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IoT Based Women Safety Device using Android

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ABSTRACT

In today's world it is not safe to travel alone, specially for women. Since many unexpected, and shameful incidents are happening around the world. Problems can occur from anywhere and anytime, as women are also growing equally like men so for that purpose they have to travel alone at night especially in public transport. for that reason we need to solve this problem of women. They also shouldn't feel any fear regarding their safety. This paper represents IoT based device along with android application which will serve the purpose to rescue the women from crisis situation. As we all know that nowadays every individual carry their own Smartphone's and wearable's. The uses of android along with smart wearable's is increasing rapidly so it is better to have such system which will provide a safe environment for women in crisis situation.

Keywords: SMS, IoT, Android, Bluetooth, Arduino , GPS

I. INTRODUCTION

A. Domain: IoT

The Internet of Things also known as IoT is system of interrelated computing devices, mechanical and digital machines, objects, people that are provided with unique identifiers and the ability to transfer data over a network without requiring any interaction between human/machine and machine/human. This definition of the IoT has evolved due to the convergence of multiple technologies, real-time analytics, machine learning, sensors and embedded systems. Traditional areas of embedded systems, wireless sensor networks, control systems, automation and others all contribute to enabling the IoT. In the consumer market, this technology is most similar with products pertaining to the concept of the "smart home", covering devices and appliances i.e., lighting fixtures, home security system and camera and other home appliances like washing machine that support one or more common ecosystems, and can be controlled by the devices connected with IoT ecosystem, such as Smartphone's and smart speakers.

B. PROBLEM STATEMENT: IoT based women safety device using Android

This paper is focusing on building an effective, fast and reliant system to make the women to feel safe and empowered.

Our platform will act as a 24*7 active help and companion for women so that they don't feel alone in any crisis situation.

It will unite as well as enables the citizens of our nation and the police to work towards a common problem. This tool will act as eyes and ears for the civilians and police and help them in diminish crimes against women.

This device has been designed in a manner that it deals with the various situations a woman can be stuck in like when she is alone or when she is in a public place or when she is in a public transport etc…

II. LITERATURE SURVEY

1. **Ms. Deepali M. Bhavale, Ms. Priyanka S. Bhavale, Ms. Tejal Sasane, Mr. Atul S. Bhavale,"IoT based unified approach for women and children security using wireless and GPS", IJARCET, Volume 5, Issue 8, Aug 2016**

This research paper proposed a system which can be useful for women for security purpose it consist of wearable device with emergency button to access the device immediately and proceed with its further functions. This system can make better use of Arduino based on Linux Board. The system has been developed on web based data driven application that provides use full information. This saves the time and victim get help without loss of time.

2. **Tuman Poddar, Ritesh C, Nagraja Bharat, "Using Wearable Technology To Answer Women's Safety", IJSTM, Volume 4, Issue no.5, May 2015.**

This research paper proposed a system of accessories incorporating computer and advanced electronic technologies. It includes devices with sensors and sync with mobile device for personal safety. This research proposes a system where these aspects of technology to build a unified system. The module setup use Zigbee and GSM for wireless communication and GPS for location tracking. The experiment of this research and its result can be viewed as an opening into a wider and vivid class of possible solution for women safety.

3. **Dr. P. Eswaran, Dr. N. Manoharan, "Women Security Solution Using: IoT", IJPAM, Volume 119, No. 10, 2018.**

Current Scenario from shows that women are facing Lot of troubles and they are not secure in untimed situation since women are working equal to men in every sector like police, Army, Business, etc. When they are leaving alone they may face problems like robbery, rape, murder and harassment. This research proposed a low cost model which is useful for women. By using this system on right time we can save women by problems they are facing while being alone or apart from their family members.

4. **Mr. Vaibhav A. Alone, Asst. Prof. Ashish Manusmare, Asst. Prof. Trupti Bhoskar, "A Study Based on Women Security System", IJSETR, Volume 6, Issue 8, Aug 2017.**

This research proposed an alternative method for women security concerns. Here the system is designed around Arduino Microcontroller that uses GPS and GSM for better security. In this research an intelligent and advanced women safety is proposed. The paper shows that the system ensures complete women safety during public transport and this system gives self defense to women. It is designed around microcontroller ATMEGA328P and button is pressed manually to indicate any miss happening. As soon as miss happening is detected by the device the same is indicated to controller.

III. SYSTEM DESIGN

The proposed system is going to work in the following way when caught in the crisis situation women with the wearable device and Smartphone connected with each other with Bluetooth simply

have to press the panic button placed on the device which then activate the device for the further functioning. On pressing the panic button digital signals will get generated with the help of control unit and get converted into analog signals with the help of Arduino mounted on the device. These analog signals then transmitted to the Smartphone via Bluetooth.

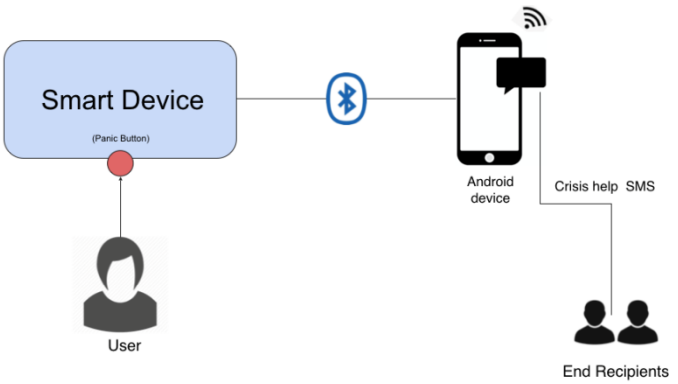


Fig 1: general system architecture

After receiving the signals sent by the device, application installed in the Smartphone is programmed for further processing. In which it includes database connection, real time GPS coordinates fetching and preparing SoS SMS etc… Android application on receiving signal simply prepare the massage with predefined templates including real time GPS coordinates and send it to the emergency contacts saved in the database. Functioning of android application is flexible as message templates and contact list can be updated anytime according to the user needs.

In short the model works as follow, the Smart phone is connected to Smart Device through Bluetooth Low Energy (BLE).Smart Device communicates with the Smartphone via a specially designed API unit collects data from human being using switch. Control Unit collects information from smart device unit. GSM Module will then send the location coordinates and help messages from control unit to the base station from which the messages are forwarded to the relatives if the incident occurs.

IV. ALGORITHM

```
Node_function(pressed)
 {
  IF panic button is pressed THEN
      BEGIN
           Analog signal is generated;
           This Analog signal is converted to digital
           signal;
           Digital signal is transferred using
           Bluetooth;
      End;

  IF Bluetooth signal arrived Then
     BEGIN
          FETCH the Guardians list;
             Get  the Current time;
               BEGIN
                    GET the Current location;
                    APPEND Current Location to
                    Message;
                    Send the Message to Guardians;
          End;
IF Current time increment by 5 min THEN
       BEGIN
         GET the Current location;
           APPEND Current Location to
                    Message;
                    Send the Message to Guardians;
              End;
     End;
}
```

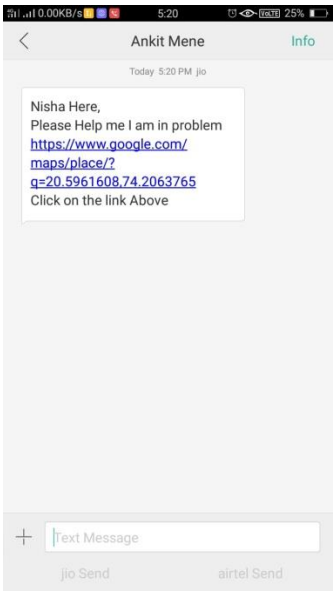
V. RESULT (OUTPUT SCREENSHOT WITH EXPLANATION)

EXPECTED RESULT

This system is expected to behave in following way:

Panic Button

Arduino



SOS Message

Current Location

Bluetooth

After pressing emergency panic button,
Immediately signals will be generated by the Arduino. These signals are transferred to android device via Bluetooth.
On receiving signals by the android application, SoS SMS will be prepared with real time location coordinates and send to emergency contacts which are already defined or stored in the database.

VI. ADVANTAGES

- Comfortable and Easy to Use
- Smartphone Based
- Single Button
- Bluetooth Low Energy(BLE) – Less Energy
- More durability
- 24/7 connectivity
- SOS SMS
- Real-time location sharing
- Backup support

VII. LIMITATIONS

1. To use this, device should be always connected to the mobile using Bluetooth.
2. If mobile is not close enough to the device Mobile will not receive the signal.
3. Internet Connection is must to get the current location.

VIII. FUTURE WORK

1. We can add camera in the device to capture the Images and record the video.
2. We can use the shock system in the device.
3. Using shock system in device the woman can tackle the situation.

IX. CONCLUSION

This research paper is focusing on the minimizing the problems women are facing. This system will help conquering the same problem. There are many alternatives research has been done to tackle same problem but proposed system is more efficient and convenient to use as device is easily accessible and its coordination with android platform makes it even sophisticated.

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