WOMEN SAFETY SYSTEM USING IBEACON TECHNOLOGY

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ABSTRACT

In today's world women are less secure and have many issues regarding their security purpose. They have to undergo among various difficult situations and have to prove themselves every time in all critical conditions. So, for their security and safety purpose government has provided security through rules and regulation to the society. Although there are many 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 This paper describes about safe and secured electronic system for women which comprises of an Arduino controller and sensors such as temperature LM35, flex sensor, MEMS accelerometer, pulse rate sensor, sound sensor. A buzzer, LCD and GSM 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, MEMS accelerometer and the voice of the victim is sensed by sound sensor. When the sensor crosses the threshold limit the device gets activated. The GSM will send the alert message to the registered contact number..

***Key Words*:** *Arduino controller, Ibeacon, Sensors, Global system for mobile.*

I. INTRODUCTION

The device has been made in the form of a glove and is completely electronic. The person using the glove only has to activate the circuitry installed within the glove to attack the oppressor and protect herself from any danger. The circuitry is mounted within the glove between the protecting and insulating layers of the glove. The outer portion of the circuit has been well insulated, so that it does not cause any danger to the wearer and the person using it is completely safe.

II. PROPOSED SYSTEM

New iBeacon technology uses low cost Bluetooth Low Energy signaling to enable micro-location services and to trigger actions within apps. A woman with a mobile phone only needs to pass by the Bluetooth signal to be tracked by an application. This technology used to provide safety tracking of women and young people. IBeacon technology used to track and "checkin" on women and children in urban environments with automated low cost Bluetooth devices. Women and young people who can be tracked easily in an urban environment, law enforcement will can access information quickly, families who want to "checkin" on their loved one's travelling globally.

III. EXISTING SYSTEM

Using Smart Phone the women or child cannot send its location by itself. The parent of that child has to send the message to the child's system to know their location.
In an Intelligent System based on RFID and GPS Technologies for Women Safety has some limitations in terms of cost, signal interferences and also the information access to invalid and unauthenticated users.

IV. SYSTEM ARCHITECTURE

ATMEGA 328 is a single chip microcontroller created by Atmel in the MegaAVR family. It has a modified Harvard architecture 8-bit RISC Processor core.
The microcontroller (PIC16F877A) acts as an embedded computing system and controls the activities of all the subsystems. It is interfaced with Emergency Switch, GPS Receiver, GSM MODEM, and Speech Circuit. In case of emergency the trigger button is pressed.

The system tracks the location information from the GPS and prepares a text SMS containing the present location information and send SMS through GSM modem to the police control room and distress message to the preprogrammed mobile number.

V. HARDWARE DESCRIPTION

ARDUINO ATMEGA 328:

It consists of different types of memories such as flash memory, EEPROM, SRAM. The length of the arduino board is nearly about 68.64mm and the width of the microcontroller is about 53.4mm. The weight of the arduino microcontroller is about 20g. We can use various types of microcontroller such as 8 bit AVL Atmel microcontroller and 32 bit Atmel arm microprocessor. From these different kinds of processors, we can use those processors for various engineering projects as well as industrial applications. Some of the examples of using the arduino in the industrial applications are controlling the actuators and sensors. Some of the examples of arduino microcontrollers are Arduino Duemilanove, Arduino UNO, Arduino Leonardo, Arduino Mega, and Arduino MEGA 2560 R3, Arduino MEGA 2560 R3, Arduino Nano, Arduino Due, LilyPadArduino, micro arduino. We have already mentioned, arduino has been programmed by using c and c++ programming language. These c and c++ are high level languages. Normally it has 18 number of input and output pins. Among those 6 pins are considered to be an analog inputs.From these analog inputs, we can be able to work the arduino microcontroller using analog inputs supply.

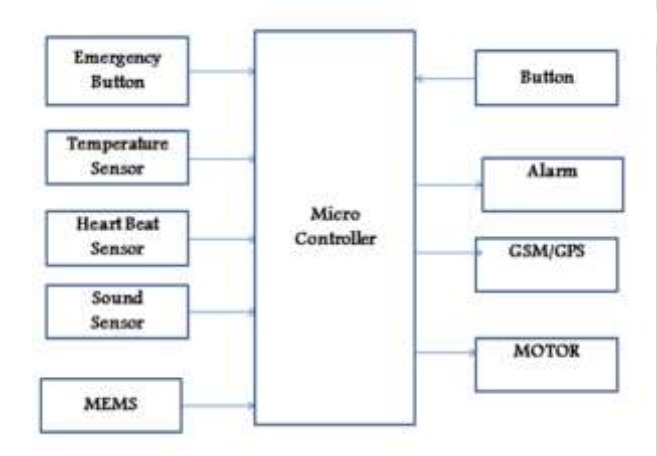

FIGURE.1. BLOCK DIAGRAM

VI. TECHNICAL DESCRIPTION

SIMCom SIM900AGSM Module:

This is actual SIM900 GSM module which is manufactured by SIMCom. Designed for global market, SIM900 is a quad-band GSM/GPRS engine that works on frequencies GSM 850MHz, EGSM 900MHz, DCS 1800MHz and PCS 1900MHz

MAX232 IC:

The MAX232 is an integrated circuit that converts signals from an RS-232 serial port to signals suitable for use in TTL compatible digital logic circuits, so that devices works on TTL logic can share the data with devices connected through Serial port (DB9 Connector).

Serial port / DB9 connector:

User just needs to attach RS232 cable here so that it can be connected to devices which has Serial port / DB9 Connector.

Power Supply Socket:

This power supply socket which actually named as AC/DC Socket provides the functionality to user to connect external power supply from Transformer, Battery or Adapter through DC jack. User can provide maximum of 12VAC/DC power supply through AC/DC socket.

Power On/Off and GSM On Switch:

Power On/Off switch is type of push-on push-off DPDT switch which is used for only make power supply on/off provided through AC/DC Socket indicated by 'Power LED. GSM On Switch is type of Push on DPST tactile switch which is used for only to make GSM module 'On 'indicated by 'Module On/Off LED' while initiating with Network indicated by 'Network Indication LED'

SIM (Subscribe Identity Module) Card Slot:

This onboard SIM card slot provide User functionality of insert a SIM (GSM only) card of any service provider. Process of inserting and locking SIM card into SIM card slot is given in this manual. While inserting in and removing out SIM card from SIM card slot, User needs to take precaution that power supply should be OFF so that after making Power supply ON it will be easy to reinitialize with SIM for this module.

RXD, TXD and GND pins (JP2):

These pins are used to connect devices which needs to be connected to GSM module through USART communication. Devices may be like Desktop or Laptop Computer System, Microcontrollers, etc. RXD (Receive Data) should be connected to TXD (Transmit Data) of other device and viceversa, whereas GND (Ground) should be connected to other device's GND pin to make ground common for both systems.

Inserting SIM card into SIM card Slot/Holder:

Here is the process how to insert SIM card into SIM card slot. User just need to unlock SIM card cover by sliding back. Then user need to open this cover and insert SIM card according to slot. Put down cover on SIM card and then lock by sliding forward.

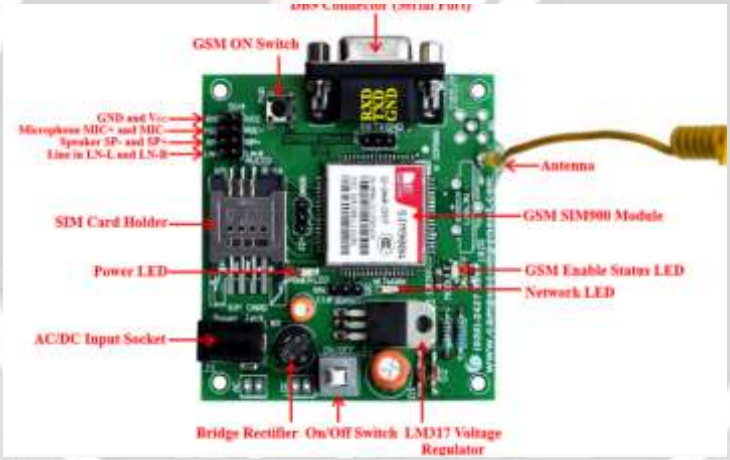

Figure.2. HARDWARE SETUP

Relay:

A relay is an electrically operated switch.Many relays use electromagnet to mechanically operate a switch, but other operating principles are also used, such as solid-state relays. Relays are used where it is necessary to control a circuit by a separate low-power signal, or where several circuits must be controlled by one signal.

Panic Switch:

The panic alarm is an electronic device designed to assist in alerting somebody in emergencies where a threat to persons or property exists. A panic button is an electronic device worn on a bracelet or necklace as part of a medical alert system, when pressed, it sends a wireless signal to a home console which dials alarm monitoring staffs and alerts them of an emergency condition.

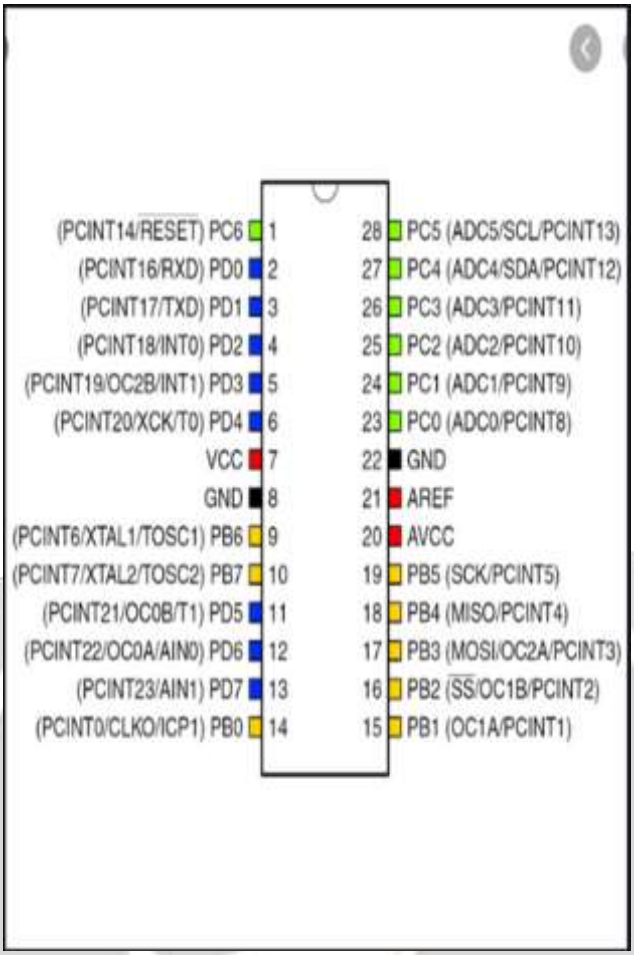

Figure.3. Pin Configuration

VII. SOFTWARE DESCRIPTION

Arduino Software (IDE):

The Arduino Integrated Development Environment - or Arduino Software (IDE) - contains a text editor for writing code, a message area, a text console, a toolbar with buttons for common functions and a series of menus. It connects to the Arduino and Genuino hardware to upload programs and communicate with them.

IBeacon Technology:

Introduced in iOS 7, IBeacon is an exciting technology enabling new location awareness possibilities for apps. Leveraging Bluetooth Low Energy (BLE), a device with IBeacon technology can be used to establish a region around an object. This allows an iOS device to determine when it has entered or left the region, along with an estimation of proximity to a beacon. There are both hardware and software components to consider when using IBeacon technology, and this document will give an introduction to both, along with suggested uses and best practices to help ensure a highly effective deployment leading to an outstanding user experience.

Embedded C:

- It is small and reasonably simpler to learn, understand, program and debug.
- C Compilers are available for almost all embedded devices in use today, and there is a large pool of experienced C programmers.
- Unlike assembly, C has advantage of processor-independence and is not specific to any particular microprocessor/ microcontroller or any system. This makes it convenient for a user to develop programs that can run on most of the systems.

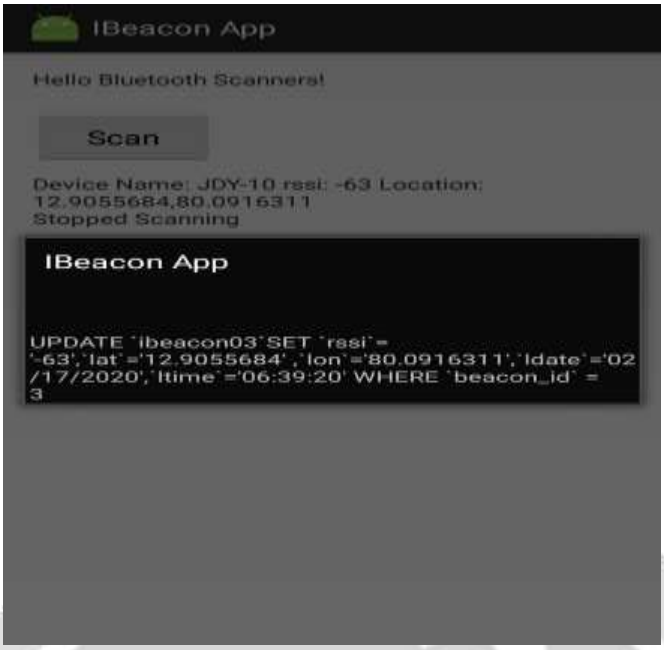

Figure.4. IBeacon Application

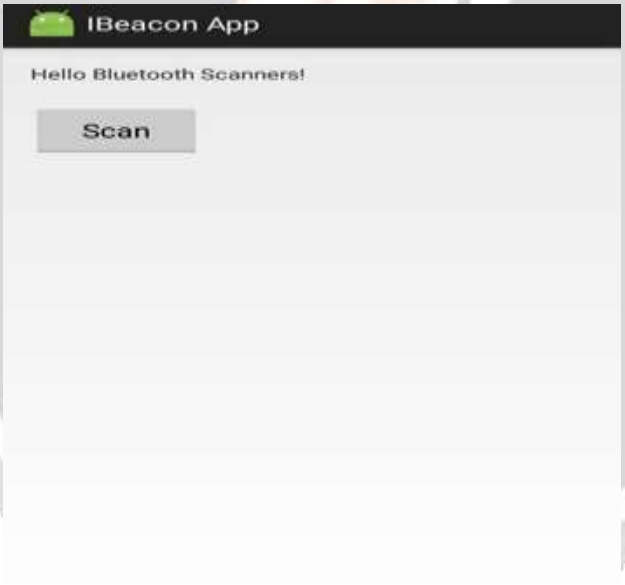

Figure.5. Bluetooth Connecting

VIII. MODULES

- MEMS Accelerometer
- Ibeacon APP
- Alert System (GSM)
- Panic Button

IX. MODULES DESCRIPTION

MEMS Accelerometer:

An example of a commonly used MEMS sensor is an accelerometer that might be used in consumer electronic devices such as game controllers (Nintendo Wii), personal media players/cell phones (Apple iPhone, Nokia mobile

phone models, HTC PDA models), as well as a number of digital cameras and other "smart" devices. MEMS accelerometer sensors are mainly designed on the principle of capacitance differentiation.

Ibeacon APP:

- when a device is far away from a beacon, the signal strength will be lower than when it is close. Due to this diminished signal strength, iOS does not have high confidence on accuracy of the proximity estimate to the beacon.
- However, just as GPS signal strength can be diminished by physical objects like buildings or being placed in a backpack, purse or pocket, so can a beacon's signal strength. Signal attenuation, or the loss of intensity of a signal, can be caused by many factors.
- When building an application that uses either GPS or beacon, it is important to consider this accuracy. The values reported by the Core Location objects (the horizontal Accuracy property in the CLLocation class, or the accuracy property in the CLBeacon class) indicate this level of uncertainty, or the margin of error. Both are measured in meters..

Alert System (GSM):

- GSM is used to send the alert message to the registered contact number. Global System for mobile Communication (GSM) SIM card is a device to send the location obtained through GPS.

- The GSM SIM card number is registered with the system.

- In this proposed device the GSM acts as a receiver while the GPS acts as a transmitter are sent as an SMS to the new predefined emergency numbers.

Panic Button:

- The panic alarm is an electronic device designed to assist in alerting somebody in emergencies where a threat to persons or property exists.
- A panic button is an electronic device worn on a bracelet or necklace as part of a medical alert system, when pressed, it sends a wireless signal to a home console which dials alarm monitoring staffs and alerts them of an emergency condition.
- Depend on the severity of the situation, alarm monitoring staffs will summon friends, family, or emergency services.

X. ADVANTAGES OF THE PROPOSED SYSTEM

- Increased self-confidence
- This device can be compatible with mobile phones
- This device small and easy to carry.

XI. REFERENCE

- R.A.Mahajan, Sayali A.Lavhate, Sayalee P.Waghmare, Prerana K.Pingale, "A Survey on Women's Security System Using GPS and GSM", International Journal of Innovative Research in Computer and Communication Engineering, Vol 5, Issue 2, February 2017.

- Premkumar.P,CibiChakkaravarthi.R,Keerthana. M and Ravivarma.R'Sharmila.T, "One Touch Alarm System For Women's Safety Using GSM," International Journal of Science, Technology & Management, vol. 04, no. 2394-1537, March 2015.

- Wadhawane, A. Attar, P. Ghodke and P. Petkar, "IoT based Smart System for Human Safety,"International Journal of Computer Applications, Vol. 179, No.7 , March, 2017.

- S. B. Gadhe, G. Chinchansure, A. Kumar and M. Ojha,"Women Anti-Rape Belt," An international journal of advanced computer technology, vol. 4, no. 2320-0790, April,2015.