

Safety Device for Women with Self-Defense

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Abstract - As we know India "is the world's second most-populous nation after China" and in view of powerful countries having 14th rank in the world. But According to NCRB data 2018, incidents of crime against a woman is committed every three minutes. This project presents a women safety alert system using GPS and GSM modems attached with an electric shock device with wireless switch operating system. The system can be interconnected with the alarm system to alert the neighbors or nearby persons. This detection and messaging system are composed of a GPS receiver, Microcontroller and a GSM Modem. GPS Receiver gets the location information from satellites in the form of latitude and longitude of the earth. The Microcontroller processes the information of modems and that information is sent to the user mobile number in the form of message with live location link through GSM modem. When a woman is in danger and in need of help then she can manually press the safety switch. When switch is pressed then device will get activate and immediately an SMS will be sent to concern person with live location link using GSM and GPS. If due to some reason she is not near the device she can operate the device through wireless switch.

Keywords - Easy to handle, New features like Electric shock, Wireless Switch, Location tracking through Blynk App, with Safety Switch, GPS Tracker, GSM Module, Emergency Buzzer, Rechargeable Battery etc.,

I. INTRODUCTION

Security is the condition of give safety, reduce the crime and being protected against danger. Now a day's rate of crime against women are not decreasing [1], while android safety app also is available because in dangerous situation women wants to open the app but due to lack of time, she's not able to open and use the app to ask help. If anyway she operated that app but as it works police will take time to reach that place. So, for get instant help by considered all these problems with different situations this project is designed with two microcontrollers Node MCU and Arduino Nano. This Project presents a women safety detection system using GPS (GY NEO6M) and GSM (SIM800C) with new features like electric shock and wireless safety switch operator device as shown in Fig.13. The system can be interconnected with the emergency or safety alarm system to alert the neighbors or nearby persons when woman in need of help. This detection, messaging and live location tracker systems are composed of a GPS receiver module, Microcontroller units and a GSM Modem [2,3]. GPS Receiver gets the location

information from satellites in the form of latitude and longitude co-ordinates of the earth. The Microcontroller processes the information of modems and that information is sent to the user mobile number in the form of message with live location link through GSM modem [4] and also trackable through Blynk app as shown in Fig.14. When a woman is in danger and in need of help then she can manually press the safety switch. When switch is pressed then device will get activate and immediately an SMS will be sent to concern person with live location link using GSM and GPS module. This project is an embedded system which is a combination of both hardware and software because in this hardware parts are microcontrollers, GSM modem, GPS module and software part is programming language of Arduino and Node MCU.

II. WORKING PRINCIPLE

A. BLOCK DIAGRAM

The working block diagram of our purposed system is shown in below figure:

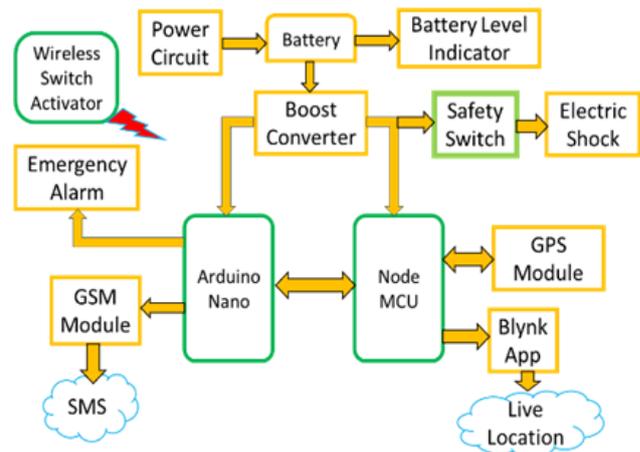


Fig. 1. Block diagram of system

B. OPERATION

The main purpose of this safety device is to reduce the rate of crime against the women and provide the self-defense security with new technologies like electric shock module, Live location through Blynk App etc., According to this safety device when a woman is in danger and in need of help then she can manually press the safety switch. When switch is pressed then device gets activated and then two features get on at a time first sent a message with live location link of current latitude and longitude of the

woman (victim) to her relatives and nearby police station, which is easily trackable through Blynk app and second action an alarm alert system gets activated to alert the neighbors or nearby persons. If no one is there to help her then she can operate an electric shock switch. When this system gets activated then she can apply an electric shock on the suspect person to unconscious that suspect person and she can escape or take any other action for help. If due to any condition she is not able to pressed that safety switch then she can operate that switch from a far distance(<300m) by the help of wireless switch as shown in Fig.12, which will be always with women as shown in Fig.1.

III. COMPONENTS

A. Battery

Powerful Lithium ion rechargeable battery (3.7V, 3500mAh) used to give supply power to the circuit with battery charge level indicator led as shown in Fig.2.



Fig. 2. Battery

B. Boost Converter

A DC-DC Boost converter is used to boost the voltage from low level to high level. Here it converts 3.7 volts to nearly 20 volts level as shown in Fig.3.



Fig. 3. Boost Converter

C. Voltage Regulator (7805)

The microcontroller and associated circuitry work at 3.3V-5V supply. The voltage regulator 7805 is used to obtain 5V DC output as shown in Fig.4.



Fig. 4. Voltage Regulator

D. Push Switch

There are two push switches as shown in Fig.5. When push button-1 is pressed then it will send signal to microcontroller, then microcontroller will send the GPS co-ordinates via GSM to the police station or to the



Fig. 5. Push Switch

family members and When push button-2 is pressed then it activates the Electric shock circuit module.

E. Controller Unit

In this safety device two controllers are used as shown in Fig.6 & Fig.7: Node MCU is a Wi-Fi module. It is used to interface with GPS tracker for live location tracking. It sends information to the Blynk App. Arduino Nano is a controller device. It is used to interface with



Fig.6: - Node MCU



Fig. 7. Arduino Nano

GSM Module for sending SMS. It processes the information of safety switch.

F. GPS Module (GY NEO6M)

As shown in Fig.8 GPS Module is used for send the live location information from satellites in the form of latitude and longitude to the controller and controller will send that information to the concern user through SMS.



Fig. 8. GPS Module

G. GSM Module (SIM800C)

As shown in Fig.9 The GSM modem sends an Emergency SMS with live location link to the predefined mobile number or concerned person.



Fig. 9. GSM Module

H. Buzzer or Alert system

When push button-1 is pressed then it will send signal to microcontroller and at the same time as shown in Fig.10 buzzer will activate to alert the neighbors or nearby persons for help.



Fig. 10. Buzzer

I. Electric Shock Module (2KV)

If no one is there to help her then she can press push button-2, then electric shock module as shown in Fig.11 will activate and she can give high voltage electric shock to that suspect person.

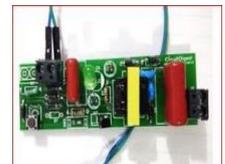


Fig. 11. Shock Kit

J. RF Modules (TX & RX pair)

This module is used to make wireless switch with IC (HT12E &HT12D). To operate the safety switch from a far distance (<300m). If she is not able to press the push button-2.



Fig. 12. RF Modules

IV. FINAL ARRANGMENTS

The final arrangements of our purposed system are shown in below figures:

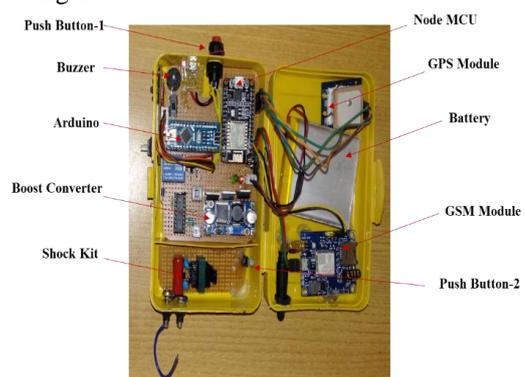


Fig. 13. Picture of Final kit

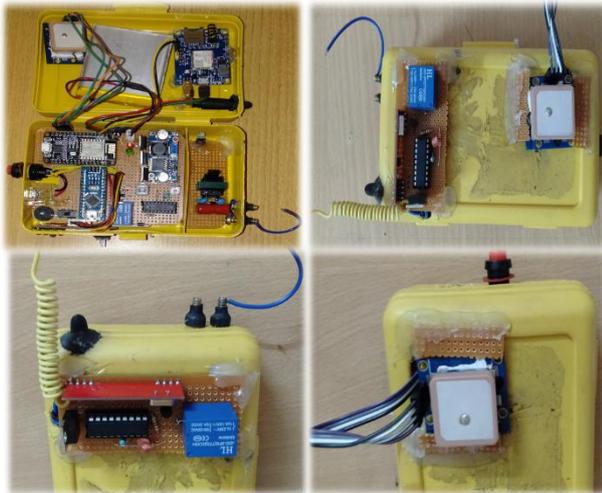


Fig. 14. Different views of Final kit

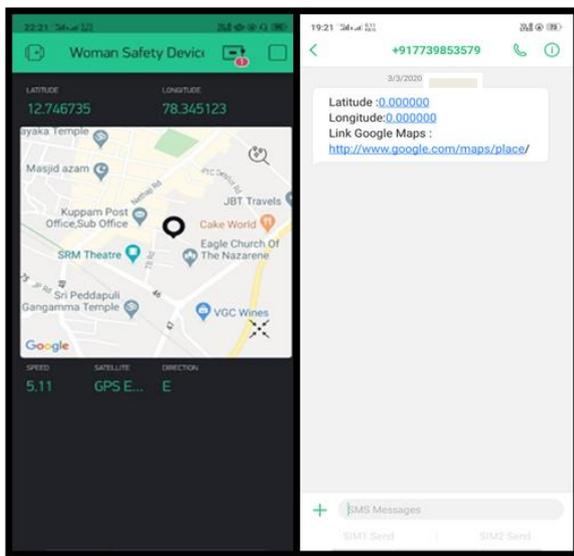


Fig. 15. Live location link on Blynk App & Phone message

V. ADVANTAGES

- This safety device can work in both conditions online as well as offline.
- It can operate by manually as well as wirelessly through switch.
- It has a unique feature compared to exist system is high voltage electric shock.
- This device is live trackable easily through the Blynk App.
- Easy to handle and compact in size.

VI. RESULT AND DISCUSSION

The main Objective of purposed system is to provide self-defense security to the women. When a woman is in danger and in need of help then she can manually press the safety switch. When switch is pressed then device gets activated and then two features get on at a time first sent a message with live location link of current latitude and longitude of the woman (victim) to her relatives and nearby police station, which is easily trackable through

Blynk app and second action an alarm alert system gets activated to alert the neighbors or nearby persons. If no one is there to help her then she can operate an electric shock switch. When this system gets activated then she can apply an electric shock on the suspect person to unconscious that suspect person and she can escape or take any other action for help. If due to any condition she is not able to pressed that safety switch then she can operate that switch from a far distance(<300m) by the help of wireless switch.

VII. CONCLUSION

The main ambition of our project is to reduce the rate of crime against women in Indian society and give safe environment with freedom of work till late nights to the women. The purposed safety device provides self-defense security to women in dangerous condition. High voltage electric shock feature makes it differ from existing safety devices and it will be helpful in dangerous situations.

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from very sorrow able incidents like Priyanka Reddy Kand, Nirbhaya Kand etc...



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