

# 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 smartphones and wearables. The uses of android along with smart wearables 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 smartphones 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. RELATED WORK

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. So when victim presses button system get activated to collect the information and send to the registered mobile number. This paper represent the system for women security in this paper a wireless method which will alert and communicate with the secure medium when the sensor kit button is pressed will collect the information of the user. This information will be send to the registered phone number.

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. This model with GPS UBLOX NEO-6, Arduino, Microcontroller acts as a prototype. In this model Zigbee is used which is short ranged i.e. 10-100 meters. Both GSM module and GPS module consumes a lot of power which drains the battery quickly since the application is built on the project with algorithms which consumes large share of power that makes portability of this device a problem.

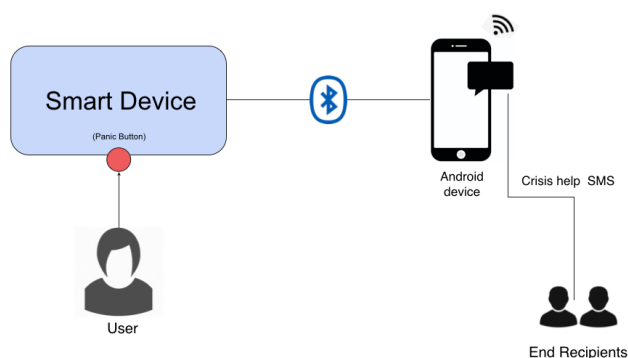
3. Dr. P. Eswaran, Dr. N. Manoharan, "Women Security Solution Using: IoT", IJPAM, Volume 119, No. 10, 2018.

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. This type of idea is first of its kind and plays a crucial role towards ensuring women's safety in the fastest way possible. They are using a microcontroller device MCU using IoT that communicates with smartphone And Sensors like GPS and GSM are used to identify the location. They are using Ubidots platform for development of android application.

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



After receiving the signals sent by the device,

Fig 1: A general system architecture

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 mishappening. As soon as mishappening is detected by the device the same is indicated to controller. Upon receiving the signal the controller gets in action and prepare a message containing location of victim and is transmitted to the relatives. This model is mounted on a single chipset so the device have to work with limited processing power which can overload the system and sometimes lowers the efficiency of the device. Due to this device may have heating problem.

### III. PROPOSED ARCHITECTURE

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.

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 message 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. PROPOSED SYSTEM

This proposed system is the device which is an integration of multiple hardware devices. This device is continuously connected and communicates with Smartphone via Bluetooth that has GPS and GSM module. Application on Smartphone is programmed and loaded with set of actions to perform afterwards. Signals generated by Smart device transmitted to the application on Smartphone. Application with access to GPS, Bluetooth and Messaging Services preprogrammed to send help request messages and precise location coordinates to relatives and people in

emergency contacts saved in database which can be edited by user using android application according to their needs.

In this device, We're using Arduino chip to accept input and process output because of its numerous advantages like

- 1)It is cheap.
  - 2)It comes with an open supply hardware feature that permits users to develop their own kit.
  - 3)The software of the Arduino is well-suited with all kinds of in platforms like Windows, Android etc.
  - 4) Ability to process digital signals into analogue ones.
- We're using Bluetooth as connectivity medium because of its efficiency, reliability, and cross platform support. We're building this system for Android platform because it's vast majority of users.

## V. SYSTEM REQUIREMENT

### A) Hardware:

- Smart Phone (With GSM and GPS support)
- Ram: minimum 1GB
- Arduino Nano v3
- Bluetooth 5.0
- Panic Button

### B) Software:

- Android Studio
- Global Positioning System(GPS)
- GSM 300
- Android Application acting as an interface between Smartphone and Device.

## VI. EXPECTED RESULT

This system is expected to behave in following way: After pressing emergency panic button, immediately signals will be generated. 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.

## VII. 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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