

GPS and GSM Based Self Defence System for Women Safety

Harshitha M S¹, Chaithra P R², Chaithra S³, Prof. Akshatha kamath⁴

U.G Student, Department of Computer Science and Engineering, Sri Krishna Institute of Technology, Bengaluru, Karnataka, India^{1,2,3}

Assistant Professor, Department of Computer Science and Engineering, Sri Krishna Institute of Technology, Bengaluru, Karnataka, India⁴

ABSTRACT: The world is becoming so much more unsafe for women. Social evils like molestations, dowry, crime against women, worst among all is rape is on the rise in many countries. Incidents of crime against women have been increasing at an alarming pace in Indian cities, most common incidents being rape, kidnapping, sexual harassment and eve teasing. Security for women is still a major issue as the number of crimes over women and girls is increasing day-by-day. In this age of technology, mobile phone is one gadget almost everyone uses to keep in touch with family and friends.. All they need is a device that can be carried around easily and worn whenever the woman feels unsafe.

This proposal document describes a quick responding, cost protection system for an individual and especially for women using which a woman in distress can call for help just with the press of a button on this smart gadget. Self Defence System for women safety is like a Smart Watch for Women. It has the ability to help women with technologies that are embedded into a compact device. The women wearing this device as a watch or band, in case of any harassment or when she finds that someone is going to harass, she presses a switch that is located on the watch or band or when the woman has fallen the information about the attack along with the body posture and location information is sent as SMS alert to a few predefined emergency numbers And soon help is on its way! The system will consist of embedded hardware and software co-designed for this dedicated application. The system allows for knowing exact location of the individual, as soon as the trigger key on the belt is pressed. By providing the instant location of the distressed victim to the police so that the incident could be prevented and the culprit apprehended. In case if the caretaker wants to know the present location of the lady, he/she can do so by sending a SMS to the SIM number of the lady which contains a secret password. Then this system responds to such request by sending back a SMS containing location information in terms of Latitude and Longitude. This would help reduce crime against women. It also contains a shock mechanism to produce non-lethal electric shock in emergency situations to deter the attacker.

KEYWORDS: Microcontroller, GPS, GSM, Voice recognition Module, Alarm, Shock wave generator.

I. INTRODUCTION

In today's world, women safety has become a major issue as they can't step out of their house at any given time due to physical/sexual abuse and a fear of violence. Even in the 21st century where the technology is rapidly growing and new gadgets were developed but still women and girls are facing problems. Even today in India, women cannot move at night in many places and even at day time crowded places hundreds and thousands of incidents of physical/sexual abuse happens to women every day. Among other crimes, rape is the fastest growing crime in the country today.[6]

The device described here is a self defence system specially designed for women in distress to help them to protect themselves. This device can be fitted in a purse, belt or fitted to the girl's sandals and the panic button attached to the belt. The lady in danger can activate the system by pressing emergency button on belt or tilting her sandal. It is a simple and easy to carry device with wide range of features and functionality. [7] The basic approach is to intimate instant location and a distress message to the cops and registered number like parents, friends, media, and women cell etc. so that unfortunate incidents would be averted and to provide real time evidence for swift action against the perpetrators of crime against women. [8]

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Women all over the world are facing and even subjected to unethical physical harassment. Security for women is still a major issue as the number of crimes and harassment over women and girls is increasing day-by-day. In this age of technology, mobile phone is one of the gadgets that almost everyone like and uses to keep in touch with family and friends. All they need is a device that can be carried everywhere easily. This proposed project deals with a quick responding, cost protection system for an individual and especially for women using which a woman in anguish can call for help just with the press of a button on this smart gadget. Self Defence module for women safety is like a Smart Watch for Women safety. It has the ability to help women with technologies that are embedded into a compact device. It has the potential to help women with technologies that are embedded. It is specially designed for women safety and protection. It has a control button that will be used by women to inform nearby police when they are in distress. This watch directly gets connected to the satellite through GPS when activated. Then the location is transferred through the GSM, it also contains a shock mechanism to produce non-lethal electric shock in emergency situations to deter the attacker. In this sense, the use of context-aware technology is an essential aspect in these developments to perceive stimuli from the context and react to it autonomously. An environment capable of recognizing the presence of people, and locating them. Activity context is the base to our technology to demonstrate all its potential. There are many approaches that propose electronic tele monitoring systems aimed at tracking victims and aggressors in order to reduce risk situations. Though these approaches are based on locating and data transmission technologies such as GPS and GPRS. This module directly gets connected to the satellite through GPS when activated. Then the location is transferred through the GSM and this device is also provided with a shock mechanism to produce non-lethal electric shock.



II. OBJECTIVES

Self defence and alert system for individuals to avoid crimes in alone or being in badly lit areas:

1. Implementation of a real time monitoring device can solve the problem to an extent.
2. The basic approach is to intimate instant location and a distress message to the cops and registered number like parents, friends, media, and women cell etc. so that unfortunate incidents would be averted and to provide real time evidence for swift action against the perpetrators of crime against women
3. Shock mechanism to produce non-lethal electric shock in emergency situations to deter the attacker.

III. LITERATURE SURVEY

With reference to [1], battered intervention programs were opened for psycho-educational intervention of men that used the violence toward their partner or ex-partner. This was proposed in Spain, Costa Rica and Chile. With reference to [2], a facial expression analysing system was developed to report the threat based on facial expressions of danger. The camera captured images of the people and instantaneously the expressions of the people

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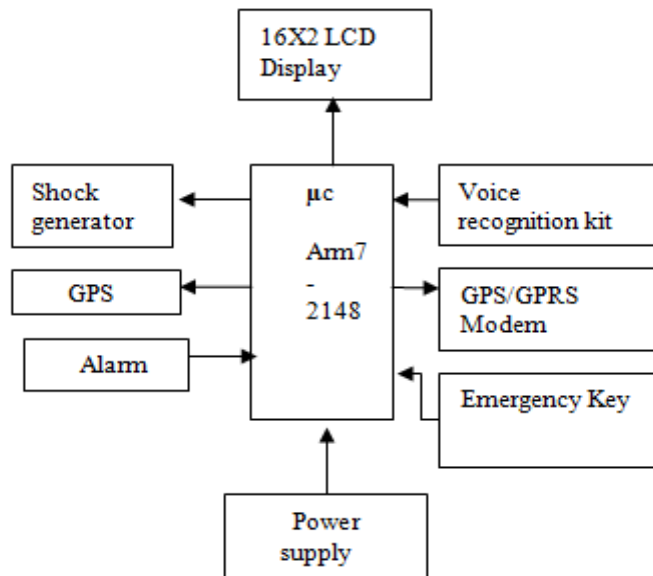
captured in those images weren analysed. On detection of the expressions which showed fear, a threat report was filed. This system was proposed to be installed in railway stations, bus stations, shopping centres etc.

With reference to [3], a self defence system was developed with GPRS (General Packet Radio Service) location tracking and Short Message Service (SMS) alerting through GSM networks. In this system the SMS contained information only about the victim location and the body posture of the victim. These messages will be sent to the predefined emergency numbers. In case if the caretaker wants to know the present location of the user, he/she can do so by sending a SMS to the SIM(Subscriber Identity Module) number of the lady which contains a secret password.

IV. EXISTING SYSTEM

Various methods are existing for women security like pepper spray canisters, the Stun Rings, the Ultrasonic Dog Repellent, the Stun Gun, the Tear Gas Spray . There are also mobile phone based apps that can send an alert message using GSM networks and GPS locating tracking systems. There are various approaches towards wearable devices with only a SMS based alert and tracking of the victim using GSM and GPRS systems.

V. PROPOSED SYSTEM



Fig(1):Block Diagram

Fig(1): The block diagram of the conceptual system is shown in above figure. The microcontroller acts as an embedded computing system and controls the activities of all the subsystems. It is interfaced with Emergency Switch, Voice recognition module, GPS Receiver, GSM Modulator demodulator (MODEM), High Voltage Shock Circuit, LCD display, Buzzer, and Wireless camera. The microcontroller periodically monitors the status of all the devices and also keeps on checking for any incoming SMS message from the parents or any caretakers. When there is no GSM network, on pressing the Emergency Switch, the processor activates the speech circuit to make loud shouting sound to catch the attention of the nearby people for help. Thus, when the user asserts the voice command the buzzer will automatically turn on. It also prepares the High Voltage Electric Shock Circuit to be ready to give a non-lethal shock to the attacker. If the help is not available and if the system is not reset within the stipulated time, the system obtains location information from the GPS and prepares a text SMS containing the present location information and sends a SMS through the GSM modem to the police control room and a distress message to the pre-programmed mobile number[3]. The design is

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implemented using an embedded microcontroller, in a modular form to be adaptable to different types of location tracking. Based on the total design of the system, the hardware and software of the system is designed to be near real-time monitoring of the women and immediate help.

The lady can protect herself by electric shock to the person harassing her. The software developed in assembly language Demonstrate the system capability in providing real-time response. Using the location information supplied by the system, the location can be tracked and traced using GPS and Google Maps. Thus the lady will be safe and she feels protected. At the product level it can be as compact as a smart watch.

VI. WORKING PROCEDURE

The user on asserting any one of the pre-loaded voice commands can start operating the device. On acknowledgement of the voice command of the user and user's voice verification, the device turns on. On pressing a button, a message regarding the threat can be sent to the nearest police station and the family members whose contacts have been pre-loaded. The police station receives the message and user location tracking is been provided by GSM, GPS and GPRS modules. Along with the message, the user can also capture and send the image of the assailant to the police station with the help of miniature camera in the device. Additionally, to add more safety in cases where GSM network operators are not available, a built in shock generator produces shock waves which harms the attacker and the buzzer which produces an alarming sound in the surrounding location. The user can also just press a button to send a message to the police station which will be unaware to the assailant.

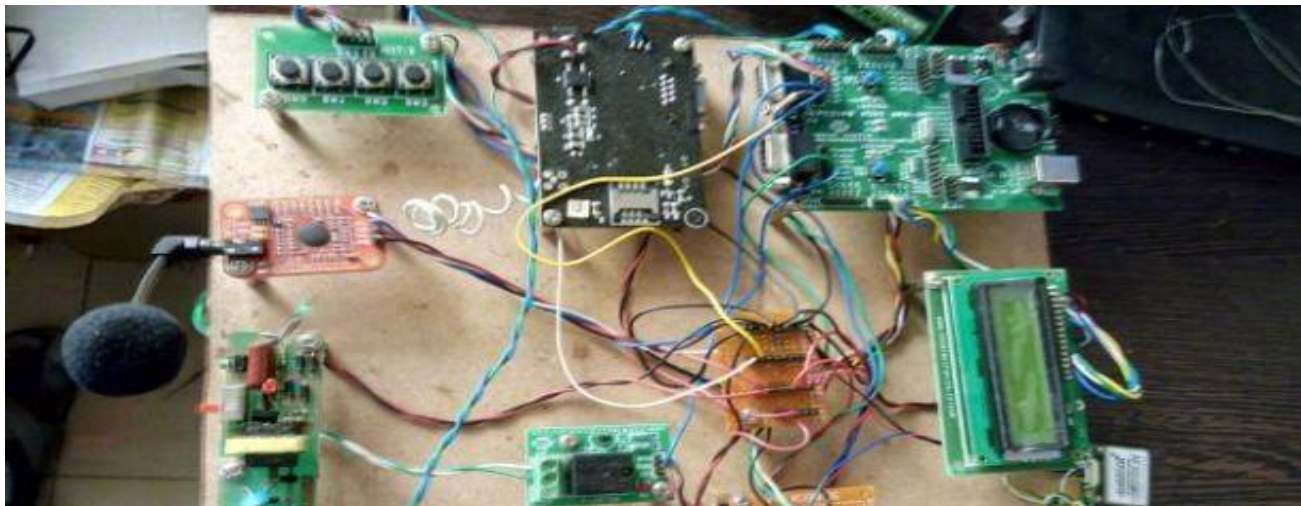


Fig (2): Working prototype

VII. TOOLS USED

Keil μ Vision: The prototype presented in this paper makes use of Keil μ Vision Software for coding purposes.

All the components like LCD display, GSM, GPS, Voice recognition module etc are all interfaced to ARM processor using Kiel μ Vision software and the prototype operates based on the codes being given to the processor.

GPS:It consists of six wires out of which three wires are used for connection. The blue wire is the transmitter wire which is connected to the 15th pin of the microcontroller. Voltage supply is about 3.3V to 5V. When trigger button is pressed, GPS starts receiving signals from 8 satellites out of the 24 satellites in the orbit [5].

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GSM:Global System for Mobile Communication (GSM) SIM card is a device to send the location obtained through GPS. The GSM SIM card number is registered with the system. In this proposed device the GSM acts as a receiver while the GPS acts as a transmitter. The received values from the transmitter are sent as an SMS to the few predefined emergency numbers.

VOICE RECOGNITION MODULE:Any one action can be activates the system, which sends the message including the user location to the registered contacts. At the receiver, just by clicking on the location ink provided in the message it can show the location on the Google map.

ALARM:It makes the alarm at —user end whenever user activates the system through the SOS button or through voice command. In case of the intrusion activity the alarm siren generated at the home side.

APPLICATIONS OF PROPOSED DEVICE

- Compact in size.
- Wireless connectivity.
- Easy and fast to install.
- Easy Maintenance
- Low cost with high performance.
- Works round the clock.
- Fast response.
- Environmental friendly system.

VIII. RESULTS

The working of the proposed model can be dealt in steps as shown below ,

Step 1: When the woman is in distress situation, she can press the emergency key which activates the self defense module.

Step2: The current location is captured by the GPS module and will be displayed on the LCD DISPLAY as shown below,

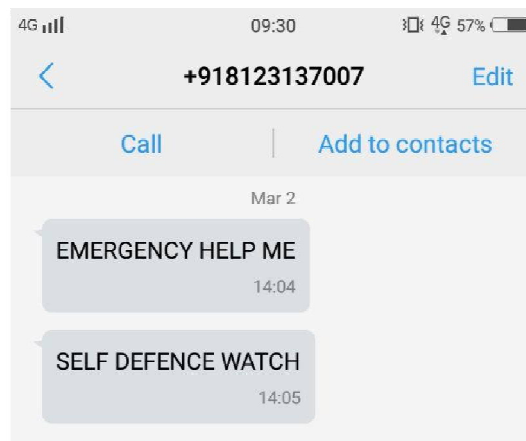


Step 3: Through GSM the emergency message is sent to the near by police station, and also to relatives, friends by using the contact numbers which are stored in the GSM. Emergency Switch Turned On. This diagram explains the emergency situation of the person whom we are tracking. When the switch is pressed emergency information is send to nearby police station. This diagram explains the emergency situation of the person whom we are tracking. When the switch is pressed emergency information is send to nearby police station.

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Step 4: Now the input data that is the voice of the person is stored. Then the data is transferred to the nearby police station. With the help of GPS and GSM the location of nearby police station is found out. The system is implemented with a Sim card which also helps to transfer the information.

Step 5: The module has another emergency key for shock generator which when pressed the module is activated and produces nonlethal shock to deter the attackers .

IX. CONCLUSION

Women security can be increased by making use of this gadget. Inter-network between the women and the police station provides easy access to women to obtain safety with just a message .The image captured by the camera will serve as evidence and record for the police to trace the assailant. The prototype can be developed and made as digital watch .

X. FUTURE SCOPE

The prototype proposed in the paper can be implemented into digital watch by reducing the size of the components. into digital watch by reducing the size of the components. colleges, and hospitals and also in parking system. By integrating a culturally-relevant educational curriculum (service) with a product (good) that is affordable and accessible, Our innovation is helpful in saving women from harassment. In India lots of crime happen against women every day. "Smart Watch For Women" can readily solve this issue. We will install these watches at small scale and we will try for further progress in the same. Lastly fulfilling our main aim to spread this project in the whole world that is large scale production .

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