IOT Based Women Safety in Public Places
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Abstract:
In light of the present situation of the metro cities and other big cities, women security has emerged as one of the most important requirements in our country. In this world of advanced technology and smart electronic sit is required to have a simple and cost-effective safety gadget that helps the victims during unforeseen dangers. Hence, to provide security to the women during unforeseen dangers of chain snatching, IOT Based Women Safety System have been developed. In this security system there are three modules namely Prevention from Ornament Snatching and Women Safety, Panic situation monitoring and Health Care System. In ornament snatching and women safety module when the connectivity with the microcontroller will be lost then the message will be send to nearby police station with the location of victim and route taken by the snatcher. In Panic situation System, in ornament snatching and women safety module when the connectivity with the microcontroller will be lost then the message will be send to nearby police station with the location of victim and route taken by the snatcher. In Panic situation monitoring module, there will panic button fitted in ornament which can be pressed in case of any kind of emergency. In health care system module, which is basically an android application which will provide prescription based on the symptoms regarding health-related issues entered by the woman.

Keywords: Node MCU Microcontroller, GPS Module, Panic Button, Chain Snatcher, Web Server.

I. INTRODUCTION

Internet of Things (IoT) is the network of physical objects comprising of all the devices, vehicles, buildings and the other items embedded with electronics, software and sensors which enables these objects to collect and exchange data amongst each other. Using this technology, objects are sensed and controlled remotely across existing network infrastructure. This creates opportunities for direct integration of the physical world into computer-based systems. IoT is advantageous in many ways as it leads to automation of daily tasks leading to better quality of life and saves money as well as time. Applications of IoT include a vast number of systems, amongst them, a few are Smart homes, Automated car, Automated doors. Similarly, IoT plays a major role in Women Safety System. In today’s world, women safety has become a major issue in our country as women can’t step out of their house at any time, especially during night. It is primarily due to fear of violence against them or being physically or sexually abused. The fear of harassment against women is not only the condition at outside but it may also happen at homes. Even in the 21st century where the technology is rapidly growing, and new gadgets are being developed but still women and girls are facing problems. They often work across ethnic, religious, political, and cultural divides to promote liberty. We know that our society is all aware of importance of women safety, but it is also a duty of individual that they should be properly protected. Not only this, we must create such an environment in our society that women must feel secured outside their house even when they are alone at any time. Women are not so physically fit as compared to men so in case of a need a helping hand would be a boon for them. The best way to reduce probability of becoming a victim of violent crime (robbery, sexual assault, rape, domestic violence) is to recognize, defense and look up resources to help of hazardous situations. If a woman is in dilemma or get split from friends during a night out or someone is following with bad intention (sexual assault) or don’t know how to find back residence then this system will be with her and will guard her and bring assistance when she needs it. It not only protects the women by sending the live location of women to nearby police station as well as her relative but also prevents ornament from being snatched. It will also provide an m- health care application which will provide instant prescription based on health-related issue entered by women in the application.

II. LITERATURE SURVEY

The research papers used as reference for developing Women safety system are as follows:

M. Prakash, K. Nandhini, K. Narmatha, SV. Swetha, J. Srikanth [1] Proposed work involves design and development of electronic gadget that records the criminal offence of chain snatching automatically. Cons of this system is that Limited to certain range. Does not uses rechargeable batter SowmyaS, Dr. G. Raghavendra Rao [2] The Proposed system uses SoC and GPS. Wearable electronic systems include any autonomous device that is powered by a battery. The battery can be augmented by energy harvesting with secondary batteries being recharge from energy harvested outside the human body. As these devices are mainly at the research stage, many improvements will be needed concerning all their parameters. B.S. Manusudhan and S. Sowmyasudhan. [3] Smart electronic gadget that can track the chain snatcher and alert the police through the Real time transmission of video signals of the scene of crime which helps in solving the complicated cases. It is Costly. Difficult to identity the culprit in crowdyplaces. Ravi SekharYarrabbothu, BramarambikaThota. Abhayaa, an Android Application for the Safety of Women and this app can be activated this app by a single click, whenever need arises. A single click on this app identifies the location of place through GPS and sends a message comprising this location URL to the registered contacts and call on the first registered contact to help the one in dangerous situations. The unique feature of this application is to send the message to the registered contacts continuously for every five minutes until the “stop” button in the application is clicked. Continuous location tracking information via SMS helps to find the location of the victim quickly and can be rescued safely. Piyush Kumar Verma, Arpit Sharma, DhruvVarshney, Manish Zadoo [4] The main working...
of this project is that anytime a woman senses danger, all she must do, is to hold on the button of the device. Once the device is activated, it tracks the place of the women using GPS (Global Positioning System) and sends emergency messages using GSM (Global System for Mobile communication), to already registered mobile number and the police control room. The pulse sensor checks the pulse of victim and in abnormal health situation the device also sends current GPS location to ambulance at every 10 sec in form of SMSs To remove the drawbacks of conventional methods used for women safety Based Women Safety System will satisfy the following objectives:

- System will provide Real Time Location of the ornament Snatcher.
- The system alerts can be set to predefined Mobile numbers or pre defined E-mail Ids of the victim.
- It will ensure safety of women during unforeseen dangers.
- It will provide instant prescription on health-related issues.

III. PROPOSED METHODOLOGY

A. System Requirements

Following are the software and hardware requirements of the IOT Based Woman Safety in Public Places:

a) Software Requirements

- Operating System: Windows 7 and above.
- IDE: Eclipse or NetBeans
- Programming Language: Java
- Tool-Kit: Java Development Kit (JDK) 7

b) Hardware Requirements

- System: Intel 3 or Above 2.4GHz.
- Hard Disk: 40GB.
- Monitor: 15 VGAColor.
- Panic Button: It will be used in panic condition.
- Ram: 512MB.
- GPS Module: GPS Module used for location.
- Node MCU: Node MCU is a Microcontroller with inbuilt WiFi.
- Current Continuity Detector: To detect the connectivity of ornament and microcontroller.

Figure.1. System Architecture

B. System Working

This proposed system will function for three different modules which are explained below as follows:

1) Prevention from Ornament Snatching and Women Safety
2) Panic Situation Monitoring
3) Health Care System

In the 1st scenario, i.e. for ornament snatching, when the ornament will be snatched by the snatcher then the connectivity of microcontroller placed in the ornament with inbuilt Wi-Fi and GPS module for real time location tracking and ornament will break due to which the live location from where the ornament has been snatched as well as the route taken by the snatcher will also be transmitted to the nearby police station. Due to which the cops will make a trap to catch the snatcher. Secondly for women safety, when the women think that she is in danger she can herself snatch her ornament so that the connectivity of ornament with microcontroller will break and the message, as shown in fig.12, that she is in danger as well as the live location of women will be sent to the nearby police station and relatives. After which the police as well as the relative will come to location and save the women. We can add the details of police station in the localhost admin portal as shown in fig.9.

In the 2nd scenario, i.e. Panic situation monitoring, panic button is embedded in ornament. Women can press the panic button in case of panic situation i.e. in case of medical emergency. For e.g., if the women is facing labor pain during pregnancy or having severe chest pain, she can press the panic button and the message as well as the live location of women will be sent to the nearby hospital and relatives.

In the 3rd scenario, m-healthcare application will be used. Firstly, the women will register herself and then login in the application. This information related to the women will be saved or recorded in the localhost, as shown in fig.5. In this application the data about the symptoms of health issue as well as the related prescription will be feeded in the database as shown in fig.11. After clicking on the Disease tab present in the Admin Portal, it redirects to the Disease Details Page, which consists of various tabs such as View Records, Add Diseases, Logout. On clicking Add Diseases tab, it redirects to Add Diseases Page shown in fig.11, where symptoms and first aid for prevention of it can be added by filling in all the details. If the women are facing health related issue which is not much severe then she can open the app an the enter the symptoms about what health issue she is facing and depending upon the symptoms, the m-healthcare application will provide prescription to the woman.

C. Algorithm

This is the required algorithm to find the location of the nearest Police station and also Hospitals in case of Panic situations.

Input: K- the number of clusters
D: a data set containing n objects Output: A set of k clusters

Steps 1: Randomly select k data objects from dataset D as initial cluster centers.
Steps 2: Repeat.
Steps 3: Calculate the distance between each data object di(1 <= i <= n) and all k cluster centers cj(1 <= j <= k) and assign data object di to the nearest cluster.
Steps 4: For each cluster j(1 <= j <= k), recalculate the cluster center.
Steps 5: until no changing in the center of clusters.

The computational complexity of the algorithm is O(nkt) n: the total number of objects k: the number of clusters t: the number of iterations

IV. EXPERIMENTAL RESULTS

The developed system is being deployed and tested. The
Women Safety System consists of Women Safety Web Portal. In the Women Safety Web Portal, information related to the registered women, hospitals and police stations, diseases along with their symptoms and first aids ca be found.

Fig 2. Shows the Women Safety Web Portal.

![Welcome Page](image1)

The Welcome Page in fig.2 is the starting page, which consists of various tabs Home, Login, About.

![Login Page](image2)

Figure.3. Login Page.

The Welcome Page in fig.2 is the starting page, which consists of various tabs Home, Login, About.
The Login Page in fig.3 can only be accessed by the admin by using credentials.

![Figure 4: Admin Portal](image1)

The Admin Portal page in the fig.4 consists of various tabs such as Women’s, Doctor, Police, Disease, Map_View and Logout.

![Figure 5: Women Details Page](image2)

After clicking on the Women’s tab present in the Admin Portal, it redirects to the Women Details Page shown in fig.5 where details of all the women who have registered through the Women Safety app, is displayed.

![Figure 6: Doctor Details Page](image3)
After clicking on the Doctor’s tab present in the Admin Portal, it redirects to the Doctor Details Page shown in fig. 6 which consists of various tabs such as View Records, Add Hospitals Logout. On clicking View Records, details of all the doctors who have registered are displayed.

After clicking on the Add Hospitals tab, it redirects to Add Hospitals Page shown in fig. 7, where hospitals and doctors can be added by filling in all the details.

After clicking on the Police tab present in the Admin Portal, it redirects to the Police Station Details Page shown in fig. 8 which consists of various tabs such as View Records, Add Police Station, Logout. On clicking View Records, details of all the Police stations is displayed.
After clicking on the Police tab present in the Admin Portal, it redirects to the Police Station Details Page, which consists of various tabs such as View Records, Add Police Station, Logout. On clicking Add Police Station tab, it redirects to Add Police Station Page shown in fig.9, where Police Station can be added by filling in all the details.

After clicking on the Disease tab present in the Admin Portal, it redirects to the Disease Details Page shown in fig.10 which consists of various tabs such as View Records, Add Disease, Logout. On clicking View Records, details of all the Diseases along with their symptoms and first aid is displayed.
After clicking on the Disease tab present in the Admin Portal, it redirects to the Disease Details Page, which consists of various tabs such as View Records, Add Diseases, Logout. On clicking Add Diseases tab, it redirects to Add Diseases Page shown in fig. 11, where Diseases along with its symptoms and first aid for prevention of it can be added by filling in all the details.

As soon as the woman in the panic situation presses the panic button, the alert message was sent to the officer’s phone in charge in the Police station which is illustrated in fig. 12.

V. CONCLUSION

The proposed design will deal with critical issues faced by women during night and provide security with advanced technology. While the society may or may not change its mind set but this device will help to feel women independent. It is user-friendly, wearable and can be used in day to day life

FUTURE SCOPE

• System can be embedding with different sensor like health monitoring that can alert about woman health condition which will further enhance woman safety.
• The miniaturization of the module could be done using Nano technology.
• Sensors can be fitted in the ornament itself during manufacturing.
• Electric shock mechanism in device that helps to prevent thieves snatching valuable assets.
• Mechanism of inbuilt tiny camera which can take the images of thieves.

VI. REFERENCES


