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## IoT based intelligent jacket

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### ABSTRACT

*“IoT Based Intelligent Jacket” gives an intelligent jacket that gives security for girls’ safety and blind support. In a global scenario, the prime question in every girl’s mind is about her safety and harassment issues. The simplest notion haunting every female is when they may be able to move freely on the streets even in bizarre hours without demanding about their protection. This assignment suggests a new generation to shield ladies. The 2nd scenario is set the blind people, Blind individuals war when visiting from place to region and depend on predefined and repetitive routes with a minimum impediment to guide them to their destination without an assistant. The task also makes a specialty of navigation of the visually impaired systems. “IoT Based Intelligent jacket” gives a sensible jacket that provides navigation for girls’ protection, visually impaired people. The machine encompasses ultrasonic sensor, GSM, GPS Sensor, Arduino UNO, Node MCU, Buzzer, Power supply, smartphone.*

**Keywords**— Arduino UNO, Ultrasonic, GPS, GSM, Node-MCU, Solar Panel, Smartphone, Jacket

### 1. INTRODUCTION

Internet of Things (IoT) is the networking of physical items that incorporate electronics embedded inside their architecture to talk and experience interactions amongst each different or with appreciation to the outside environment. In today’s world, we are facing a lot of trouble associated with women like criminal assault. The World Health Organization states that more than 40million folks are blind and 314millions have some pretty visual disorder. These people should be dependent on others for navigation. To resolve this hassle, wise jacket for ladies’ protection that permits users to shield while traveling in strange hours or while they feel helpless. In 2d scenarioBlind individuals struggle whilst traveling from place to place with a

minimum obstacle to guide them to their destination without an assistant. There are some systems available like a smart stick for blind people [1], Ultrasonic Blind strolling stay with voice playback [2], Electronic jacket for women safety [4], Emergency alert for girl’s safety with region tracking and artificial vision for blind [5]. These systems based on ultrasonic sensors and water sensors to detect the impediment. These solutions are less effective as they do not offer better navigation to blind individuals and the right protection to women.

The purpose of this device is to conquer the drawbacks of earlier systems to design and impose a clever jacket with a voice-primarily based alert for blind people to offer higher impediment detection and to offer higher safety machines to women. The clever jacket consists of a GPS sensor to offer navigation, Ultrasonic sensor to hit upon the impediment, GSM module for communicate purpose, Emergency offerings like Buzzer, SOS and NodeMCU with built-in WIFI module.

### 2. METHODOLOGY

The proposed system makes use of an ultrasonic sensor to continuously send digital signals to a microprocessor. From the duration of transmitting and receiving pulses, distance is getting calculated and if an obstacle is detected within a particular range, it gives a voice alert to the blind person. The range of ultrasonic sensors is between 3cm to 300cm. Ultrasonic sensors have ultrasound waves that have a frequency above normal human hearing i.e. 20KHz and the range of human hearing is between 20Hz to20KHz.

The system uses ArduinoUnoR3 is a microcontroller board supported byATmega328.SIM900 delivers GSM/GPRS 850/900/1800/1900MHz performance for voice, data and fax in a small form factor with low power consumption. It acts as a

two-way communication system. NodeMCU which includes firmware which runs on the ESP8266 Wi-Fi SoC from Espressif Non-OS SDK, and hardware based on the ESP-12 module. GPS sensor takes the information from the satellite and uses the method of triangulation to determine a user's exact position. The system also uses emergency services like buzzer for voice alert and save our soul (SOS) message.

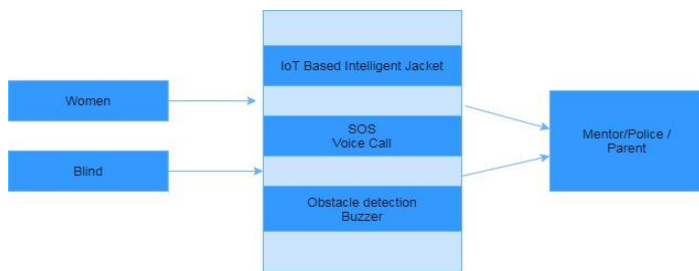


Fig. 1: Data Flow Diagram

### 3. PROPOSED SYSTEM

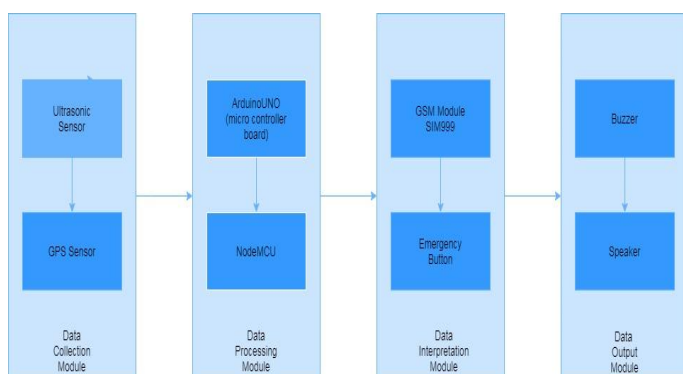


Fig. 2: System Block Diagram

#### 3.1 Hardware

It includes Arduino UNO connected with the Ultrasonic sensor, GPS sensor. Ultrasonic sensors will help blind to detect intercepting obstacles. GPS for navigation. We have used Node-MCU with an inbuilt Wi-Fi module for net connectivity. GSM provides two-way communication It also uses Buzzer as a voice alert and LCD screen to show the status of the jacket.

#### 3.2 Software

An integrated Android application will provide navigation in both cases women as well as blind.

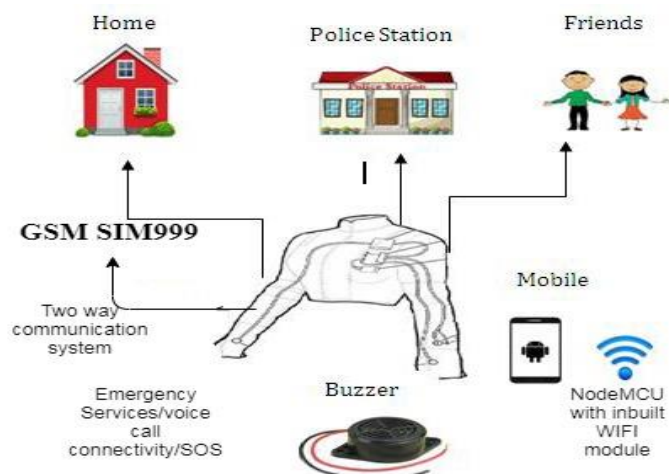


Fig. 3: Architectural model

This is the architectural model of our project. In that GPS, GSM and sensors are used.

### 4. REQUIREMENTS

Following would be the technical requirement to develop our system:

#### 4.1 Software

- Operating System- Windows10 (64bit)
- IDE – Arduino, Android Studio3.1.3
- Languages- Java, XML, Embedded C Language

#### 4.2 Hardware

- Ultrasonic SensorHC-SR04
- Arduino UNOR3
- GPS Sensor
- GSM SIM900
- Buzzer, Speaker
- NodeMCU
- Smart Phone (With AndroidVersion More Than4.1)

### 5. FUTURE SCOPE

- Indoor Navigation: To get navigated within the workplace and track assets in the workplace, a beacon device (Bluetooth Low Bandwidth device) will continuously transmit a single radio signal in one direction & if Bluetoothparable device will come in beacon range, the current location will get information as programmed in beacon.
- A Personal Assistant: To provide functionality that will enhance the jacket to act as a virtual assistant.
- Face recognition using image processing.

### 6. RESULT AND ANALYSIS



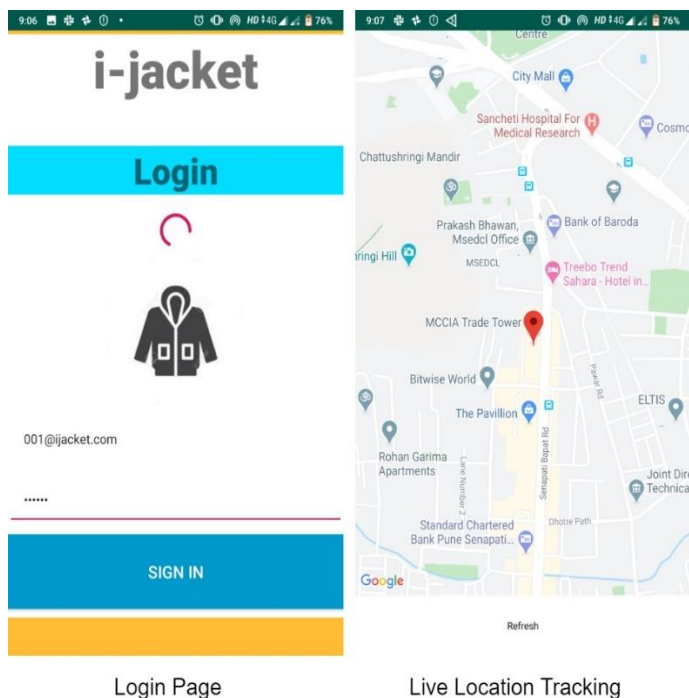
Fig. 4: Connection of components without a jacket

This figure shows the result of the connection of all components without a jacket and the working of voice call connectivity.



Fig. 5: Hardware with Jacket

This figure shows the result of an electronics kit or hardware with a jacket. All the electronics kit or circuitry part is hidden inside the jacket which will be useful in both the cases women safety and blind support.



Login Page Live Location Tracking  
**Fig. 6: Result of Android Application**

This figure shows the result analysis of the android application which will be useful in location tracking or GPS navigation by the mentor.

**7. CONCLUSION**

The proposed system will help the women when she is in danger zone. She can make rescue herself in dangerous situations. And she will never feel helpless in any situation. And can protect her by herself. Another focus of the system is to detect and avoid an obstacle in the path and to provide navigation with the help of sensors for visionary impaired people. So, women and visionary impaired people will be benefited from this system.

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