

The Mobile Based Smart Women Safety Device

M. Muthukumar¹, U. BalaKrishna², S. Mohamed Sakeel³, Dr. M. Somu⁴, V. Senthilkumar⁵

^{1,2,3}Student, Department of Computer Science and Engineering, K.S.R. College of Engineering, Tamil Nadu, India. Email: muthukumarnishok@gmail.com, balabk408@gmail.com, mohdssakeel1999@gmail.com

⁴Professor, Department of Computer Science and Engineering, K.S.R. College of Engineering, Tiruchengode-637215, Tamil Nadu, India. Email: somumurugesan@gmail.com

⁵Assistant Professor, Department of Computer Science and Engineering, K.S.R. College of Engineering, Tiruchengode-637215, Tamil Nadu, India. Email: senthilkmr777@gmail.com

Abstract - These days the safety of an individual is at stake, it may be due to the increasing crimes such as the sexual assaults, molestation, abuse etc. So in order to prevent these to a certain extent, this paper proposes smart device with camera to prevent the above mentioned cause, which has access to internet (IoT). The GSM and GPS are used to identify the victim's location when in need. The victim location is shared to the near by police station and to the preregistered mobile number. The buzzer alerts the surroundings of the victim.

Keywords - Microcontroller, GSM and GPS, Record video.

I. INTRODUCTION

In Today's world, the safety of women is in danger especially in India. The rate of crimes against women is not decreasing but in fact increasing at an alarming rate especially harassment, molestation, eve teasing, rape, kidnapping and domestic violence. Some of the rape cases are very gruesome and brutal like the Nirbhaya Case in Delhi. Many preventive measures have been taken by the government to stop these misbehaving activities but still has not affected the growing rate of these crimes and has remained unaffected. So, it is primitive to provide an application which helps the women to tackle this problem rapidly and efficiently. So, in order to prevent these to a certain extent, this paper create smart device with camera to prevent the above mentioned cause, which has access to internet (IoT). The GSM and GPS are used to identify the victim's location when in need. The victim location is shared to the nearby the police station and to the pre registered mobile contacts. In order to make them safe, a smart device are developed. Women safety device is specially designed for women in case of dangerous and emergency situation. The women safety devices should be very simple, easy to carry and that should be integrated with several functionalities. The smart phones usage has been drastically increased in the world. There are several mobile application and smart devices are developed by the government and people in order to help the women when they are in the trouble. Even though, they developed various devices and applications the rate of the sexual offenses has not been decreased. The women safety devices or application should be combined with a several features which are used in day today life and real emergency cases.

II. RELATED WORKS

In a country, Sexual offense happen against to the women and children. According to National Crime Records Bureau, New Delhi;

- In 2011, over 42968 the criminal assault to women has increased to 84746 cases in 2016.
- Around 309 acid attack cases are produced in the year 2014.
- In 2011, 24206 rape cases have been enlarged to 38947 cases in 2016.
- According to this statistics, around 92 women's are raped every day in India.

III. EXISTING SYSTEM

As same as the above work Kalpana seelam et al., [1] The articles portrays about the safe and secured electronic framework for women or children which involves an Arduino controller and sensors, the several sensors used in this system are temperature, flex sensors, MEMS accelerometer, pulse rate sensors ad sound sensor. The gadget detects body parameters like heartbeat rate, changes in temperature, movement of victim by flex sensor by flex sensor and MEMS accelerometer and the voice of the injured individual is detected by sound sensor and the location is send to the registered contacts.

Similarly Dantu Sai Prashanth et al., [2] In this article an application is developed with unique features and all the existing features has been integrated to make efficient software which is useful for women safety. This application consists of dynamic GPS tracking system and it also includes spy-camera which is useful to record the incident. Initially it requires login details and the user has to update their information from time to time. In this, user has to be registered to a firebase database which is used for user login authentication which keeps application more secure. When the user is moving from one place to another a GPS tracking system is switched on and thus live location is also viewed. It also offers various functionalities like first aid information, toll free call which is inbuilt. Through dynamic GPS tracking system the enlisted contacts users who all use the same application can view the user’s location.

Piyush Kumar Verma et al., [3] In this proposed system deals with a device which is used for women to protect them from dangerous person while they are moving out in night and for an independent women also it I useful. It consists of buzzer, pulse sensor and switch. When the switch is pressed, the device sends a current location of the women to all the registered contacts and it also monitors the pulse rate of a women. If the pulse reading is abnormal, the SMS is send to a hospital. Thus, the device is used to protect themselves from a danger and it is small in size.

IV. PROPOSED SYSTEM

1. The main objective of this system is to identify the need of the user for human assistance i.e. when there is any sexual violation, or some assaulting on the old people in the old age homes or hospitals etc.
2. When any abnormality is found in the data obtained form sensors compared to the preprogramed data then the device gets activated and sends the alert messages along with the user’s location, to the pre registered mobile numbers, police station requesting immediate assistance.
3. There the GSM and GPS play a main role in sending the location of the user and all this is done through the IoT.
4. A LCD display 16x2 is also connected to the input pin. The GSM quad band module and GPS module is connected to microcontroller. This helps to communicate with GSM and GPS.
5. The camera will record the video and image to send the registered contacts through the link.

Overall system architecture:

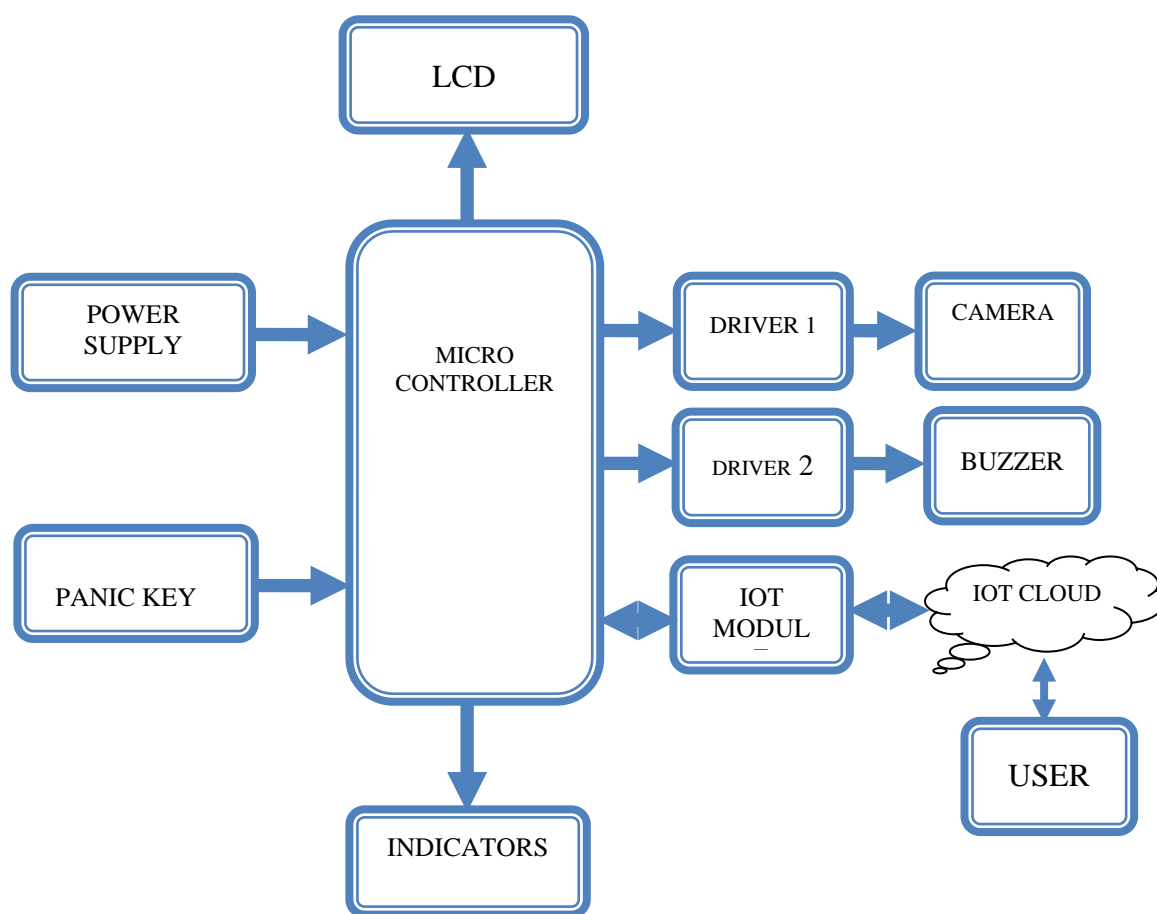
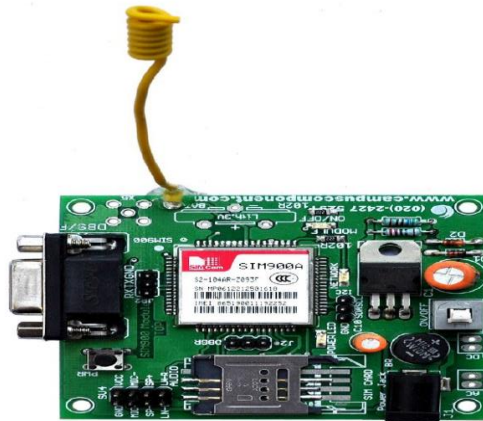


Fig. 1 Block diagram of women safety device

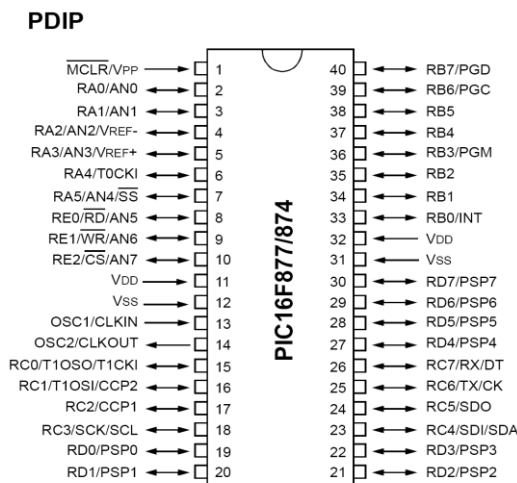
A. GSM (Global System for Mobile)

TTL-Modem is SIM800C Quad-band GSM / GPRS device, works on frequencies 850 MHZ, 900 MHZ, 1800MHZ and 1900 MHZ. It is conservation in size and simple to use as plug in GSM modem. The modem is designed with 3V3 and 5V DC TTL interfacing circuitry, which allows User to directly interface with 5V Microcontroller (PIC, AVR, Arduino,8051, etc.) as well as 3V3Microcontroller (ARM, ARM Cortex XX, etc.). The baud rate can be configurable from 9600-115200 bps through AT (Attention) directions. This GSM/GPRS TTL Modem has interior TCP/IP stack to empower client to interface with web through GPRS include. It is suitable for SMS as well as DATA transfer application in mobile phone to mobile phone interface. The modem can be interfaced with a Microcontroller utilizing USART (Universal Synchronous Asynchronous Receiver and Transmitter) highlight (sequential correspondence).



B. Microcontroller

PIC16F877 belongs to a class of 8-bit microcontrollers of RISC architecture. It has 8kb blaze memory for putting away a composed program. Since memory made in FLASH innovation can be modified and cleared more than once, it makes this microcontroller reasonable for gadget advancement. It has information memory that should be spared needs when there is no stock. It is normally utilized for putting away significant information that must not be lost if power supply abruptly stops. For example, one such information is an appointed temperature in temperature controllers. On the off chance that during lost force supply this information was lost, we would need to make the alteration by and endless supply of supply.



C. Buzzer

A buzzer or beeper is a sound signalling gadget, which might be mechanical, electromechanical, or piezoelectric. Typical use of buzzers and beepers is giving sound indication to the user’s power is applied this mechanical device will energize and by doing so interrupt the power source also the cycle proceed until the force is evacuated. The frequency of wavering is carefully subject mechanical inactivity.

D. GPS

The Global Positioning System (GPS) is a space-based satellite navigation system that provides location and time information in all weather conditions, anywhere on or near the Earth where there is an unhindered view to at least four GPS satellites. The framework gives basic abilities to military, common and business clients around the globe. It is kept up by the United States government and is uninhibitedly open to anybody with a GPS collector. A GPS collector figures its situation by decisively timing the signs sent by GPS satellites high over the Earth. Each satellite constantly transmits messages that incorporate the time the message was transmitted satellite situation at time of message transmission. The receiver uses the message it receives to determine the transit time of each message and computes the distance to each satellite using the speed of light. Every one of these separations and satellites' areas characterize a circle. The receiver is on the surface of each of these spheres when the distances and the satellites' location are correct. These distances and the satellites' locations are used to compute the location of the receiver using the navigation equations. This location is then displayed, perhaps with moving map display.

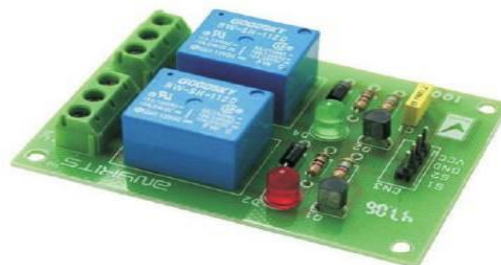


E. LCD

LCD(Liquid Crystal Display) screen is an electronic display module and find a wide range of applications. A 16x2 LCD display is exceptionally essential module and is ordinarily utilized in different gadgets and circuits. These modules are favoured more than seven segments and other multi portion LEDs.

F. Relay:

Relays are basic switches which are worked both electrically and precisely. Relays comprise of an electromagnet and a part of contacts. The switching system is completed with the assistance of the electromagnet. There are also other operation principles for its working.



G. Bridge Rectifier

Bridge rectifier is used to maintain the proper DC polarity at the input to the circuit, irrespective of telephone line polarity. It involves four diodes associated to form a bridge. It uses the whole AC wave (both positive and negative segments). 1.4V is spent up in the bridge rectifier in light of the fact that every diode utilizes 0.7V when conducting and there are constantly two diodes directing, as appeared in fig below.

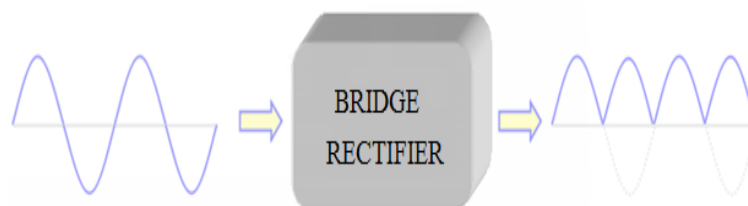


Fig. 1 Bridge rectifier block diagram

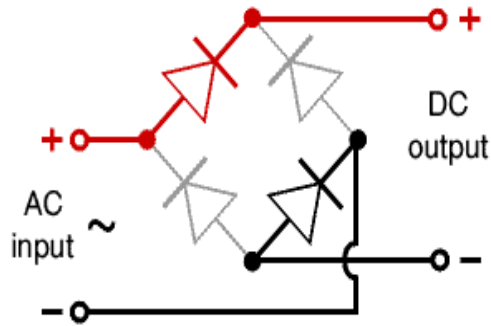


Fig. 2 Bridge rectifier Circuit diagram

H. IC Voltage Regulators

Voltage regulators contain a class of widely utilized ICs. Regulator IC units contain the circuitry for reference source, comparator amplifier, control gadget, and overload protection all in a solitary IC. Although the inward development of the IC is to some degree not the same as that portrayed for discrete voltage controller circuits, the outside activity is a lot of the equivalent. IC units give guideline of either a fixed positive voltage, a fixed negative voltage, or an flexible set voltage.

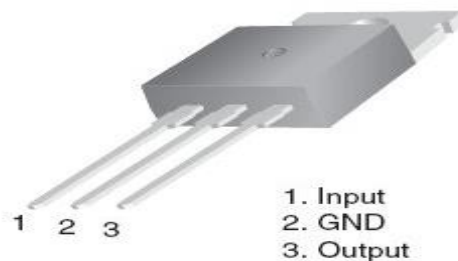
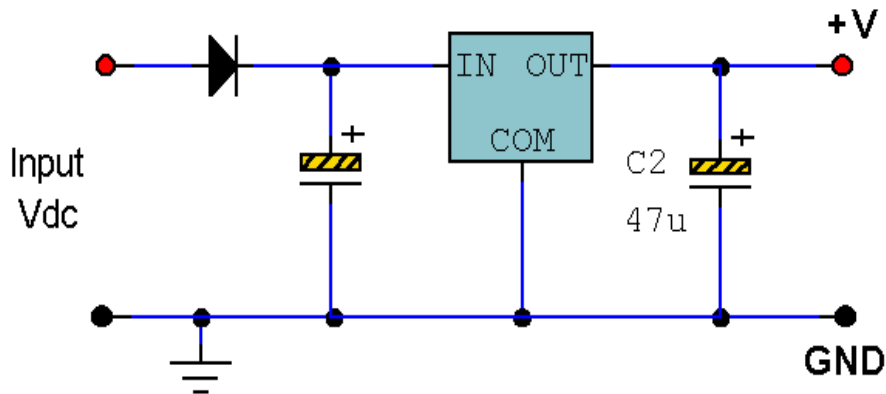


Fig: 3 Voltage regulator IC

I. Connection Diagram of Voltage Regulator IC



Features of Voltage Regulator IC

- Output Current up to 1A
- Yield(Output) Voltages of 5, 6, 8, 9, 10, 12, 15, 18, 24V
- Thermal Overload Protection
- Short Circuit Protection
- Output Transistor Safe Operating Area Protection

J. Circuit Diagram of Power Supply

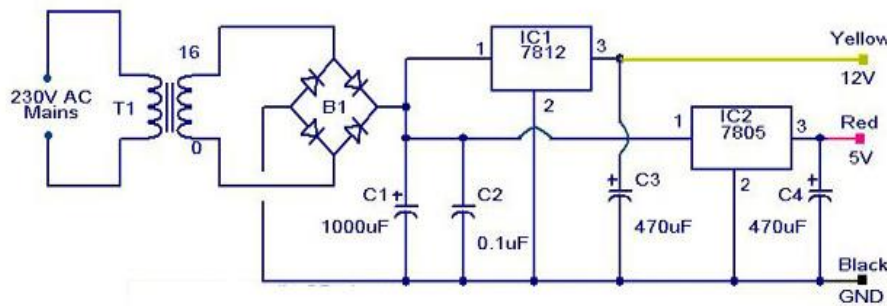
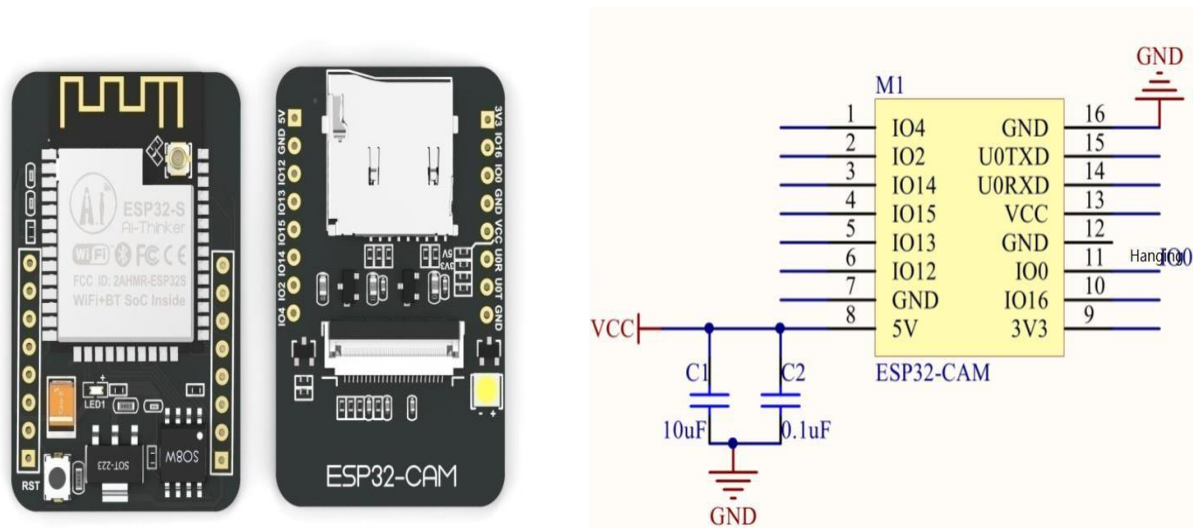


Fig: 4 Circuit Diagram of Power Supply

K. Camera

The ESP32-CAM has very competitive small size camera module that can operate independently as a minimum system with a footprint of only 27*40.5*4.5mm and a deep sleep current of up to 6mA. ESP-32CAM can be widely used to various IoT applications. It is suitable for home smart devices, industrial wireless control, wireless monitoring, QR wireless identification, wireless positioning system signals and other IoT applications. It is an ideal solution for IoT applications.



V. RESULT

When women is in trouble, she presses the Panic switch. The GSM will enable GPS also activate camera and it sends to track the longitude and latitude of that location of the victim. This location is continuously tracked and displayed on the LCD. A alert message signal is also sent to the pre-registered mobile numbers. When the Panic switch is pressed, an alarm signal is also generated with the help of a Buzzer. The alert message sends to the mobile indicating that the person is in danger and it also displays the longitude and latitude of the victim location.

VI. CONCLUSION

The main aim of this proposed system is to enable one to protect themselves from physical harm, molestation, abuse, sexual violation. The working kit in real time can be made as a wireless device, with further research and addition of video capture for identify the accuse easily. This device can be of help for a certain extent and is more efficient in its own way. But the complete safety can be obtained when there is a change in the mindsets of the person using this instrument. When we start to value the humans, human values and morals over the materialistic things then this world becomes a safe place to live in, with peace, and humanity and can achieve greater heights.

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