Smart Gadget for Safety and Security

Apurva G, Navya S, Jeevitha H J, Teja S B
Computer Science and Engineering
Vivekananda Institute of Technology
Bengaluru, India

Prof. Lakshmi K
Computer Science and Engineering
Vivekananda Institute of TechnologyBengaluru
Bengaluru, India

***Abstract* - At present time, people face many problems regarding safety like crime, theft. Considering the well-being of people of certain age groups such as women, children,elderly etc., we have implemented a user-friendly safety gadget for certain age people with self-defense features. The proposed system module has features for providing pictorial and audio evidences and also tracks location of the victim in danger. We kept in the mind the problems faced by the victim when a sudden unexpected attack happens on them.The device rings when a buzzer is triggered to save the person in danger zone. We are using Android application for tracking the victim's location usingGPS module which gives information about the victim's position and GSM module for sending messages about the victim. The device contains pre-set contacts for which message is sent during emergency situation, through the mail and also message is sent to nearby police station. Then alert messages are updated instantly to the preset contacts so that the person can be safe.**

Keywords* - *microcontroller; gps/gsm; safety; security; protection

I. INTRODUCTION

Safety means protecting ourselves from any form of danger that may adversely affect our lives.A safe and secure life is the topmost priority of any individual. It is the right of any citizen.Even though the government as released many application they are not so secured for society.

Sometimes safety and security becomes a major concern for people of certain age groups even though women are not highlighted. Safety gadgets play a major role in our day to day life .Technology is becoming a game changer in the public safety area.

A development that hinges on our ability to communicate seamlessly.Wearable devices are just a few of the innovative ways that technology is contributing to safer lives and a safer society.In critical situations any individual say a working woman or a student and even an elderly person will not feel secure when they are in places which are scarcely populated or odd areas. The safety gadget ensures to provide self-defence application which helps the victims to handle unsecure situations.Keeping in mind the need for security for individuals of certain age groups, our group has proposed a smart gadget for safety and security for the welfare of our society.

The system suggests a smart wearable device for security which contains different modules such as GSM, GPS, Buzzer, panic button and Microcontroller.The proposed system helps women in emergency situation by activating the modules on triggering the panic button. These sends an alert message to preset contact which is friends and family members if you're in danger.

II. SYSTEM DESIGN

A. Existing System

In the prehistoric times caveman clubs, pepper spray and stun guns were only the mechanisms for safety and security of the people especially women but the technological evolution has given rise to the advent of gadgets which have all the user interactive and portable features.

These are the safety devices that have made personal safety a whole lot easier.They have already many existing device and application in that they are some listed here Cuff, Nimb, Apple watch, Athena, Allen Band, Revolar. Some of the devices are created on the base of women safety which is help for the safety of the victim.

Disadvantages of existing system:

The above mentioned safety devices are the latest existing gadgets presently but they have their own disadvantages that are not scalable to users which are as follows:

- The existing devices are very costly therefore not economical to the user.
- Many users do not have the knowledge of using the device properly especially the illiterate and the uneducated.
- Though the existing devices are wearable, they lack major self-defence feature such as video recording.
- Some existing devices work on batteries or shells. Replacement of shells or batteries is tough and expensive.
- Some of the devices work only by pressing certain buttons.When a person is immediately attacked, person gets panicked and may not remember to press the button.

B. Proposed System

The proposed system consists of different hardware shown in Fig 1 such as Microcontroller, GSM, Buzzer, GPS, LCD and Android Mobile phone.Microcontroller is the main part and it controls all the functionality of the system.Once the panic button is triggered, it activates the system. Buzzer starts to produce beep sounds so that surrounding people who hear the sound can rescue the victim.The android application gets activated and it captures the image and also records a video.The location of victim is tracked and it is sent to police through email and message is sent to pre-set contacts in the application.

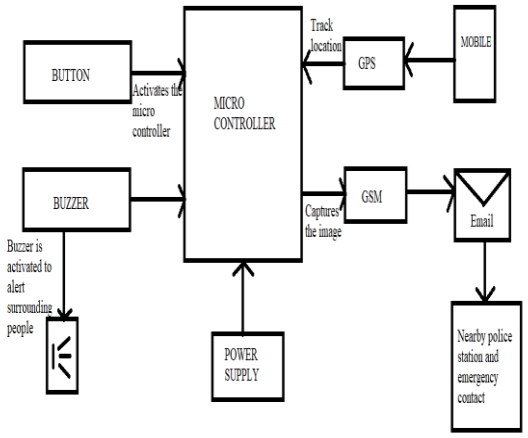

Fig 1: Proposed System

1) Hardware components working is explained below:

- Microcontroller: It is single chip.We are using SST89E516 microcontroller, it consist of 40 pins, 4 ports(P0, P1, P2,P3), 32 bits of input and output pins, 1024 byte of RAM, ROM is 64 kb and it has 3 timers namely T0, T1, T2.
- GSM: It is used for tracking the location along with latitude and longitude information. GSM has adopter, diode, power, LM 317 and SIM 800.
- LCD: Its used for display purpose. It consist of 16 column and 2 rows.
- Buzzer: It activates a beep sound when panic button is triggered.
- GSM:It sends the messages if the SIM card is inserted.
- SMS on Emergency number: It helps to send the message to the pre-set contact in the application. The pre-setcontact get the message as "PROB" when the person is in danger situation.
- Power Supply: It is used for activating microcontroller. The 12V current is required for activating the hardware device.Android Mobile phone: It is required for activating application.

2) Features of Proposed System:

The additional features included in our proposed system are as follows:

- If any changes is made to system,it is easily adaptable.
- Additional devices can be added to the existing system.
- Secured communication, as we are using email to send image to police.

III. METHODOLOGY

System Architecture is developed mainly for the safety of people in dangerous situation. The device provides tracking of location of the victim using GPS and sends message using GSM module. These modules send the message to pre-set contact and also through emailto the police in application. In this system camera is activated to capture the evidences. Fig1 explains the working of the devices through which we can understand the proposed system of the project.

// Steps for Proposed System :

STEP 1:Start the device.
STEP 2: Switch on the power supply.
STEP 3: Emergency button ON.
STEP 4: Buzzer is activated and starts alerting surrounding people.
STEP 5: if button activated
Then sends the messages to pre-set contact
Track the location through GPS
Else
De- Activated
STEP 6: Information is sent through email for police.
STEP 5: Evidences captures images/stored the video

IV. SYSTEM REQUIREMENTS

The software design for the devices contain both hardware and software performance requirements.System specification what the system should be there in complete devices. It defines a statement in natural languages plus illustration, which defines under which the system is proposed.

1) Hardware Specification

- Global Positioning System
- Global System for Mobile Communication
- Liquid Crystal Display Android mobile phone
- Panic Button

2) Software Specification

- Android SDK
- Web Server
- Java and XML
- Eclipse IDE

V. RESULTAND DISCUSSION

The main objective of the device is to provide the safety and security of the certain age people in danger situation. When the person is in dangerous situation the device is pressed the button get activated through the

device. Then the buzzer get ring the alarm and alerts the surrounded people to help the person in danger. After that the device sends the message to the pre-set contact and also track the location of the person in danger. Through email the details and evidences are sent to police for further requirement.

The developed wearable device can help people to get assistance during an emergency. The wearable device is connected through the application that we have developed and can be used to monitor the user by fetching the location of the user and sending messages regarding the user. The wearable device is provided with a button called the 'EMERGENCY' button, which when pressed will alert the microcontroller to do the necessary actions as directed.

Once the user presses the emergency button, the device which is connected to the mobile application will send a SMS to the pre-set contact as shown and detects the location of the user through GPS as shown in Fig 2. At the mean time, it also activates the alarm which is previously included in the device and the camera in the mobile phone through the application autonomously to capture the image.

Fig 2.Setting the Preferences in Application

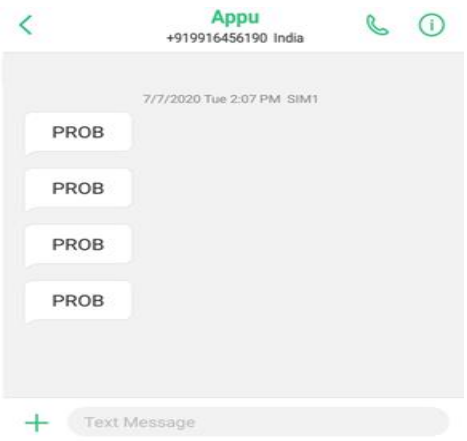

Fig 3.Alert Messages

The location and the images captured will be sent to the nearest police station and ask for help. This device is easy to use and is also wearable, which makes it more accessible to the user. The device also has a LCD display. When the person is in danger situation he/she should press the button on the hardware device. The application will get activated and sends messages to the pre-set contact as shown in the Fig 3. There will not be any necessary to search the contact details, to create message and then send it. All that needed is an Android cell with our application deployed in it.

VI. CONCLUSION

The wearable device helps for certain age people in dangerous situation. When 'EMERGENCY' button is presses the message will be sent to pre-set contact. Then the system responds with a TRACK Message and the current location of victim is found. Therefore our application will be more efficient and productive in problem detecting and alerting. The images captured can be used as evidences for filling a complaint against the culprit and punishing the attacker or culprit.

ACKNOWLEDGEMENT

We are grateful to our beloved guide Prof. Lakshmi K, Department of Computer Science and Engineering, Vivekananda Institute of Technology,for her valuable guidance and support.

REFFERENCES

[1] Trisha Sen , Arpita Dutta , Shubham Singh , Vaegae Nveen Kumar.”Pro-Tech- Implementation of an IoT based 3-Way Women Device”, ICECA,2019.
[2] Akash Moodbidri , Hamid Shahnasser , “Child Safety Wearable Device”, IEEE ,2017.
[3] Jismi Thomas , Maneesha K J, Nambissan Shruthi Vijayan , Prof.Divya R, ”TOUCH ME NOT-A Women Safety Device’’,IRJET, volume 5, Issue 3, March2018.
[4] G C Harrkiran, Karthik Menasinkai, Suhas Shirol, “Smart Security Solution for Women based on Internet of Things(IOT)”, in “International Conferences on Electrical and Optimization Techniques(ICEEOT)”,2016.
[5] Dayananda P and Sowmyarani C. N. "Analytical Study on Privacy Attack Models in Privacy Preserving Data Publishing." Security Solutions and Applied Cryptography in Smart Grid Communications. IGI Global, 2017. 98-116. Web. 10 Feb. 2017. doi:10.4018/978-1-5225-1829-7.ch006
[6] A Helen, M Fathima Fathila , Rijwana ,Kalaiselvi V.K.G, “A Smart For Women Security Based On Iot Concept”, “Watch Me”,IEEE-201