphone send location to nearest police station and relative and. and take image of this victim and send to both of. However, this technique is effective only with the availability of smart phone to the victim and the contact personnel. Hence, there is a scope for further improvements by using GSM and GPRS aspects in the approach. Women Empowerment will make India a well-developed nation. Not only women in villages need to be empowered, but women in cities also need to be trained in physical security. Women need to be aware of all the schemes and rights that are provided by the government towards their empowerment. Every educational institution must have a Women Empowerment Cell to empower the girl students. This makes women to be equal to men in all aspects.

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