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IOT BASED SAFETY SMART BAND FOR WOMEN

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Abstract

This proposed system adopted IOT technology which is a real-time, portable, secure system used to send alert message to their relatives and nearby police station that consist of easily trigger able raspberry pi camera. Priory, victim has to install mobile application and select emergency contacts list to send information when they are in danger. In today scenario, we receive lot of unwanted messages via SMS. So, peoples don't give much important to SMS. Also, some mobile operators cost separate charges for SMS and some time it takes lot time to reach recipient. But Mail services are effective and we can send image directly through mail. When the button connected with raspberry pi is pressed, raspberry pi sends the image of crime along with GPS location to mail address. It produces the loud sound to grab public attention. It also equipped with electric shock circuit it produces high electric pulses which can help victim to attack the criminal. At the moment of alert signal updated in cloud, android application GPS coordinates to cloud and sends it with current location of mobile to selected contact list through mail and SMS.

Keywords:IOT, Women Safety, Computer Networking, Smart Ring, Raspberry Pi, Mobile Application.

Introduction

In the present situation, because of their family situation and passion women need to take every step equal to men. But they cannot step out of their safe zone at any time of the day, cannot wear clothes as per their will, nor can they can go for work in peace.Due to the above said reasons, it is quite apparent that there is a striving need for women security in the country. However, it is a point worth to note that advancement in technology has paved its path in almost all walks of life. As such, it is now possible to intelligently apply the benefits of current technology to resolve societal issues.

Women's safety involves strategies, practices and policies which aim to reduce gender-based violence (or violence against women), including women's fear of crime. Women's safety involves safe spaces.

Safety: The primary **importance** of self-defense is for **women** to be able to protect themselves against anything that's unacceptable in terms of social conduct. Confidence: There is nothing more empowering than having the confidence to analyse a dangerous situation and take actions to overcome them effectively.

This paper, therefore, aims to apply the current trend in technology, i.e., Internet of Things (IOT) to eliminate fear filled lifestyle of female folks. The Internet of Things (IOT) is an ecosystem of connected. physical objects that are accessible through the internet.

It refers to the ever-growing network of physical objects that feature an IP address for internet connectivity, and the communication that occurs between these objects and other Internet-enabled devices and systems.

Typically, IOT is expected to offer advanced connectivity of devices, systems, and services that goes beyond machine-to-machine (M2M) communications and covers a variety of protocols, domains, and applications.

The interconnection of these embedded devices (including smart objects), is expected to usher in automation in nearly all fields, while also enabling advanced applications like a smart grid, and expanding to areas such as smart cities. In the recent past, issues on women harassment are accentuating at great heights, creating anguish and distress among the women of today.

As a matter of grave concern, this paper introduces a Raspberry-Pi based wearable device called the Smart Ring that proves constructive to the women in danger and helps them to fight such odds.

The main objective of the system is to intimate an instant location and a help message through an Android app to a registered number of contacts and the police, so that untoward incidents could be prevented and to provide real time evidence for swift action against the perpetrators of the crime.

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This proposed system adopted IOT technology to improve the women safety. Using IOT, physical devices can communicate with each other over internet irrespective with distance. The proposed system is a real-time, portable and secure system which used to send alert message to their relatives and nearby police station.

This system consists of raspberry pi zero board, raspberry pi camera, buzzer and a push button along with power supply. An android application is designed to simplify the user interface of smart band. Priorly, user has to install mobile application and select emergency contacts list (Mobile Number as well as Mail ID) to send information when they are in danger.

When the button connected with raspberry pi is pressed, raspberry pi captures the image of the crime and send the emergency signal to the cloud database.

As soon as emergency signal updated in the cloud, android application fetches the GPS location of user mobile and send to cloud. Similarly, it sends the SMS to contact list given by user. After that raspberry pi send the image of crime along with GPS location to mail address.

Working

Smart band is a wearable Raspberry Pi based device that aims to help women in distress. It is integrated with a smart phone application that uses GPS tracking to find the victim's location, a camera module to record the crime for evidence and Messaging services to aid in alerting the emergency contacts with the incident, thereby, proving to be a boon to women.

The Smart Ring consists of a button, a Raspberry- Pi Nano board, a camera module and a buzzer. When a woman is in danger, she presses the button that triggers the Raspberry- Pi Nano that enables the camera module to capture an image of the incident.

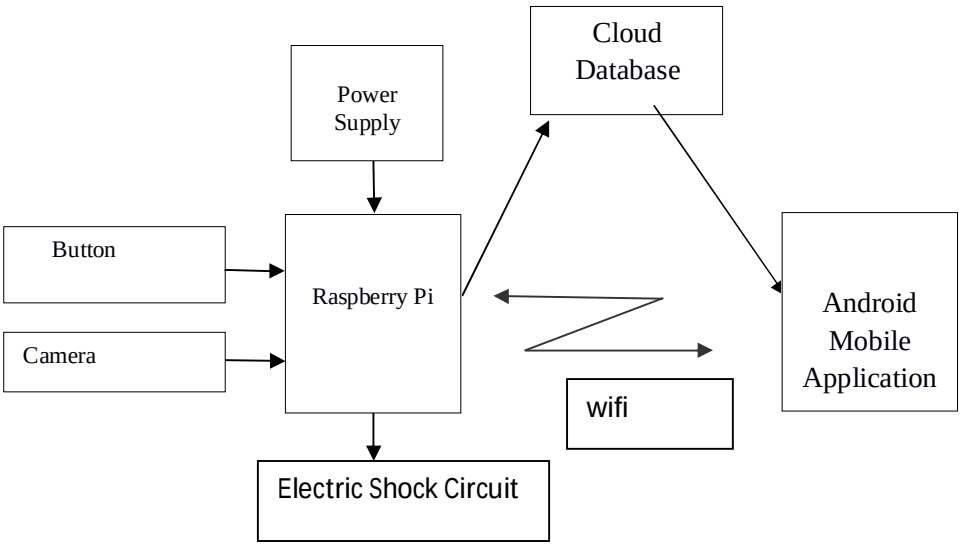

Fig 1: Block Diagram of women safety

The captured image is stored in a local host server that is run on a machine. The user logs into an Android App, specially designed for the ring, that allows her to select from a list of existing contacts or add a new contact with whom she wishes to communicate. Once the desired contact is selected, the image link fetched from the server, a help message along with the current GPS location of the victim is sent to the emergency contact and police. The buzzer connected to Raspberry-Pi is activated and it generates a high frequency screeching alarm to seek the attention of the people in that vicinity and also serves as a warning to the intruder, on the click of the same button.

In woman safety application camera is used to find out location of the user and send surrounding images to emergency contact numbers respectively. This device is better than the existing systems and can be really helpful to individuals in danger because of the following reasons: Criminal Identification, Increased accessibility and portability. A boon to senior citizens and people suffering from medical issues Can also employed for children safety thus preventing crimes like child abuse and child trafficking, Need for a movement towards safer environments

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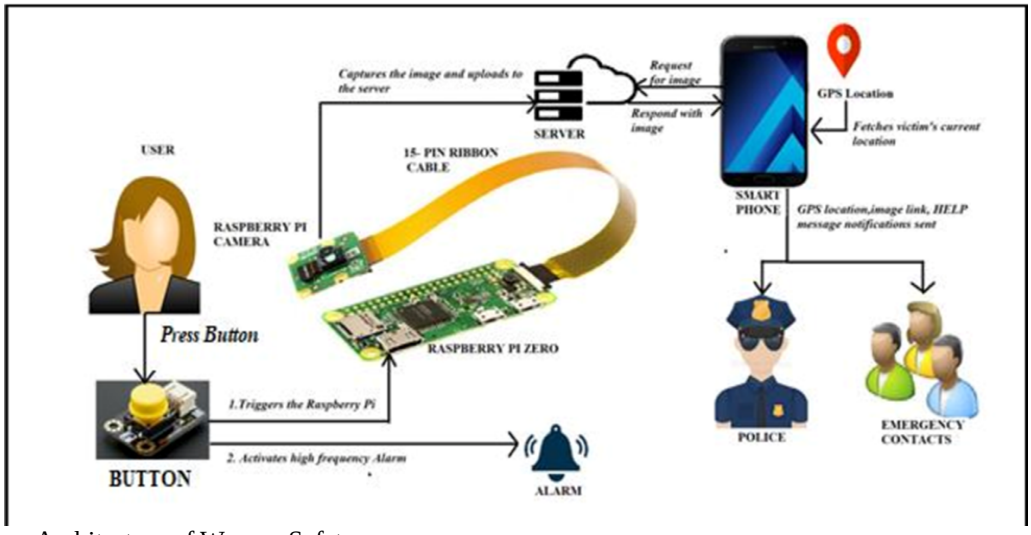

Fig 2: Software Architecture of Women Safety

This paper is an endeavor to develop an effective self-defense gadget which would provide protection to women in case of any assault or unsolicited contact. The major merit of this product is its simplicity and is also economical and effective handy device for women who travel alone. This gives more confidence to the women about their safety. Since it is implemented in the form of a ring the device can be easily concealed and extremely accessible in dangerous situations. But there is always room for improvement. Some improvements can be made so that it expects to enhance the performance without altering the existing design. Presently the application is compatible only to android smart phones. So, by making it compatible with any OS, can improve the system. The system can be further developed by adding few sensors to sense the fear and anxiety and thus automatic response can be obtained. Addition of a voice recognition system for the access will also help to improve the performance.

Results:

Results and Implementation

Installing and Creating Your Firebase Console

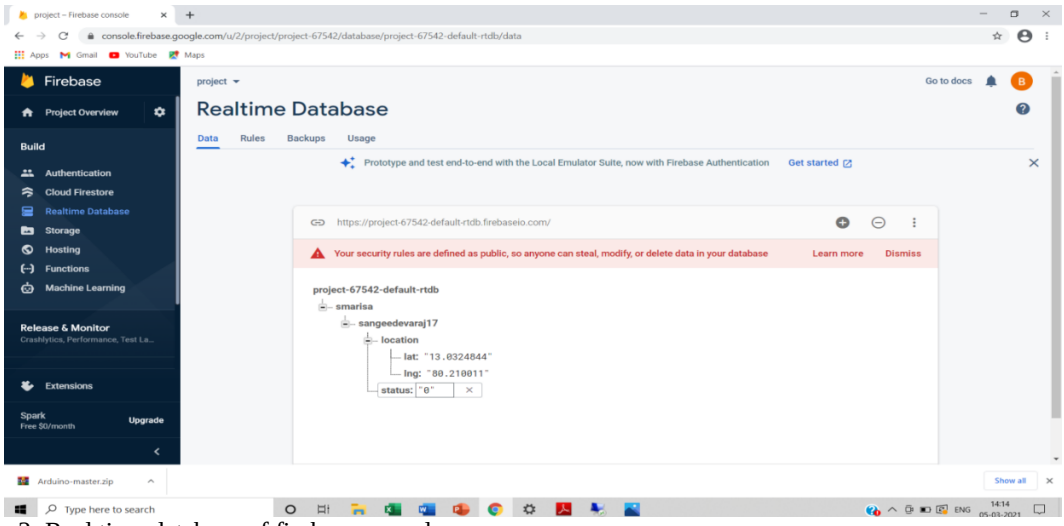

Fig 3: Real time database of firebase console.

Step 1: **Add Firebase using the firebase console**.

Adding Firebase to your app involves tasks both in the Firebase console and in your open Android project (for example, you download Firebase config files from the console, then move them into your Android project).

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Step 2: **create a Firebase project.**

To use Firebase in your Android app, you need to register your app with your Firebase project. Registering your app is often called "adding" your app to your project.

Step 3: **Register your app with a Firebase**

1. Go to the Firebase console.
2. In the center of the project overview page, click the **Android** icon (plat_android) or **Add app** to launch the setup workflow.
3. Enter your app's package name in the **Android package name** field.

Step 4: **Add a Firebase configuration file**

Add the Firebase Android configuration file to your app:

1. Click **Download google-services.json** to obtain your Firebase Android config file (google-services.json).
2. Move your config file into the module (app-level) directory of your app.

Step 5: **Add Firebase SDKs to your app**

Using the Firebase Android BoM, declare the dependencies for the Firebase products that you want to use in your app. Declare them in your module (app-level) Gradle file (usually app/build.gradle).

Real time Database:

Store and sync app data in realtime.

Storage:

File storing made easy.

In firebase console, we are creating a new project and to show the of Real time database of our project.

It shows the exact status and current location with latitude and longitude.

Women Safety App (Android Mobile App)

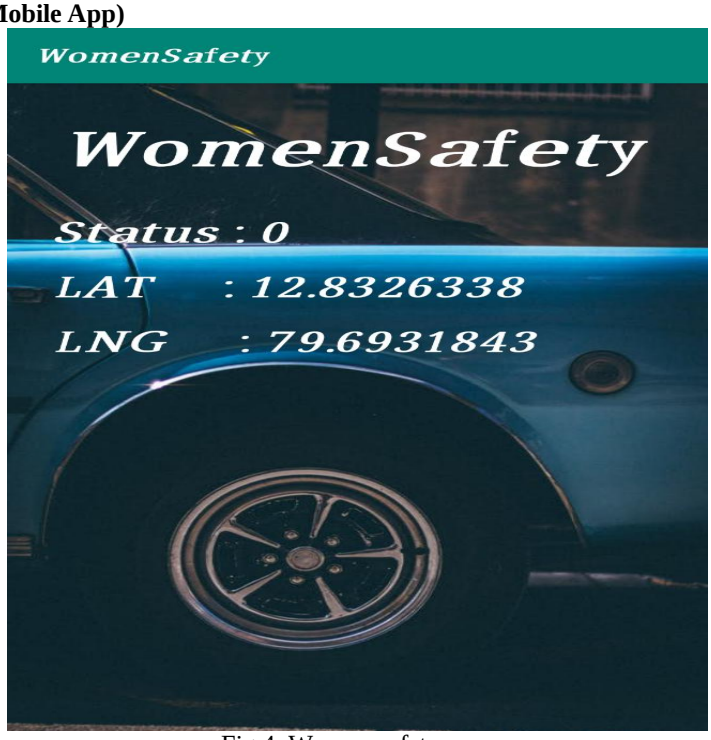

Fig 4: Women safety app

Woman safety is the app which we used for sending the exact location of SMS and MAIL with the location as well as image. Priorly this app is to be installed by the user for SMS and MAIL purposes. And we have to register into the app by giving the details required.

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Results of Women Safety Captured Image with Location

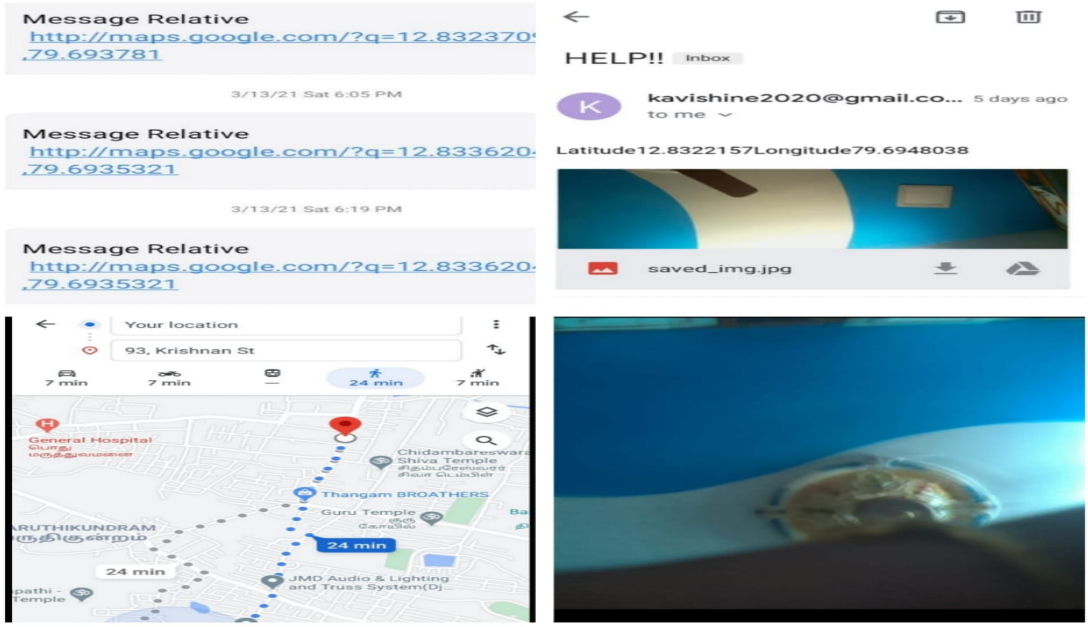

Fig 5: Captured image with location.

Message: Represents the location URL. If we click that URL, we can see exact location.
Mail: Represents the help message along with latitude and longitude and also image will be shown.

Conclusion

The main goal of this project is to ensure that every woman in the society feels safe and secure while travelling at night, on lonely roads, while going to schools, colleges, workplaces, etc., Implementing real time applications and an upgraded device, we can solve the problems to an extent with further research and innovation, it can be used to safeguard the women in critical conditions, as women are facing many problems regarding their security. This application is useful to avoid cases like rapes and any perverts teasing girls, girls being stalked or harassed. Thus, we conclude that we have been able to review different techniques that have been used over years regarding women safety. On the basis of literature review carried out we proposed of a system which will acts as a safety gadget for the women and may help her to give the information of her whereabouts to the people around when in danger. In today scenario, every woman faces an issue time-to-time assistance and encouragement by her has played an important role in the development of our project. I would also like to thank our entire information technology who have willingly cooperated with us in resolving our queries and providing us all the required facilities on time. Regarding her safety due to rapidly increasing harassment against women. This system will help women to overcome their fear in going out and pursue their careers and work.

Future Scope

Presently, the application is compatible only to android phones.so by making it compatible with any OS, can improve the system. This system can be further developed by adding few sensors such as temperature sensor and pulse rate sensor to sense the fear and anxiety and thus automatic response can be obtained. Addition of a voice recognition system for the access will also help to improve the performance.

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