Smart Safety System For Women Security

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Abstract: Women's security is a critical issue in today's world, and it is very crucial for every individual to be acting over such a problem. This project describes a GPS (Global Positioning System) based women security system and an android based application. The security device provides the combination of GPS device as well as provide alerts to the nearby people and sends SMS (Short Message Service) to the emergency contacts. The transmitter and receiver are used by which the system provides alert and sends messages automatically when the RF signal between the receiver and transmitter goes low. This safety device also contains a button that is pressed by women whenever they feel they are in danger. The android application will be useful when one forgets to carry the device. Through which one can make a call and send the location along with the current address to the emergency contacts and police station on a single click as well as the system plays a siren sound to divert the attacker and to alert the nearby people. In case of accidents and fire alerts, one can also inform the hospitals and fire stations. The signal can also be shared on social media. The system provides a realizable, cost-effective solution to problems related to women. Nowadays, due to some issues such as rape by drivers or colleagues, burglary, etc. Women's security has become the foremost priority in the world. The information on women's position provided by the device can be viewed on Google maps using the Internet or specialized software. The IT companies are looking forward to the security problem, and they require a system that will efficiently evaluate the question of women security like working in night shifts, traveling alone, etc. The proposed model is focused on to deal with the problem of the security issue of women using a GPS based tracking system.

Index Terms : Android Application, GPS, Nodemcu, Receiver, RF signal, Transmitter, WIFI module.

1 INTRODUCTION

"SMART SAFETY SYSTEM FOR WOMEN SECURITY" describes a security device and an application specifically designed for women in emergency and distress. Even in this well developing country, women are feeling insecure about stepping out of their house because of increasing crimes in the country like harassment, abuse, violence, etc. Women's rights under the Indian Constitution mainly include dignity, equality, and freedom from discrimination. The report of WHO expresses that, "A savagery demonstration against female sexual orientation irritated the general wellbeing life of society, and it disregards the human privileges of women.” The corporate and IT sectors are currently in a boom. Since the last few decades, the status of women has been going through a lot of changes. To survive in this world and to be independent, a woman works in various places and supports their family. They work in different areas like call centers, IT firms, and so many places like it. Many women are working in corporate sectors, in both morning and night shifts. There is a feeling of insecurity among those working women. The proposed device is like a safety and security system in case of an emergency. This device has a transmitter and a receiver in which the receiver is placed in the bag, and the transmitter is placed in the slipper. When the signal between the receiver and transmitter goes low, the device automatically sends SMS to the emergency contacts and provides alert to the nearby people.

This system consists of a WiFi module and GPS. GPS is used to track the location of the women, and the WiFi module is used to send the tracked location as SMS to the emergency contacts. The microcontroller used here is nodemcu ESP8266 by which the parents receive the message when the button is pressed or when the sensor reads the input. The software used here is the Arduino IDE. The coding is compiled in the software and uploaded in nodemcu. An Android application is developed in case one forgets to carry the device with them. Smartphones are widely used nowadays by every age of people. Even a child takes an android phone. The system not only acts as a helping agent for women but also for children and older people. Using the software application, one can send the location to almost five contacts and can make a call to a contact and alert the nearby people in the press of a single click or by simply shaking the mobile phone. The location sensor is used to detect the location of the user. When the application is opened, the GPS will be activated. In case of fire alerts and accidents, one can send alerts to the hospitals and fire service station. If the problem gets solved, one can send a safety alert to the stored contacts. The accelerometer sensor detects the shaking action. One can also send the alert to the social media's by pressing the sharing option. Using this option, one can share their location either on Facebook, WhatsApp, Twitter, etc., by sharing the alert in social media, the victim can be easily tracked in a fast manner, and the harasser can get arrested so quickly.

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2 EXISTING SYSTEM

The existing system describes an equipment which consists of a GPS module by which one can get the geographical location via SMS. In case of any emergency conditions, she can press a button once, and then the location will be tracked and sent to police and relation so that they will know the exact location of the individual, so that the incident could be prevented and the culprit is apprehended. There are also several kinds of applications developed in the market for women’s safety and security. These applications allow the users to register themselves on the app by creating their account. After making an account, users would be qualified to use all the services intended to protect and empower them. Services include an automated distress SOS to the nearest police station and her emergency contacts. These applications can share the location only to a maximum of a single contact. Also, one needs to constantly press the button to share the location at various intervals while saving herself from emergency situations. There are some applications through which one can send pictures. When activating the camera or video option automatically on button click, sometimes an offensive photograph can also be taken, which may rarely lead to suicidal issues.

3 PROPOSED SYSTEM

The proposed system describes a safety device that gets automatically triggered when a woman is in danger from anywhere at any time. This device has a transmitter and receiver in which the receiver is placed in a bag, and the transmitter is placed in the slipper. When the RF signal between the receiver and transmitter goes low, the device automatically sends SMS to the emergency contacts and provides alert to the nearby people. Here WiFi module and GPS are used. GPS is used to track the location of the women, and the WiFi module is used to send the tracked location as SMS to the emergency contacts. The microcontroller used here is nodemcu ESP8266 by which the parents receive the message when the button is pressed or when the sensor reads the input. GPS reads the data for every 20 seconds and sends it to the nodemcu. The WiFi module is used to send the GPS data to the cloud. Radio Frequency module is used here to measure the distance between the transmitter and receiver. If the RF signal goes low, it sends SMS to the emergency contacts and provides an alarm. The software used here is the Arduino IDE. The coding is compiled in the software and uploaded in nodemcu. After uploading code in nodemcu, it will have the data of the GPS and radio frequency module. In case of an emergency, when one unable to press the button, this device will be very useful. Figure 3.1.1 describes the block diagram for a women safety device. The proposed system also describes an android application, which will be very helpful when one forgets to carry the device along with us. The application consists of various buttons like help, safe, ambulance, fire service, sharing. When one is in danger, the victim can either trigger the button using a click or by shaking the mobile phone when the application is open. In this application, one can store up to 5 contacts to send the location via location sensor, and one can store a call contact to make a phone call to the close neighbor so that when attended they can easily hear what is happening around us which can be very helpful in tracking the victim and secure them. In times of accident and fire alerts, one can call ambulance number and fire service number by triggering the ambulance and fire service number. In case of security threats, one can send alerts to police via the help button. To alert the nearby people, a distress sound will also be produced. When one gets relief from the danger, they can send safe zone messages to the neighbors by clicking on the safe button. Figure 3.2.1 represents the flow diagram for the android application that describes the workflow of the application. In this application, one can also share their location via social media using the sharing option. As the impact of social media is increasing among all ages of people, sharing the alert in any of the media such as Facebook, WhatsApp, Twitter, can rescue the victim in the most effective way.

The modules in the safety device are Location Tracking and Alert Sound. The modules in the android application are Location tracking, Call a contact, Shaking Alert, Sharing via social media. The location tracking module is used to track the location of the women, and the location is sent to the emergency contacts via SMS. The alert sound module provides alert sound to the surrounding people in case of an emergency. Call a contact module is used to make a phone call to the emergency contacts in case of an emergency. The siren sound also beeps to alert the nearby people. Shaking alert is used to activate the alert by just shaking the phone. Sharing via social media module is used to share the location via social media platforms such as Whatsapp, Instagram, Twitter, etc.

3.1 ARCHITECTURE DIAGRAM

3.1.1 THE SAFETY DEVICE
3.2 FLOW DIAGRAM
3.2.1 ANDROID APPLICATION

The figure 4.1.2 represents GPS, which is used to send the location to the emergency contacts via SMS. The GPS model used here is NEO-6M-0-001. It reads the data for every 20 seconds and sends the data to the nodemcu, and the nodemcu sends the location via SMS to the emergency contacts.

4.2 GPS

The figure 4.1 describes NodeMCU in which WiFi module is connected. NodeMCU is programmed to send SMS to the emergency contacts whenever the button is pressed, or input is read if the signal between the transmitter and receiver goes low. It is also connected with a buzzer that provides alert sound in case of an emergency.

4.1 NODEMCU

The figure 4.1 represents NodeMCU in which WiFi module is connected. NodeMCU is programmed to send SMS to the emergency contacts whenever the button is pressed, or input is read if the signal between the transmitter and receiver goes low. It is also connected with a buzzer that provides alert sound in case of an emergency.

4.3 WIFI MODULE
4.3 WiFi Module

Figure 4.3 represents the WiFi module, which is used to connect the device with the internet. The WiFi module used here is 8266. With the help of the WiFi module, GPS data is sent to the cloud. This data is stored in the cloud using HTTP Call, which is programmed in PHP MySQL platform.

4.4 RF TRANSMITTER AND RECEIVER

Figure 4.4 represents the RF transmitter and receiver. The transmitter is connected with the device that is kept on the bag, and the receiver is kept on the slipper. If the signal between the receiver and transmitter goes low, the SMS is sent to the emergency contacts, and alert sound will be provided. The transmitter receives the serial data and sends it to the receiver by means of an antenna that is connected to the receiver.

5 IMPLEMENTATION

5.1 SAFETY DEVICE

5.1.1 LOCATION SHARING

In this module, whenever the button is pressed, or the signal between the transmitter and receiver goes low, the location is tracked, and the tracked location is sent to the emergency contacts through SMS, as shown in Fig 5.1.1(a). It sends the location through SMS to the emergency contacts for every 20 seconds.

The contact can search for the latitude and longitude value in the Map, as shown in Fig 5.1.1(b).

5.1.2 ALERT SOUND

In this module, the alert sound is provided to the nearby people whenever the button is pressed, or the signal between the transmitter and receiver goes low. For this, a buzzer is fixed in the device, as shown in Fig 5.1.2 to provide alert sound so that nearby people get alert and come for help to safeguard the women. The buzzer is connected to the pins of NodeMCU, and then it is programmed using Embedded C Language.
5.2 ANDROID APPLICATION

5.2.1 LOCATION SHARING

The User interface is designed with logo buttons like help, ambulance, fire service, safe, sharing, camera, sound off, as shown in Fig 5.2.1(a). The Location Sensor is added to track the location of the victim. A TinyDb Component is used in the application to store the text and call contacts and IMEI number. The Texting Component is designed to send the location via SMS. The event Send Message Directly allows the victim to send the SMS to the contacts automatically. In TinyDb, store value procedure stores the contacts which are entered in text boxes, as shown in Fig 5.2.1(b) along with a tag name. The Location Sensor is disabled to begin, then enabled when the button is clicked and disabled once again when the location is determined. When the alert button is clicked, the location sensor tracks the current location of the victim and sent the latitude, longitude values along with the current address, as shown in Fig 5.2.1(c) to the stored contacts.

5.2.2 CALL A CONTACT

A Phone Call Component is added to the screen to make a call to a contact in times of emergency issue. A Sound Media Component is added to the designer page to Save any siren.
sounds to alert the nearby people in case of any emergency issues. When the button is triggered, The Send Phone Call direct event automatically places the call, as shown in Fig 5.2.2, to that number, and the sound starts to play.

5.2.3 SHAKING ALERT

An Accelerometer Sensor Component is added to send SMS, as shown in Fig 5.2.3, and call to the neighbors in the detection of shaking by the victim. When one is unable to send the alerts frequently by pressing the button, she can activate the alert by simply shaking the phone. Shaking() event Indicates that the device started being shaken or continues to be shaken.

5.2.4 SHARING VIA SOCIAL MEDIA

The component Sharing is added on the designer page. Sharing is one of a non-visible component that enables sharing files and messages between the app and other apps installed on a device. The component displays a list of the installed apps that can handle the information provided and will allow the user to choose one to share the content with, for instance, a mail app, a social network app, a texting app, and so on. When a victim needs to share the alert on social media, one can share them, as shown in Fig 5.2.4 (a) using the sharing component. The method Share File with the message is called so that when one presses the sharing button, the alert can be sent to any social media. The Camera component is added so that one can send the camera pictures, as shown in Fig 5.2.4(b).

6 CONCLUSION

This project describes the safety measures which will be needed when a woman finds herself in danger. Even though there are several laws that are undertaken by the government, the environment still does not providing the actual safe to women while they step out outside the house. Women are facing various kinds of sexual harassment in their workstations too. This system will act as a real-time helping agent to them. It provides 24*7 safety and security to them. This project covers various kinds of situations that women face nowadays. The device can either be activated automatically by measuring the distance between the transmitter in the slipper and receiver in the handbag or by the button click. This Application can be used in panic situations, accidents, fire alerts. One can send the alerts to the people either via button click or by shaking the phone. Due to the impact of social media on all ages of people from a child to the old aged, this system has an option to share the alert through the WhatsApp, Facebook, Twitter, etc. This will be very much helpful in rescuing the victim and in arresting the harassers in the most effective way. When news is shared on social media, it will become more viral, and the victim can be rescued as soon as possible. In this application, one can send the latitude and longitude of their location as well as the street address. A siren sound gets starts to play, which will be very helpful in alerting the nearby people about the danger. Even teens and old aged people can use this application. It will provide a high-level safety and security measure so that one can feel secure when stepping out of their house and roaming around the world.

REFERENCES


