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Blackbox- Modified-Women and Senior Citizen's Safety Device

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Abstract: *Proposed work is a modification to Blackbox which was intended as a women and senior citizen's safety device. The presented work is a novel approach to make a safety device which removes all the disadvantages of existing systems and become a standard for safety devices. In today's modern world security and safety of an individual is of utmost importance. This project does not restricts its use to the above stated applications but can also be used for children and men's safety as well. Black box consists offour sections, self defense mechanism (shock circuit / stun gun circuit), transmitter and receiver section (RFID tag)GSM modem, Microcontroller 89S52) , audio recording tool and a video recording circuit .The objective of this project is to design a gadget that can act as a rescue device and can prevent innocent people from harassment. This system has been made keeping in mind all aspects of a crime, the first part of this project enables it users to protect them using a stun gun circuit which gives shock to the criminals of an intensity which will keep them away for 8-10 minutes and give way to escape that situation , in the mean while location of the crime spot is sent to the police as well as numbers which are fed in the system and even after all these precautions a crime happens , then there is a provision of keeping a audio and video record of the crime scene for post-crime operations and they act as evidences against criminals.The system uses a RFID tag fixed in a ring or wallet of an individual and as soon as the rfid tag gets enabled the live location is sent to the intended numbers and stun gun circuit is enabled , all this co-ordination is done with a microcontroller circuit. An audio recorder and video recorder tool enables users to keep a track record of the incident so that it can be provided as evidence and also to identify the criminals.*

I. Introduction

In Indian society, today are becoming the most vulnerable section as far as the safety and security is concerned. When we turn the pages of newspaper, we come across many headlines reporting cases of sexual assault, molestation, rapes, human trafficking, ill treatment of women in houses, violence against women in remote areas, murders, kidnapping etc. This certainly implies that there has been an increasing trend of such crime in present generation.From the past few days we are experiencing an increment in the cases of eve teasing and pick pocketing etc. in this project we are trying to approach towards certain preventive solution. This would mean to have multipronged strategy with the participation of multi stake holders of society.[1]

Safety is the most wanted power for everyone's in today's world. Technology is the best way to achieve it. Our endeavour behind this project is to design and fabricate a gadget which is so compact in itself that can provideadvantage of security. The gadget also contain self defence tool which is a shock circuit. In this project we providekey points of the gadget and its application in danger time. So, far we didn't saw any special security device whichcan be used by every one for their safety in critical time. There is a provision for stun gun circuit to give shock to the criminals. This will give some time for escaping the crime scene quickly. It can keep the criminal paralyzed for quite sometime. We can give an electric shock number of times. There is also a provision of a GSM modemwhich sends a SMS to the concerned persons when the RFID tag is touched on the RFID receiver this will send asignal to microcontroller 89S52. The IC89S52 is interfaced with the GSM modem. This device will work as safetyequipment especially for women, children's and senior citizens. This circuit can be fitted in a purse at the productlevel it can be compact as a mobile phone.

II. Components

RFID Tag- There are two basic types of chips available on RFID Tags, Read-Only and Read-Write. Read-Only chips are programmed with unique information stored on them during the manufacturing process. Theinformation on Read-Only chips can never be changed.

AT89S52 microcontroller- In our BLACK BOX, there is circuit containing micro – controller AT89S52which is the heart of the circuit. The AT89S52 is a low-power, high-performance CMOS 8-bitmicrocomputer with 8K bytes of Flash programmable and erasable read only memory (PEROM). Thedevice is manufactured using Atmel's high density non volatile memory technology and is compatible withthe industry standard 80C51 and 80C52 instruction set and pin out. The on-chip Flash allows the programmemory to be

reprogrammed in-system or by a conventional non volatile memory programmer. By combining a versatile 8-bit CPU with Flash on a monolithic chip, the Atmel AT89S52 is a powerfulmicrocomputer which provides a highly flexible and cost effective solution to many embedded controlapplications.

2.1GSM modem- A GSM modem can be dedicated modem device with a serial, USB or Bluetooth connection,or it can be a mobile phone that provides GSM modem capabilities. For the purpose of this project GSMmodem is used to send message to the recipients stored in the SIM. GSM modem supports one or more ofthe protocols in the GSM evolutionary family, including the 2.5 technologies GPRS and EDGE, as well as the 3G Technologies WCDMA,UMTS,HSDPA and HSUPA.The GSM modem exposes an interface that allows applications such as NOW SMS to send or receivemessages over the modem interface. The mobile operator charges for this message sending and receiving asit is was performed directly on a mobile phone. To perform this task, a GSM modem must support an'extended AT command set' for sending/receiving SMS messages.

2.2Video Camera: There is provision of camera to record the crime scene so as to provide an evidence in court. The camera has to be of Night vision time because generally the crimes take place during night time.

2.3RS 232-Is defined as the "Interface between data terminal equipment and data communicationequipment using serial data exchange." This definition defines data terminal equipment (DTE) as thecomputer while data communication equipment (DCE) is the modem. A modern cable has pin to pinconnections, and is designed to connect a DTE device to a DCE device.RS232 are normally available in 4,9or 25 cabling options. We are using RS232 with 9 pin cable which does not have many of the uncommonlyused pin.

2.4 MAX 232- The MAX232 is a driver/receiver that includes a capacitive voltage generator to supply TIA/EIA-232-F voltage levels from a single 5-V supply. Each receiver converts TIA/EIA-232-F inputs to5-V TTL/CMOS levels. These receivers have a typical threshold of 1.3 V, a typical hysteresis of 0.5V, andcan accept±30-V inputs. Each driver converts TTL/CMOS input levels into TIA/EIA-232-F levels.

2.57805- These fixed-voltage regulators are designed for a wide range of applications. These applicationsinclude on-card regulation for elimination of noiseand distribution problem associated with single-pointregulation. Each of these regulators can deliver up to 1.5 A of output current. The internal current limitingand thermal shutdown features of these regulators essentially make them immune to overload. In additionto use as fixed regulators, these devices can be used with external components to obtain adjustable outputvoltages and current, and also can be used as the power-pass element in precision regulators.

2. 6 Shock circuit (ST coil)- In the circuit shown below we use a Step up coil to step up 5Vdc to 190Vdc, polyester capacitors are connected in series to increase output voltage.

III. **Working**

When the RFID Tag is touched on the RFID reader, reader gets activated and sends the signal to the microcontroller89S52. RFID is a method of identifying unique items using radio waves. The RFID which we are using here is ofactive type and it covers a good coverage area range of 300 feet. We are using it in ultra high frequency band whosefrequency range is from 2.4 GHz to 2.5 GHz and 850 MHz to 950 MHz. But this 850 to 950 MHz frequency rangeis used only in those countries where this frequency range is not allocated for telephony system. The signal is sendthrough MAX 232 IC on RXD pin of microcontroller IC. We have a "HELP" message stored in the memory ofmicrocontroller. This message will be send to the GSM modem in the form of signal. Again, this transmission willbe done through MAX 232 IC. This signal will be transmitted from TXD pin of microcontroller IC and will be

received on RXD pin of GSM modem. GSM modem uses AT Commands for communication. Then, the helpmessage will be send through antenna to the numbers stored in the programming of GSM modem. The numbersstored will be of guardians or friends and police.Message which will be received by family or friends and helpbeing provided by family or friends. Self defense tool is used in this project for preliminary stage safety if the personfeels that he or she is in danger by pressing the button on the shock circuit it will produce high voltage of 190 VoltsDC. This high voltage shock can make a person unstable for few minutes. This will help the victim to escape andreach a safe place. There are many self defense tools available in market like stun gun, shock circuit and manyothers. In the circuit shown below we use a Step up coil to step up 5Vdc to 190Vdc, polyester capacitors areconnected in series to increase output voltage.

The video camera records the whole information and crime scene to provide as an evidence in court.

Figure 2. Block Diagram of basic working of Blackbox

Figure 3. Flowchart of basic working of Blackbox

Figure 4. Blackbox implemented

Figure 5. Shock-Circuit with Blackbox

IV. Advantages

Blackbox will be the best suited device that can be used in the present scenario considering the integration of advantages of both hardware as well as software.

V. Conclusion

The With help of this project, the Black box is able to provide security to individual in critical conditions, the blackbox sends the message to the family members or the recipients whose number is stored in the memory of the microcontroller through the GSM modem. The self defence tool gets enable as we press the button and gives a high voltage DC shock to the attacker. This would stop the crime to happen which was the main objective of this project.

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