



INTERNATIONAL JOURNAL OF ADVANCE RESEARCH, IDEAS AND INNOVATIONS IN TECHNOLOGY

ISSN: 2454-132X

Impact factor: 4.295

(Volume 6, Issue 1)

Available online at: www.ijariit.com

IoT based intelligent jacket

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ABSTRACT

"IoT Based Intelligent Jacket" introduces a wise coat which gives security to ladies wellbeing and visually impaired help. In today's world, the basic question in every women's mind is about her security and harassment issues. The main idea frequenting each young lady is the point at which they will have the option to move openly on the roads even in odd hours without agonizing over their security. This project suggests a new technology to protect women. The second scenario is about the blind people, Blind individuals struggle when travelling from place to place and rely on predefined and repetitive routes with a minimum obstacle to lead them to their destination without an assistant. The project also focuses on the navigation of the visually impaired system. "IoT Based Intelligent jacket" shows a canny coat which gives better security framework to ladies and better route for daze individuals. The system consists of an ultrasonic sensor, GPS Sensor, Arduino UNO, WI-FI module, Power supply, smartphone.

Keywords— Arduino UNO, Ultrasonic, GPS, GSM, LCD, WIFI, Smartphone, Solar Panel, Jacket

1. INTRODUCTION

Internet of Things (IoT) is the systems administration of physical articles that contain gadgets implanted inside their engineering so as to convey and detect co-operations among one another or with respect to the external environment. In today's world, we are facing a lot of problems related to women like criminal assault. The World Health Organization states that more than 40 million folks are completely blind and 314millions have some quite visual disorder. These people have to be dependent on others for navigation. To solve this problem, an Intelligent jacket for women safety that allows users to protect while travelling in odd hours or when they feel helpless. In the second scenario. Blind individuals struggle

when travelling from place to place with a minimum obstacle to lead them to their destination without an assistant. There are some systems available like a smart stick for blind people [1], Ultrasonic Blind walking stick with voice playback [2], Electronic jacket for women safety [4], Emergency alert for women safety with location tracking and artificial vision for blind [5]. These systems based on ultrasonic sensor and water sensor to detect the obstacle. This systems also uses GPS and GSM interfaced with MCU to provide the security. These solutions are less effective as they do not provide better navigation to blind individuals and proper security to women.

The aim of this system is to overcome drawbacks of earlier systems by designing and implementing intelligent jacket with a voice-based alert for the blind individuals to provide higher obstacle detection and to provide a better security system to women. The intelligent jacket consists of two sensor GPS sensor to provide navigation and an ultrasonic sensor to provide obstacle detection. GSM module for communication purpose and the emergency services like voice talkback, buzzer and SOS.

2. METHODOLOGY

The proposed system makes use of ultrasonic sensors to continuously send digital signals to the microcontroller. 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 the ultrasonic sensor is between 3cm to 300cm. The ultrasonic sensor has ultrasonic waves which have a frequency above normal human hearing i.e. 20 KHz and the range of human hearing is between 20Hz to 20 KHz.

The system uses Arduino Uno is a microcontroller board supported by ATmega328. 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. The system also uses emergency services like a buzzer, voice talkback and save our soul (SOS).

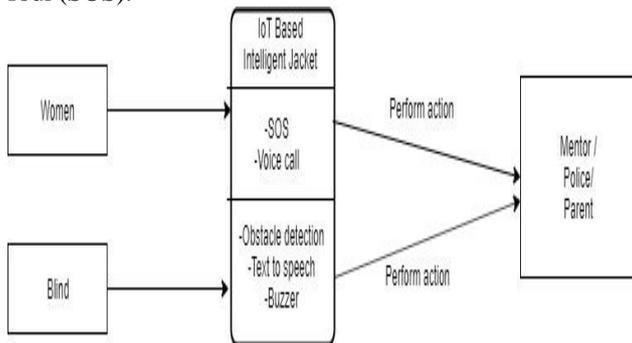


Fig. 1: Dataflow diagram

3. PROPOSED SYSTEM

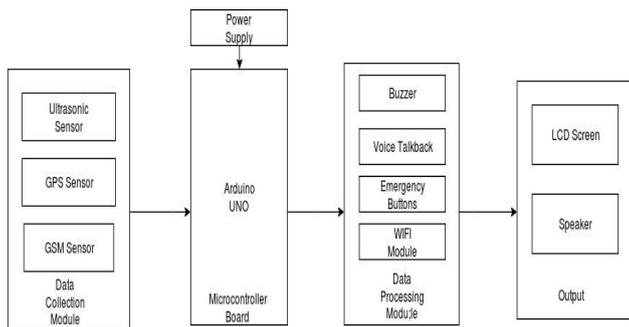


Fig. 2: Architecture Diagram

I) Hardware: It includes Arduino UNO connected with Ultrasonic sensor, GSM and GPS sensor. The ultrasonic sensor will help blind to detect intercepting obstacle. GSM provides two-way communication and GPS for navigation. It also uses Buzzer as a voice alert and LCD screen to show the status of the jacket.

II) Software: An integrated android application which will provide navigation in both the cases women as well as blind.

4. REQUIREMENTS

Following would be the technical requirement to develop our system:

4.1 SOFTWARE:

- Operating System- Ubuntu (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
- LCD Screen
- Smart Phone (With Android Version More Than4.1)

5. FUTURE SCOPE

I. Indoor Navigation

To get navigated within the workplace and track assets in the workplace, beacon device (Bluetooth Low Bandwidth device) will continuously transmit single radio signal in one direction & if Bluetooth parable device will come in beacon range, the current location will get inform as programmed in beacon.

II. AI Personal Assistant:

To provide functionality which will enhance jacket

to act as a virtual assistant

III. Face recognition using image processing

6. RESULT AND ANALYSIS

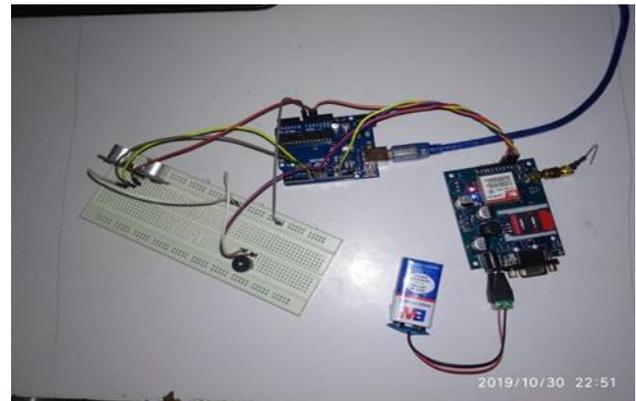


Fig. 3: Jacket kit

Result analysis of jacket kit which includes an ultrasonic sensor for obstacle detection, microcontroller board, power supply and GSM Module.



Fig. 4: Voice call connectivity

This is the voice call connectivity used in case of women safety for communication. It is a two-way communication system

7. CONCLUSION

The proposed system will help the women when she is in danger zone. She can make salvage of herself in peril circumstance. And she will never feel helpless at any situation as well as can protect her by herself. Another focus of the system detects 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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