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SMART SECURITY SYSTEM FOR WOMEN PROTECTION

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Abstract - *In today's world women are less secure and have many issues regarding their security purpose. There are any existing systems for security purpose need of advanced smart security system is increased. In order to overcome such problems smart security system for women is implemented. The proposed system describes about safe and secured electronic system for women which comprises of an Arduino controller and sensors such as temperature LM35, flex sensor, pulse rate sensor. A buzzer, LCD, GSM and GPS are used in this project. When the women is in threat, the device senses the body parameters like heartbeat rate, change in temperature, the movement of victim by flex sensor, the voice of the victim is sensed by the sensor. When the sensor crosses the threshold limit the device gets activated and by using the GSM module the victim's location is sent to the registered contact number.*

Key Words: **GSM module, LCD, Sensor, Redeem module, GPS, Temperature**

1. INTRODUCTION

Safety is the most wanted power for everyone in today's world. Technology is the best way to achieve it. That's the reason to develop the project that can act as a rescue device and protect at the time of danger. The motivation behind this project is an attempt to focus 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. Even in this modern era women are feeling insecure to step out of their house because of their house because of increasing crimes in our country like harassment, abuse, violence etc., The corporate even in night shifts. There is a feeling of insecurity among the working women. An advanced system can be built that can detect the location and health condition of person that will enable us to take action according based on electronic gadgets like GPS receiver, GSM, pulse rate sensor, flex sensor, MEMS accelerometer, body temperature sensor. The proposed device is more like a safety system in case of emergency. To make use of number sensors to precisely detect the real time situation of the women in critical abusive situations. The heartbeat of a person in such situations is normally higher which helps make decisions to detect the abnormal motion of the women while she is victimized.

2. REVIEW OF LITERATURE

The woman's or the user which is using the app so that his location information is send the geographically nearest police station. This implements the client server system that helps the user to locate and track and receive the alert message done and track the location.

2.1 A SURVEY ON WOMEN'S SECURITY SYSTEM USING GSM AND GPS

When someone is going to harass, she can just press the button and the location information is sent as an SMS alert a few pre-defined numbers in terms of latitude and longitude. It is interfaced with a push button, a GPS module, a GSM modem and a LCD Display.

2.2 WOMEN SECURITY SYSTEM USING GSM AND GPS

This system resembles a normal cloves which when activated, tracks the location of the victim using GPS and sends emergency messages using GSM. The system also incorporates a screaming alarm that user real time clock, to call out for help and also generates an electric shock to injure the attacker for self-defence.

3. EXISTING SYSTEM

In Women and children-based security system victim has to press the emergency button, but in emergency conditions pressing the button is may not be possible. Using smart phone, the children cannot send its location by itself. The parent of that children has to send the message to the child's system to know their location. In "Mobile tracking application for Locating Friends", a tracking application software must be installed in the mobile phone and the friends must be previously registered in the friend's group of application. To track their friend's mobile phones are needed in the both sides. In an Intelligent system based on RFID and GPS Technologies for Women Safety has some limitations in terms of cost, signal interference and also the information access to invalid and unauthenticated users. The existing system presents new method to provide protection for women or children by ringing the buzzer and send location to the nearby stations.

3.1 DRAWBACKS OF EXISTING SYSTEM

The main drawback of these applications and services is that the initial action has to be triggered by the victim which often in situation like these doesn't happen. The existing system presents new method to provide protection for women or children by ringing the buzzer and send the location to the nearby police station where the victim is present.

4. MATERIALS AND METHODS

The operation of the board is very simple. After powering the board from a 3-5.5V supply, the Enable (EN) pin must be pulled high to activate the IR sensor. Next, place the tip of your forefinger gently over the sensor on its face. Your finger should be still and should not press too hard on the sensor. Within a couple seconds the circuit stabilizes and you will see the LED flashing synchronously with your heart beat. You can feed the output signal (Vout) to either a digital I/O or an ADC input pin of the microcontroller for measurement of the heart beat rate in BPM. The output voltage waveform can also be viewed on an oscilloscope. We connected Digilent's Analog Discovery tool to check the input PPG and the output waveforms from the two LPF stages. The Heartbeat sensor circuit is covered with Heat Shrink Sleeve to Avoid Noise.

4.1 PROPOSED SYSTEM

The proposed device is more like a safety system in case of emergency. The main purpose of this device is to intimate the parents and police about the current location of the women. Four sensors are used in this proposed system. They are heartbeat sensor, flex sensor, temperature sensor and sound sensor. In this proposed system, we implement the heartbeat sensor by using Arduino UNO. The new version uses the TCRT1000 reflective optical sensor for photoplethysmography. The use of TCRT100 simplifies the build process of the sensor part of the project as both the infrared light emitter diode and the detector are arranged side by side in a leaded package, thus blocking the surrounding ambient light, which could otherwise affect the sensor performance. We have also designed a printed circuit board for it, which carries both sensor and signal conditioning unit and its output is a digital pulse which is synchronous with the heartbeat. The output pulse can be fed to either an ADC channel or a digital input pin of a microcontroller for further processing and retrieving the heart rate in beats per minute (BPM).

4.2 WORKING DESCRIPTION OF BLOCK DIAGRAM

The Arduino receives the signal from the sensor as an analog input signal and hence it generates the output parameters of each sensor and displays it on the LCD display. An Arduino on the board channels this serial communication over USB and looks as a virtual com port to software on the computer. The serial communication will be held in the GSM and Arduino Controller. The system tracks the location information from the GPS and prepare a text SMS containing the resent location information and send SMS through GSM modems to the police control room and distress message to the programmed mobile number. Using the information supplied by this system, the location using GPS and can be traced through Google maps. Thus, the girl will be safe and she feels protected. The sensors used in the proposed system are flex sensor, temperature sensor, MEMS accelerometer, sound sensor, pulse rate sensor. Each sensor is used to detect signals of human (women) who is in abnormal situations. If values of any sensor signal crosses the threshold limit indicating that the omen is in threat and according to victim condition, when 4 sensors out of 5 sensors crosses the threshold limit the buzzer activated. Hence the GPS transmits the signal to the GSM.

Finally, the alert message "I am in danger" along with the latitudinal and longitudinal location is send to the registered contact number. Thus, activation of sensor and buzzer traces the location of victim using GPS and with the help of GSM 800L used sends the message of location to the corresponding contacts with a 10secs delay.

4.3 BLOCK DIAGRAM OF THE WOMEN SECURITY SYSTEM

The principle behind this is to detect body parameter signals from the respective sensors which are in contact with the women who are in threat condition and hence after detecting signals, the sensor transmits the output electrical signals to the controller.

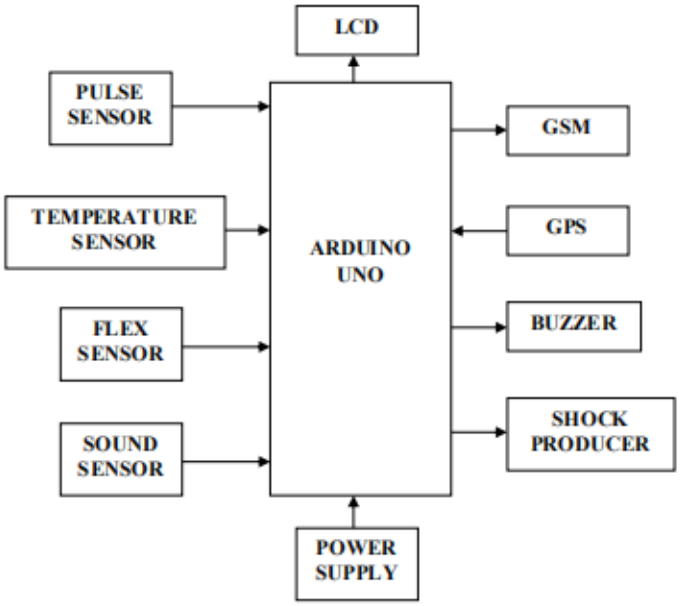

Fig-1: Block Diagram of Women Protection System

4.4 ARDUINO UNO

Arduino is an open-source platform used for building electronics projects. Arduino consists of both a physical programmable circuit board (often referred to as microcontroller) and a piece of software, or IDE (Integrated Development Environment) that runs on your computer, used to write and upload computer code to the physical board.

Fig-2: Arduino UNO

The Arduino platform has become quite popular with people just starting out with electronics, and for good reason. Unlike most previous programmable circuit boards, the Arduino does not need a separate piece of hardware (called a programmer) in order to load new code onto the board you can simply use a USB cable. Additionally, the Arduino IDE uses a simplified version of C++, making it easier to learn to program.

4.5 HEARTBEAT SENSOR

The proposed system is based on the principle of photoplethysmography (PPG) which is a non-invasive method of measuring the variation in blood volume in tissues using a light source and a detector. Since the change in blood volume is synchronous to the heart beat, this technique can be used to calculate the heart rate. Transmittance and reflectance are two basic types of photoplethysmography.

4.6 CIRCUIT DIAGRAM

The sensor used in this project is TCRT1000, which is a reflective optical sensor with both the infrared light emitter and photo transistor placed side by side and are enclosed inside a leaded package so that there is minimum effect of surrounding visible light.

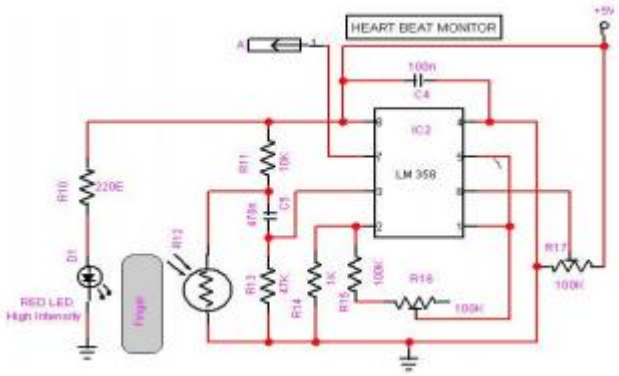

Fig -3: Heartbeat Sensor Circuit

5. CONCLUSIONS

Women's security is a critical issue in current situation. These crimes can be brought to an end with the help of real time implementation of this proposed system. Being safe and secure is the demand of the day. This project is design and fabricate a gadget which is so compact in itself that provide advantage of personal security system. The proposed design to will deal with critical issues faced by women in the recent past and will help solve them through technologically sound gadgets. With further research and innovation, this project can be implemented in different areas of security and surveillance.

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