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AN ADVANCE IOT BASED SELF-SECURITY SYSTEM FOR WOMEN'S TO AVOID UNLAWFUL ACTIVITIES

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ABSTARCT: In the current global scenario, the prime question in every woman's mind is about her safety and security. The only thought haunting every woman is when they will be able to move freely on the streets even in odd hours without worrying about their security. Thisproject proposed a new perspective to use technology to protect women. The wearable system resembles a panic button and heartbeat sensor. Women can press the button when they feel discomfort and activate the system. The system can also be activated by changes in sensor setup output which is part of the system. When the heart beat increases then automatically an SMS is send to the corresponding phone number. Same will also be performed when the temperature sensor is activated. When activated, the system tracks the location of the woman using Global Positioning System (GPS) sensor andsends an emergency message to the person who can help or save her using GSM. Hence by using this project effective result is obtained.

KEY WORDS: ARM, Heartbeat sensor, stepper motor, panic button, GSM, GPS.

I. INTRODUCTION

In this new world, where the woman is playing an outstanding role in each and every field, it is really shameful to know thatour country is rising to the top in crimesagainst woman. In a country like India, where woman are considered as goddesses and are being worshiped, woman securityhas become such a basic issue today. Each day, the nation wakes up to hear the increasing atrocities against the woman. It's high time, we should stand up to these by changing the laws and implementing the new technologies [1]. In the current global scenario, the prime question in every woman's mind is about her safety and

security. An undeniable reality that has not changed and is still prevailing, not only in our country but all around the world, is the safety of women. Whether at home, or outside the home, safety of women matters alot. It's a sad truth that every minute and every second some women, let it be mother, sister, wife, young girls, infants are getting harassed, assaulted, molested at variousplaces all over the world [2].

In today's world, women compete with men in every aspect of society. Women contribute 50% to the development of our country. However, the women are afraid of being harassed or killed. All of these typesof women's harassment cases are on the rise.As a result, it is critical to ensure women's safety. In this paper, the proposed band model will provide women with the necessary safety so that they can work late atnight. The proposed model includes a number of sensors that will continuously measure various parameters. IoT (internet of things) is a new and rapidly evolvingconcept [3].

Guardians, relatives, and police officers can monitor and track the value and location of adevice using IoT-based technology. Because a device is wearable, it is convenient to transport.

Nowadays, the safety of women and children is a major concern in our society. The number of victims is growingby the day. In gentle of the current situation of populated areas, some modern towns in India and some countries women protection is the one of the main issue [4]. In this

national wide of intelligent and smart electronic devices are required for a simple and rate-ground-breaking security machinethat encourages the sufferers at some phase in unexpected dangers. This assignment covers elucidating records about the configuration and usage of model for a computerized gadget which has the ability to highlight an assurance situated on inside the coming years.

II. LITERATURE SURVEY

This paper [5] talks about design of embedded device. This device fitted inside shoe & android application is developed for safety of women. When a woman is in trouble, she can use this app by pressing a single button. This app recognises the user's current location and sends messages to predefined numbers. In the current situation, every woman's first thought is about her safety and security. A recent literature review [6] presents a fast responding method that helps women at the time of trouble. The world is now becoming risky for women in all directions. Now a day's she is not safe because of increasing crimes against her at higher rate. The educated women feel unsafe because of increasing crimes. Whenever someone tries to indulge or harass her, she can press the button attached to the device, and the location will be sent to numbers already saved in the system. Latitude and longitude are used to determine location. The PIC16877A microcontroller was used. It has a push button, a GPS module, a GSM module, and a speech circuit. When the switch is pressed, the speech circuit activates, drawing the attention of nearby people to the need for additional help. In thissystem program is developed in embedded language. This system gives slight contribution to protect girls from crimes.

This paper [7] describes a safety device that includes a microcontroller, a heartbeat

sensor, a temperature sensor, and an emergency switch. To detect an emergency, this system retrieves the current location of the women and sends it to a saved number via GSM module. The shock giver circuit is intended to inflict pain on the attacker. R.Yadlapalli, in [8] proposed the system consists of a pressure switch, a Raspberry Pi 2, a GSM modem, a GPS receiver, a screaming alarm, tear gas, and live streaming video. When the pressure switch is pressed, the device will turn onautomatically in milliseconds. The location of the victim will be immediately tracked, and messages will be sent to emergency contacts. To summon additional assistance, the screaming alarm unit will be activated, producing a siren sound. Tear gas can be used to incapacitate the attacker and allow the victim to flee. The attackers' faces can be detected using live streaming video, causing the victim's situation to be processed using a preferred IP address. Using a webcam to stream live video Tear gas is released and incorporated into spectacles, which serve asa new weapon for smart technology.

The second paper [9] deals about an intelligent security system for women. Nowadays, young girls and women are subjected to a variety of forms of harassment, ranging from verbal abuse to sexual assaults such as rape and femicide. It is seen on streets, public transportation, parks, and in the vicinity of schools and workplaces. A new report from WHO tells 35% of women in worldwide have experienced violence. It includes a monitoring device, the output of which is processed to determine insecure environments. The microcontroller PIC16877A is used. This system can placed in public places, bus stands, foot paths and shopping malls where women are experiencing attacks. This paper [10]describes a GSM-based one-touch alarm

system for women's safety. Women are protected by this device. This helps to protect and call on resources that can assist in getting out of a dangerous situation. The system consists of a PIC microcontroller, GPS modules, and GSM modules. The main advantage of this system is that the user does not need to carry a smart phone. Women's and children's safety is a major concern in today's society. The number of victims is growing by the day. A lot of bad things have been happening.

III. PROPOSED SYSTEM

This paper proposes a model that will helpin ensuring the safety of women and children all over the world. A heartbeat sensor is used in this project for detecting heartbeat of user. Panic button is also usedto use the pepper spray when women feel to getting harm or any bad situation. GPS is used to help determine the device's location. The GSM in the model is used to send alert messages to guardians, relatives, and the police station. The IoT (internet of things)- based device is being developed to help continuously monitor the values of the device's various sensors and GPS. The blockdiagram of this proposed system is shown inFigure (1). This entire system was controlledby using ARM which can transfer all the control signals among different components used in system.

The above diagram shows the architecture of proposed system. In this ARM7, Heart Beat Sensor, Panic button, Pepper spray, LCD Display, crystal oscillator, RS-232. GSM and GPS are used. When the heart beat increases then SMS is also send to the corresponding phone number with the tracking of women location for saving her. Similarly if panic button is activated then the motor connected to the pepper spray bottle lock will be automatically on and it will spray the pepper for self protecting. Same

action can be performed when the temperature sensor also exceeds the threshold level. SMS is also sent to the corresponding phone number through GSM with location. GPS module is used here for tracking the position of women on earth. The description of each component is given below.

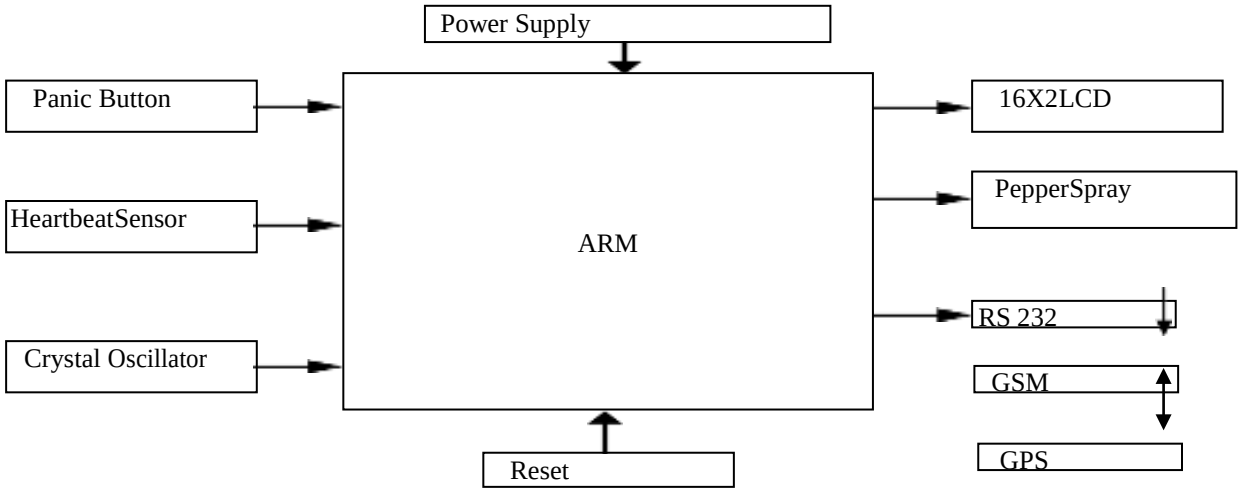

Fig. 1: PROPOSED SYSTEM

ARM

The LPC2148 microcontrollers are focused around a 16- bit or 32-bit ARM7TDMI-S CPU with constant imitating and implanted follow help, which consolidate microcontroller with inserted high velocity streak memory extending from 32 kb to 512 kb. A 128-bit wide memory interface andone of a kind quickening agent building design empower 32-bit code execution at

themost extreme clock rate. For discriminating code size applications, the option 16-bit Thumb mode decreases code by more than
30 percent with negligible execution punishment.

Because of their little size and low power utilization, LPC2148 are perfect for applications where scaling down is a key

prerequisite, for example, access control andpurpose of offer. Serial interchanges interfaces running from an USB 2.0 Full- speed gadget, various UARTS, SPI, SSP to I2c-transport and on chip SRAM of 8 kilo Bytes up to 40 Kilo Bytes, make these gadgets extremely appropriate for correspondence entryways and convention converters, delicate modems, voice distinguishment and low end imaging, giving both extensive cradle size and high transforming force. Different 32-bit clocks, single or double 10-bit ADC(s), 10-bit DAC, PWM channels and 45 quick GPIO lines with up to nine edge or level touchy outside intrude on pins make these microcontrollers suitable for mechanical control and restorative frameworks.

Crystal Oscillator

An oscillator gives a wellspring of tedious
A.C. motion over its yield terminals without requiring any contribution (aside from a
D.C. supply). The flag produced by the oscillator is more often than not of steady sufficiency. The wave shape and sufficiency are controlled by the plan of the oscillator circuit and decision of segment esteems. Therecurrence of the yield wave might be fixed or variable, contingent upon the oscillatorstructure.

Power Supply

Power supplies in recent times have greatly improved in reliability but, because they have to handle considerably higher voltages and currents than any or most of thecircuitry they supply, they are often the mostsusceptible to failure of any part of an electronic system. Modern power supplieshave also increased greatly in their complexity, and can supply very stable output voltages controlled by feedback systems. Many power supply circuits alsocontain automatic safety circuits to prevent dangerous over voltage or over currentsituations.

LCD Display

LCD is used to display the data. 16x2 is the LCD that has been used i.e. 16 characters in 1 line, total 2 lines are there. It requires +5V to operate. It is connected to port 2 of microcontroller. It acts as an output to microcontroller. It uses ASCII values to display the character.

Heart Beat Sensor

The basic heartbeat sensor consists of a lightemitting diode and a detector like a lightdetecting resistor or a photodiode. The heart beat pulses causes a variation in the flow of blood to different regions of the body. When a tissue is illuminated with the light source, i.e. light emitted by the led, it either reflects (a finger tissue) or transmits the light(earlobe). Some of the light is absorbed by the blood and the transmitted or the reflected light is received by the light detector. The amount of light absorbed depends on the blood volume in that tissue. The detector output is in form of electrical signal and is proportional to the heart beat rate.

Panic Button

This is a standard 12mm square momentary button. It is used as emergency Switch. This button is great for user input, it contains 4 pins. If the victim is in danger, by pressing the switch the gets

activated along with buzzer.

3.7 RS-232

RS-232 is a standard protocol used for serial communication, it is used for connecting computer and its peripheral devices to allow serial data exchange between them. As it obtains the voltage for the path used for the data exchange between the devices.

GSM

Global System for Mobile Communications (GSM) modems are specialized types of modems that operate over subscription based wireless networks, similar to a mobile phone. A GSM modem accepts a Subscriber Identity Module (SIM) card, and basically acts like a mobile phone for a computer. Such a modem can even be a dedicated mobile phone that the computer uses for GSM network capabilities.

GPS

The Global Positioning System (GPS) is a
U.S. space-based global navigation satellite system. It 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.

ARM processor which is a serial connector that converts TTL logics into binary and vice versa. GSM is connected to the GPS for location tracking. These are connected with cross coupled connection.

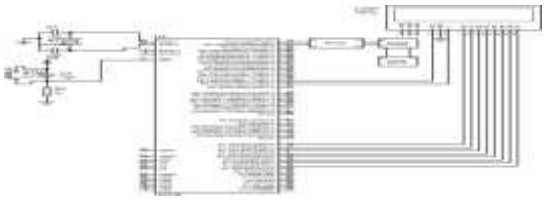

Fig. 5.2: GSM AND GPS INTERFACING

IV. RESULTS

The following figure (2) shows the complete circuit diagram of proposed system.

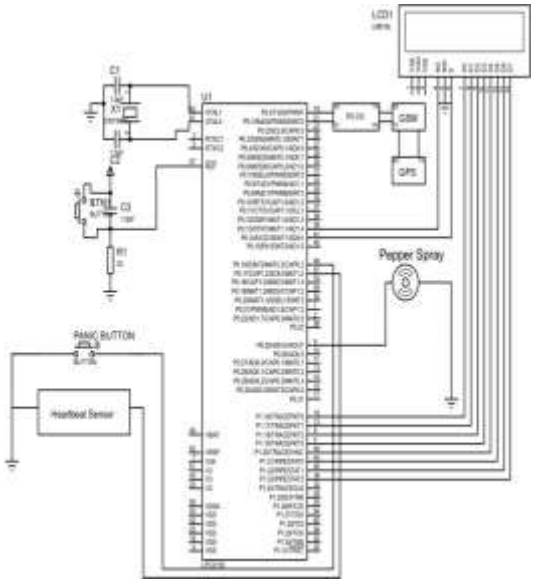

Fig. 2: CIRCUIT DIAGRAM OF PROPOSED SYSTEM

The following figure (5.2) shows the GSM and GPS interfacing to the ARM processor. The RS232 is used to interface GSM to the

The following figure (3) shows the circuit diagram when Panic button is pressed. Whenthe Panic button is ON the pepper spray motor will be activated automatically to spray the pepper for self protection.

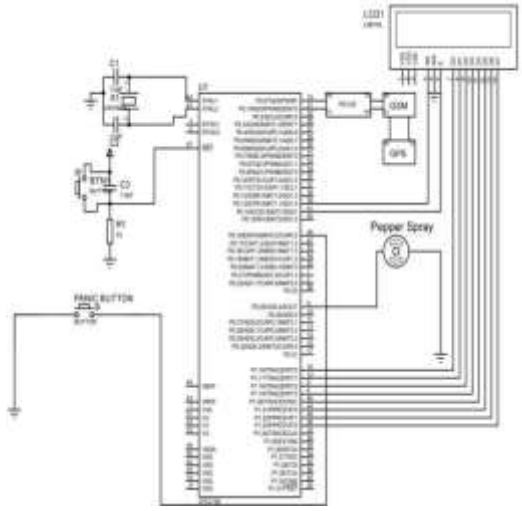

Fig. 3: WHEN PANIC BUTTON IS ACTIVATED

The following figure (4) the circuit diagram when heart beat sensor is detected. When theheart beat sensor is activated the GSM will be activated and sends an alert message through sms with their location tracking using GPS module.

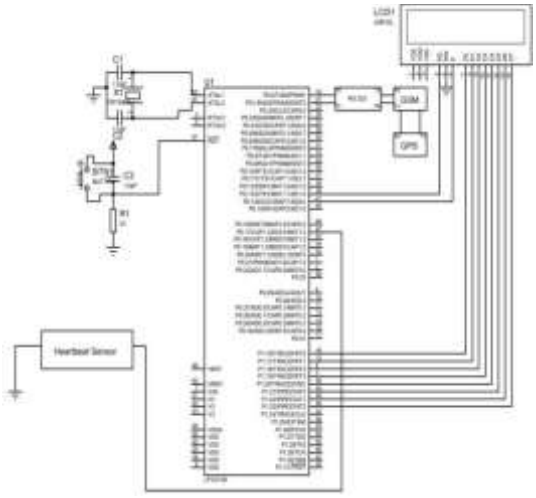

Fig. 4: WHEN TEMPRATURE SENSOR ISACTIVATED

V. CONCLUSION

The main aim of the proposed work is to provide security for women. In case of emergency situations, a woman presses an emergency button, i.e., the panic button, which activates the pepper spray for self-defense, and GPS is also activated for location tracking, and an SMS is sent to the police and the woman's family members, along with the time. This proposal document describes a quick-response, cost-protection system for individuals, particularly women, in which a woman in distress can call for help by pressing a button on this smart gadget. The heartbeat sensor is also used to monitor the health condition of women. If anabnormal situation is detected, it activatesthe GPS

and the location information is sent as an SMS alert to a few predefined emergency numbers. This proposed work is done using an ARM controller and IOT. The proposed design will deal with critical issuesfaced by women during the night andprovide security with advanced technology. The merit of this work is that it not only provides safety but also provides security bymeans of a self-defense mechanism. While society may or may not change its mindset,

this device will help women feelindependent.

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