Women Safety Measurement & Tracking System Using Raspberry Pi.

Meghana R[1], Niranjan L[2], Rashmi K G[3], Keerthana H[4], Saranya S[5]

[1, 3, 4, 5]*UG Scholar, ECE, Department, RR Institute of Technology, Bangalore.*

[2]*Asst. Professor, ECE, Department, RR Institute of Technology, Bangalore.*

ABSTRACT

Today, the safety of women and children is a major issue. The problem of our society. The number of victims is increasing during the day, we proposed a model Help ensure the safety of women and children global. We use different sensors, such as heartbeat sensors, Temperature sensor, and acceleration sensor for detection Heartbeat, sudden temperature changes and user movement. We also use GPS, which will help detect the location device. The GSM used in the model is used to send an alert message to it. The Guardian, relatives and the police station. We suggest Iot (Internet of Things based) devices will help Continuous monitoring of different sensors and GPS values used in the device.

Keywords: - Women safety, Raspberry Pi, Flex sensor, MEMS accelerometer, GPS module, GSM module.

I. INTRODUCTION

In the current situation, women compete with men. Every prospect of society. 50% of women the development of our country. But women are scared Harassment and killing. All these types of women the number of harassment cases is increasing. Very Ensuring the safety of women is essential. In this paper, the proposed belt model will provide Women need to be safe, so they can do this late at night jobs. The proposed model contains various sensors Continuous measurement of different parameters. Internet of Things (Internet) Things) is a relatively new and fast-growing concept. By Using IoT-based technology guardians, relatives and police monitor and track the values and locations of different sensors a device. The device is wearable and therefore easy to carry.

II. EXISTING SYSTEM

In the safety system based on women and children [1], the victim must press the emergency button, but pressing the button in an emergency may not be possible. With a smartphone, kids can't send their location. The child's parents must send a message to the child's system to find out where they are.In the "Targeting a friend's mobile tracking app", the tracking application software must be installed on the mobile phone, and the friend must register in the application's friends group [2] in advance. In order to track their friends, both parties need a mobile phone.In the feminine security intelligence system based on RFID and GPS technology [3], there are some limitations in terms of cost, signal interference, and access to information by invalid and unauthenticated users and the reaction in speech might be

consideredas comparable sort of weight on every single sound circumstance over the speech. Enthusiastic speechresponse goes for naturally recognizing the passionateor physical condition of an individual from his or hervoice. With the progress of the human-machinecollaboration innovation, an easy to understandinterface is ending up increasingly imperative for speechconcerned applications.The main disadvantage of these applications and services is that the initial operation must be triggered by the victim [4], which usually does not happen in this case. Therefore, the focus is on establishing a solution to work autonomously in the circumstances encountered.This paper proposes a new method to protect women or children by ringing the buzzer and sending the location to the nearby police station where the victim is located.

III. PROPOSED SYSTEM ARCHITECTURE

The architecture of the proposed system as shown in Figure 1 includes the Raspberry Pi controller [5] as the primary source for receiving input signals from the sensors so that the sensors receive input signals from threatened or dangerous or abnormal people. in case. The sensors described in this architecture are temperature LM35 sensors, MEMS accelerometers, heartbeat sensors, flexible sensors and acoustic sensors. GSM is used to send an alert message to the registered contact number. Track the location of people (females).
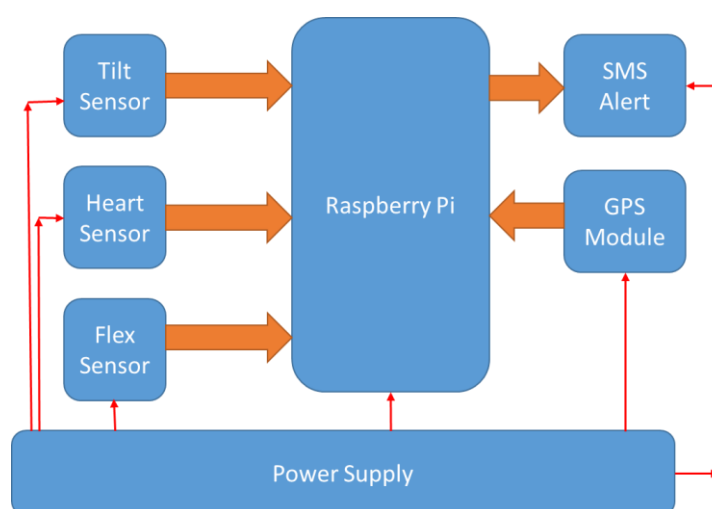

Figure 1: Block diagram of Proposed System

IV. WORKING PRINCIPLE

The principle behind this is to detect the body parameter signal from the corresponding sensor in contact with the negative in a threat state such that after detecting the signal, the sensor sends an electrical signal to the controller. The Raspberry Pi receives the signal from the sensor as an analog input signal, so it generates output parameters for each sensor. The sensors used in the proposed system are flexible sensors, MEMS accelerometers, pulse rate sensors. Each sensor is used to detect the signal of a person (female) who is in an abnormal situation [7]. If the value of any sensor signal exceeds a threshold limit indicating that the

woman is in a threat state and depends on the victim condition, the buzzer is activated when 4 of the 5 sensors exceed the threshold limit.Therefore, the GPS sends the location to the Raspberry Pi, which then sends the signal to GSM. Finally, the alert message "I am at risk" and the latitude and vertical position are sent to the registered contact number. Thus, the activation of the sensor and buzzer uses GPS to track the victim's location and, with the help of the GSM 800L used, sends the location message to the corresponding contact with a 10 second delay.

V.   HARDWARE DESCRIPTION

1. Raspberry pi: The Raspberry Pi as shown in figure 2, is a low-cost, credit-sized computer that plugs into a computer monitor or TV and uses a standard keyboard and mouse. It's a powerful little device that allows people of all ages to explore computing and learn how to program in languages like Scratch and Python. It does everything you want your desktop computer to do, including browsing the internet and playing HD videos, creating spreadsheets, word processing and playing games.More importantly, the Raspberry Pi has the ability to interact with the outside world and has been used in a variety of digital manufacturer projects, from music machines and parental detectors to weather stations and Twitter aviaries with infrared cameras. We want to see kids around the world use Raspberry Pi to learn programming and understand how computers work.More importantly, the Raspberry Pi has the ability to interact with the outside world and has been used in a variety of digital manufacturer projects, from music machines and parental detectors to weather stations and Twitter aviaries with infrared cameras. We want to see kids around the world use Raspberry Pi to learn programming and understand how computers work.

Figure 2: Raspberry Pi Module

2. GPS Module: The Global Positioning System (GPS) shown in Figure 3 is a navigation and precision positioning tool that tracks the position of the Earth's longitude and latitude based on the time difference of signals from different satellites. Arrived at the receiver [8].On six different orbits about 12,500 miles from Earth, 24 MEO (Medium Earth Orbit) satellites orbit the Earth for 24 hours, transmitting once per second. It receives the location data and transmits it to the Raspberry Pi. Therefore, the Raspberry Pi receives the signal from the GPS, so it performs further operations.

Figure 3: GPS Module

3. GSM module: A Global System for Mobile Communications (GSM) as shown in the figure 4, SIM card is inserted into the mobile device to send and receive messages using GPRS. The GSM SIM card number is already registered in the system. GSM is used to transmit data from the control unit to the base station. We can use the GSM 800A with a frequency of 900MHz. It has an uplink frequency band of 890MHz to 915MHz and a downlink of 935MHz to 960MHz GSM, with the advantages of FDMA and TDMA. In the 25 MHz BW, 124 carriers are generated with a channel spacing of 200 KHz (FDMA). Each carrier is divided into 8 time slots (TDMA) [9]. In any given instance of time, 992 voice channels are provided in the GSM 800L.

Figure 4: GSM Module

4. MEMS: A change in the value of ε, A or d will help to find the change in capacitance and thus contribute to the operation of the MEMS transducer. Accelerometer values are primarily dependent on changes in d or A values.The victim of the bay suddenly fell down: The MEMS accelerometer sensor is connected to the controller's A4, A5 analog pins. X coordinate The MEMS is connected to the A5 pin and the Y coordinate is connected to the A4 pin of the controller, as shown in Figure 10. The MEMS accelerometer is used for drop detection in many projects. In this device, the MEMS is used to detect a sudden drop in that particular person, so the X, Y coordinates determine the value obtained after a sudden drop in a particular woman/person.

Figure 5: MEMS Sensor Module

5. Pulse sensor/Heart Beat Sensor: The pulse sensor is shown in Figure 4. It is anRaspberry Pi plug-and-play heart rate sensor. It can be used by games, mobile developers, students, artists,

athletes, manufacturers, game developers and mobile developers who want to easily integrate real-time heart rate data into their projects [8]. It basically combines a simple optical heart rate sensor with amplification and noise cancellation circuitry to get reliable pulse readings quickly and easily. In addition, it consumes only 4mA at 5V, making it ideal for mobile applications.Simply insert the pulse sensor into the earlobe or fingertip and insert it into the 3 or 5 voltRaspberry Pi to read the heart rate.

Figure 6: Heart Beat Sensor Module

6. Flexible motion detection of victims: As shown in the figure 7, Place the sensor on your hand to detect the change in resistance at a specific location of the sensor, as shown in Figure 8. This depends on the change in resistance due to sudden bending of the body or hand or other factors. the reason. Therefore, this allows the sensor to sense and detect outliers to detect the output.
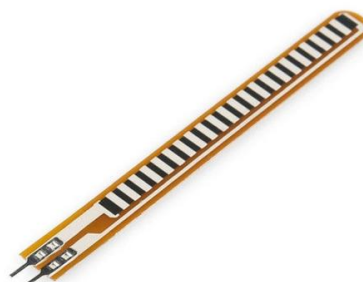

Figure 7: Flex Sensor Module

VI.   EXPERIMENTAL RESULTS

The prototype of the women security system is shown in below Figure 8 and Figure 9. The signals fromflex, MEMS accelerometer, and pulse rate sensors are detected successfully and send to Raspberry Pi. When four out of five above sensors crosses their threshold values the information is send to the family and the police station related to the threat and the location of the victim.
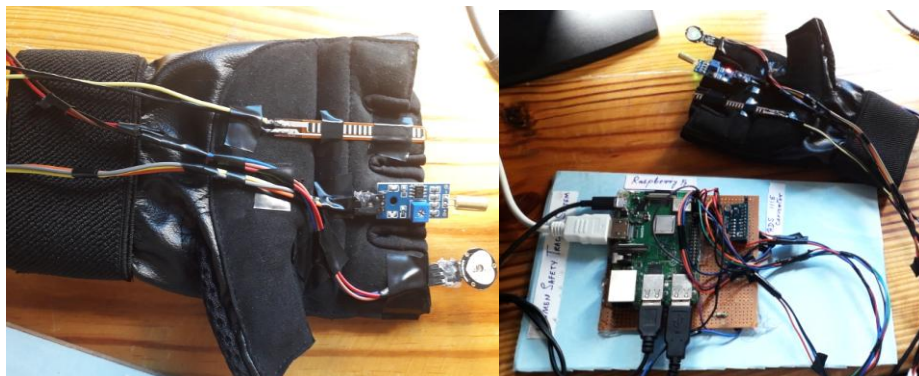

Figure 8 & 9: Glouse with sensor module and Raspberry Pi.

VII. CONCLUSION AND FUTURESCOPE

This paper is an existing application on women's safety and presents an innovative concept on women's safety and protection. More research can be done by introducing intelligent technologies that form networks of people and things. This will help to technically solve them through compact devices and concepts. Use a scream alert and alert the emergency contact to help the woman by sending a message containing the location. This system can overcome fear and make every woman in the country afraid of her safety. Emergency contact to help women's safety. This system can overcome fear and make every woman in the country afraid of her safety.

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