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Women Safety Dress using Stun Gun Technology

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Abstract: ***The ultimate aim of introducing this paper is to control or prevent the crime against them. We propose a stun gun technology-based women safety dress with GPS. This method consists of a system that provides physical security in the case when the women are harassed or whether she is in trouble. In this paper, we proposed an ATMEGA controller and an android application in which both the device and mobile phone are synchronized using the ESP module. This paper will prove to be very useful in saving lives as well as preventing atrocities against women. This system uses a panic key, a boost converter and a GPS module which provides the location of a woman who is in trouble and the stun gun technology which will provide physical protection to the women. If the panic key is pressed, it turns on the system by sending an alert message to the woman's relatives via android application. The kit is also be accessed by the parents or relatives via the IoT module. At the instance, whenever the panic key is pressed, it provides the high voltage shock pulse to a stranger via the boost converter.***

Keywords: Women safety, Stun Gun Technology, IoT, Electric Shock.

I. INTRODUCTION

The condition of woman in the world, especially in India has gone through many changes in the past few years, Even though many women have done achievements and get the right positions in workplace and constitution. Still, they are looking for safety from social issues like sexual assault. Women don't know how to protect themselves from that situation and unable to find a help from their known ones and the police department, so we have proposed a method that provides physical protection to the woman by using the stun gun technology. Whenever the panic key is pressed the boost circuit delivers a very strong shock pulse to the stranger at the same time by using the latest GPS, the live location of the woman is shared to the registered users via an android application.

II. BLOCK DIAGRAM

The Block Diagram of this project is shown in Figure 2.1. It consists of Micro controller, Panic key, Buzzer, GPS, IoT module.

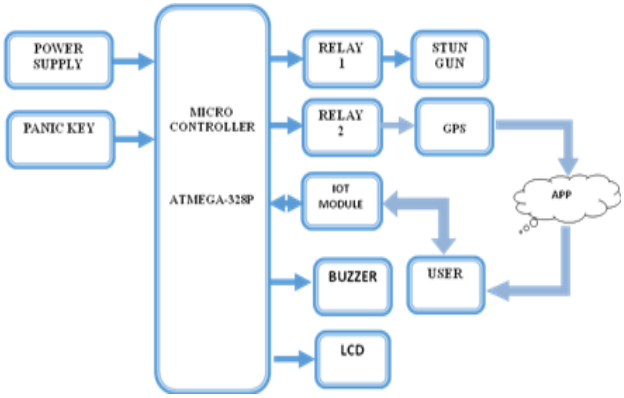

Fig.1. Block diagram of women safety dress.

II. COMPONENTS USED

The following are the components used in the project.

A. ATMEGA 328P

The Atmega Controller is the CPU of this project. It is a programmable one which can be programmed according to the various applications. In this project it is programmed to analyzing the input signals either from the panic key or from the ESP module. Atmega controller shown in Fig 2 accepts both Digital and Analog input. It consists of an inbuilt ADC converter. It also has transmitting and receiving pins to send and receive the signals.

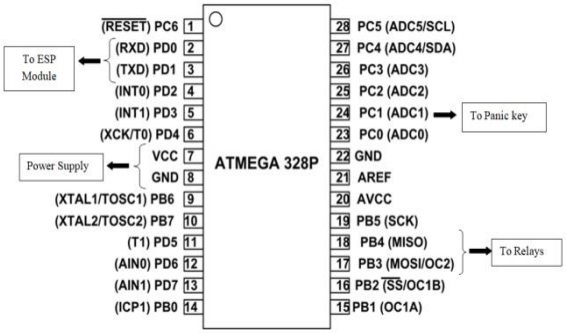

Fig.2. Atmega 328p

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B. Node MCU (ESP48266)

Node MCU is an open source Wi-Fi module. It consists of firmware which runs on the ESP866 Wi-Fi SoC and hardware which is based on ESP-12 module is shown in Fig 3.

Fig.3. Node MCU

C. Boost converter

A boost converter is a DC power converter, which is used to step up the input voltage. In this project boost converter, shown in Fig 4, is used to provide a shock pulse.

Fig.4. Boost converter

D. Liquid Crystal Display

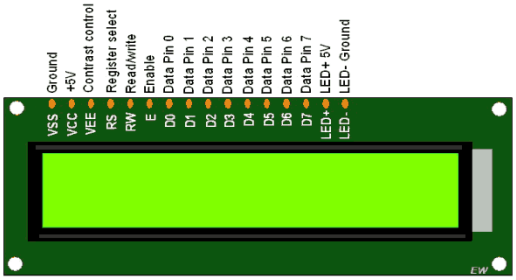

Fig.5. Liquid Crystal Display

Liquid Crystal Display (LCD), shown in Fig 5, is used to display the ongoing process in the microcontroller. It can display all types of characters, including Alpha numerals and special characters. The pin description of LCD is shown in Table I.

Table I. Pin description of LCD

Pin	Name	Description
1.	DB7	Data-bus bit 7
2.	DB6	Data-bus bit 6
3.	DB5	Data-bus bit 5
4.	DB	Data-bus bit 4
5.	DB3	Data-bus bit 3(not used in 4-bit mode)
6	DB2	Data-bus bit 2(not used in 4-bit mode)
7.	DB1	Data-bus bit 1(not used in 4-bit mode)
8.	DB0	Data-bus bit 0(not used in 4-bit mode)
9.	E	Enable (active high)
10.	R/W	Low =write, high =read
11.	RS	Register select: low = instruction, high = data
12.	V0	Contrast adjustment
13.	GND	Ground
14.	Vcc	Vcc (+5V)

E. GPS module

GPS module is a receiver with an antenna that uses a signal which is transmitted by a satellite-based navigation system. This system consists of 24 satellites to provide the geographical location. In this project, GPS, shown in figure 6, is used to provide the location of the women, whenever the panic key is pressed.

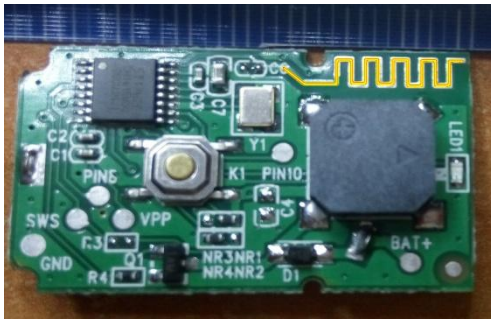

Fig.6. GPS module

F. Relay

Relay is an electromagnetic switching device used to turn on or turn off the load. The main purpose of this device is to operate the high powered load with the low power signal. In this project the normally open type relay is used to turn on the relays. The typical relay circuit is shown in Fig 7.

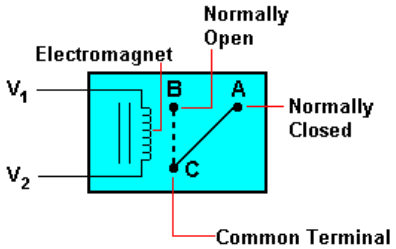

Fig.7. Relay

G. Buzzer

A Buzzer is an audio indicating device, which produces the sound according to the frequency provided. In this project the Goli type buzzer, shown in Fig 8, is used as an alerting system.

Fig.8. Buzzer

III. HARDWARE SETUP

The hardware setup consists of a stun gun module, an IoT module and power supply module. The power is supplied to the module by a 9v battery of compact size for portable operation, and the voltage is regulated as a 5V by using 7805 regulators and given to the ATMEGA328P microcontroller. The whole set up is shown in the Fig 9.

Fig.9. Hardware setup of women safety dress

The panic key is taken out from the input port of the microcontroller for external operation under emergency conditions. The boost converter consists of a step-up transformer that step-up the input voltage. It also requires a separate 6V battery for its operation. The IoT module comes with the ESP module, which has an inbuilt 3.3V regulator for its internal operations. The supply to the GPS is given by the 3V lithium battery, and the buzzer is connected in the development board for giving an alert signal to the nearby people. LCD is used to visualize the process flow. The complete circuit set up is shown in the Fig 10.

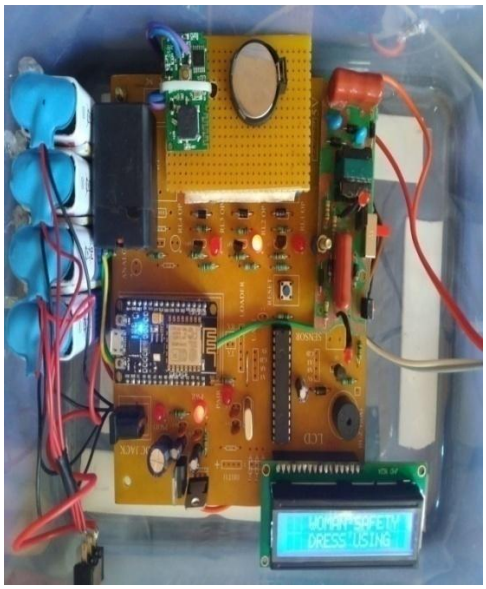

Fig.10. Circuit setup of women safety dress

IV. WORKING AND OUTPUT OF THE PROJECT

The kit can be accessed via two modes:

- By directly pressing panic key
- By indirect method

A. Direct method

Whenever the panic key is pressed, the micro controller triggers the GPS and Boost converter relay to share the live location of the victim and to produce high voltage shock pulse simultaneously.

B. By using Iot

Instead of directly pressing the panic key, the kit may also be activated by using ESP module by the parents or relatives of the victim. Initially the kit is connected to the mobile via WiFi. By browsing the IP address of the ESP module, they can access the webpage. The webpage consists of ON and OFF buttons to turn on/off the kit. If they turn on the device by using Iot, the ESP modules receives the signal and then transmit that signal to the micro-controller for the further operations. The process flow chart for the working of women safety dress is shown in Fig 11.

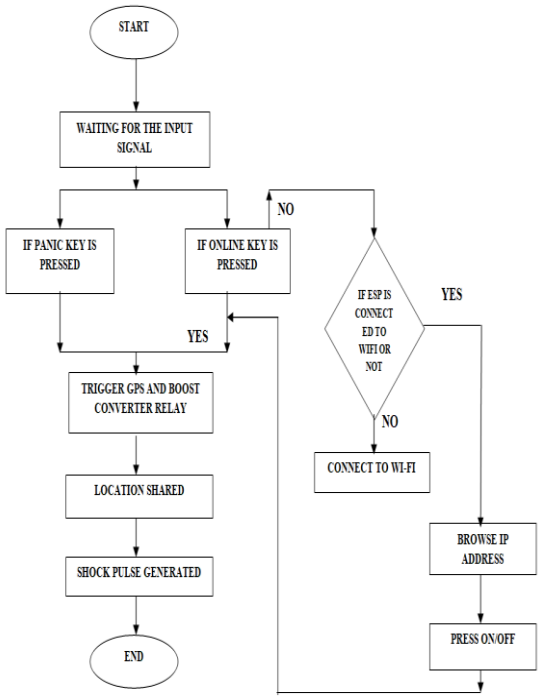

Fig.11. Flowchart

At the instance the micro controller receives the signal and triggers the GPS and the boost converter. The output terminal of the boost converter is connected to the current carrying conductors, which are placed at the outer surface of the coat. When the GPS is triggered by the relay, it immediately alerts the woman's parents via android application, by sharing the live location on the Google map and produces the alert sound until they notice that alert message. Fig 12, shows the live location of the women.

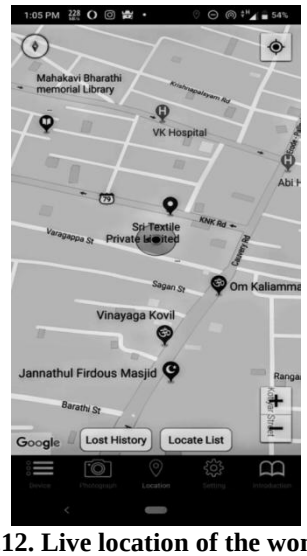

Fig.12. Live location of the women.

V. CONCLUSION

From this paper, we provide a solution for the women safety. By using this project we can protect the woman who is physically harassed by the stranger. The ultimate objective of this method to provide high voltage shock pulse to the stranger is achieved by using boost converter, which produce around 2000V at an instant. And the location of the victim is shared via GPS module. This paper successfully provide the protection to the victim by generating high voltage and also alert the parents by sending the alert signal and live location via an android application until they notice.

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