

Self- Defense Jacket for Women

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Abstract - An electric coated jacket is used to produce the current on the surface of the jacket when the attacker attacks any women. When the attacker attacks the women, the copper wires which are spread over the jacket will supply a shock which makes the person immobile for a moment. Our prototype is designed to auto activate the jacket when the wearer doesn't gets the chance to activate it manually.

Keywords - self-defense, electric shock, Auto-active jacket

I.INTRODUCTION

India is one of those nations where the rape has taken a miserable form. There is no doubt in saying that India has highest rape Crime in the year 2014. Here the working women are not appreciated by the so- called men's society. Many of them are kidnapped, Raped, and even killed for no reason. Every three out of five women in India are under this serious threat and the situation has become alarming for the government and official persons to take actions immediately. Rape cases are increasing day by day.

The top ten countries in which rape crimes are at higher levels are as Spain, Israel, Sweden, United States of America, Belgium, Germany, Argentina, New Zealand and Poland these countries are developed and developing countries in which women are being assaulted. In Poland, every year more than 2000 females are threatened and raped and the rate is said to be increasing day by day. In new Zealand, more than 1500 cases of rape had been reported in January- February 2014 and it is estimated that every day four to five women are killed by the rapists in different parts of the country In Germany over 5000 women and college going girls have become the victim of this shameful crime during February 2014.

In Belgium the rape cases are increased by 30% compared to previous few years, In Sweden during December 2013 and January 2014 more than 2300 females were raped badly and the rapists physically harmed them a lot. In United States of America every month 1200 women and young girls are raped in different cities of United States Many devices and gadgets have been created in order to provide self-defense mechanism for women, one of the best methods is to make use of electricity; this technology makes use of low-current and High-voltage supply to override the human's body muscle-actuating mechanism. When the recipient experiences the shock produced, the nerves of the human body which are responsible for establishing the communication between the brain and the body parts of human overloads the nervous system by applied external electrical signals will prevent the process of actuating the muscles. As the result of this disruption and ensuing electrical shock resulting expansion and contraction of the muscles will occur rapidly, this will cause to deplete the blood sugar by converting it to lactic acid in just a second the resulting energy loss causes disorientation and loss of balance and degrades the energy of the assailer without causing any significant effect on heart and other organs, current of 10 to 30 mA causes muscular contraction without causing any severe and permanent damage to the human body.

II.METHODOLOGY

- Study of raw material available for the jacket, heartbeat sensor, copper wires, microcontroller, transformer, electric bulb, switches and battery unit to create working circuitry.
- As we are only showing the prototype and it is not implemented in real time the jacket we have used is normal daily use material
- Development of software
- Development of hardware
- Integration of hardware and software
- Testing the performance and functionality of developed prototype

III.OPERATING PRINCIPLE OF PROPOSED SYSTEM

The inspiration to develop this self- defense jacket is the "stun gun" which works on the principle of shocking the person momentarily. A low-voltage pulse is delivered between the two electrodes. The shock has the effect of temporarily immobilizing the assailer giving the wearer time to escape [1]

IV.PROTOTYPE DEVELOPMENT

This device-cum-garment makes use of functional components and textile component.

V.FUNCTIONAL COMPONENTS

The functional component makes use of hardware and software too as shown in fig 1. The hardware consists of AT89s52 microcontroller, inverter circuitry, copper wires, LCD display, heartbeat sensor, manual switch, an electric bulb for showing the result. The circuit is applied with the 12volts of DC input supply by the battery; the inverter circuit which includes the step-up transformer will give the 230 volts of AC output for the given 12 volt DC input signal. The heartbeat sensor counts the heart rate of the wearer continuously when the jacket is activated, that will send the signal to the microcontroller. The microcontroller is configured such that if the number of heartbeat exceeds the given threshold of the normal heart rate of the women it will auto activate the jacket for producing shock, the microcontroller drives the relay according to the input signal received from the heartbeat sensor. The relay switches the inverter circuit to produce the AC 15-30 mA current to the jacket only if the heart rate exceeds the threshold

As mentioned above the heart rate is the parameter measured to activate the prototype, which will change instantly according to the situation, the main function of the heart is to supply oxygen to the whole body of human, the emotions and stress can influence the heart rate, if a person is nervous or scared during the attack the body will need more oxygen that will turn on the system called the “flight” in the brain, and that increases the heart rate.

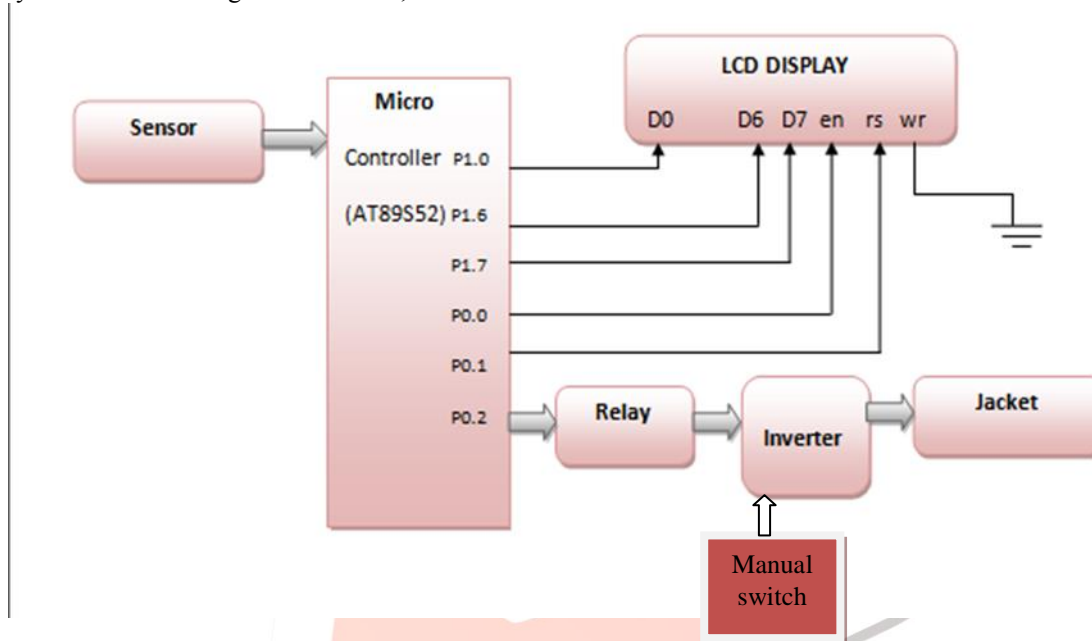


Fig.1 block diagram of prototype

VI.TEXTILE COMPONENT

The simple normal cloth is used to show in fig 2. below, how the copper wires can be spread over the jacket. The functional circuitry which is developed for achieving shock is connected to the copper wires; wires are spared parallel on the surface of the jacket. As, we are introducing the prototype we haven't used any insulating materials in this system



Fig2.jacket prototype



Fig3.simple module of jacket

A simple module is shown above in fig3, how the copper wires can be spread; only two lines are shown, similar to this we can implement several copper wires all over the material .

VII.RESULTS OF DEVELOPED PROTOTYPE



Fig4. Snap shot for the normal heart rate



Fig5. Snap shot of the heart rate which is greater than the threshold

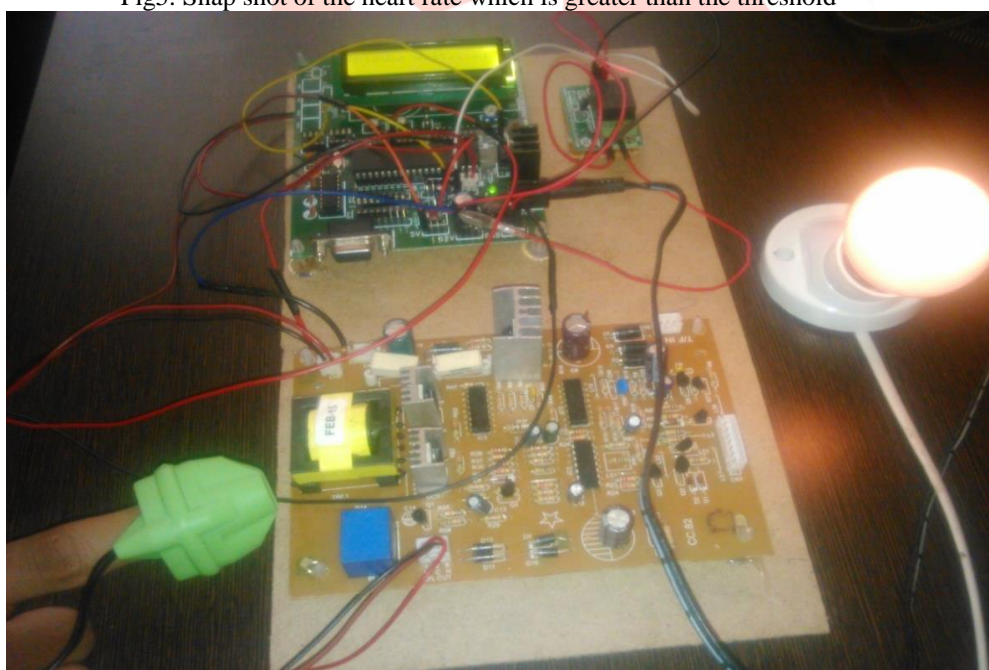


Fig6. Final result in which shock is produced

As we are introducing the prototype an electric bulb is used to indicate that, the shock is produced.

VIII. CONCLUSION

This prototype is mainly developed to help those kinds of women who are unable to handle such situation because of scare and lack of confidence, and who are not capable of defending themselves, this jacket will help them to gain some confidence so that they can rescue themselves when the attacker is immobile because of the shock

IX.FUTURE WORKS

The prototype which we are proposing can be enhanced by adding GPS tracking system, Sending SMS to the parents when the button is pressed, and giving the opportunity to the user to choose the modes of operation, i.e. manual mode and the

automatic mode, Developing mechanism such that to make the jacket secure, so that no one else can remove or wear the jacket other than the authorized person by making use of finger print recognition system

X. REFERENCES

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