Journal of Advanced Engineering Research
ISSN: 2393-8447
Volume 10, Issue 2, 2023, pp.201-204

IOT BASED WOMEN SAFETY ENVELOPE

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ABSTRACT

Women safety is a major concern in order to prevent the women harassment. The Women Safety Envelope Project is a proposal for a technology-driven solution aimed at enhancing Women's safety in various environments. The project involves the development of an envelope-like device that can be worn or carried by Women, which contains several features that can alert emergency services and deter potential attackers. This device will include a fall detection sensor to measure the amount of deflection produced on the surface. Additionally, the envelope will have an in-built GSM and GPS tracker that can pinpoint the location of the user, making it easier for emergency responders to locate them. The envelope will also include SLM sensor used to voice activation with high decibel.

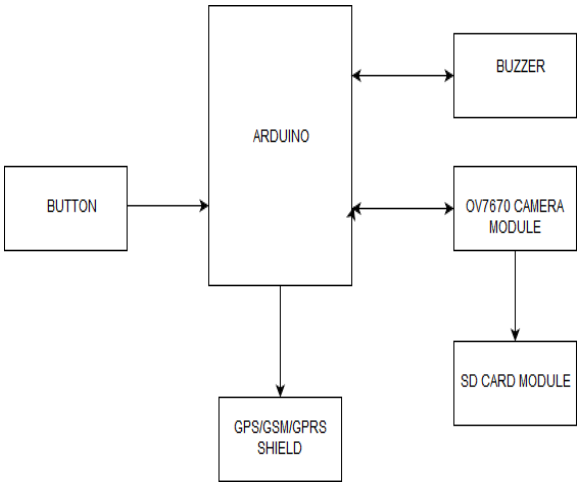
Keywords – emergency, fall detection, IoT, safety, women

1. INTRODUCTION

The women safety envelope project is a unique initiative aimed at addressing the issue of women's safety, which is a significant concern in our society. The project's primary objective is to provide a practical solution that can help women feel safe and secure when travelling alone or in vulnerable situations. The idea is to make these items easily accessible to women and to provide them with a quick and effective way to defend themselves in dangerous situations. The envelope contains items such as fall detection sensor, SLM, Heart rate sensor, GSM, GPS tracker and the Buzzer. The project is not limited to a specific geographical locations or culture. It can be adapted to meet the needs of different communities and contexts, making it a versatile solution that can benefit women across the world.

2. EXISTING SYSTEM

The system Touch me not being described appears to be a wearable device that can be activated by a woman if she is being attacked. When the device is activated, it triggers a microcontroller to turn on a GPS tracker and capture an image or video of the attacker. This data is then transmitted via an RF module to a storage location, and the system attempts to transfer the image to a web server, ideally one operated by the police. The GPS receiver in the device also acquires the woman's location coordinates and sends them to predetermined cell phone numbers, such as those belonging to family members and the police, using a GSM module. Overall, the system appears to be designed to provide a means for women to quickly and discreetly call for help and provide evidence in the event of an attack.

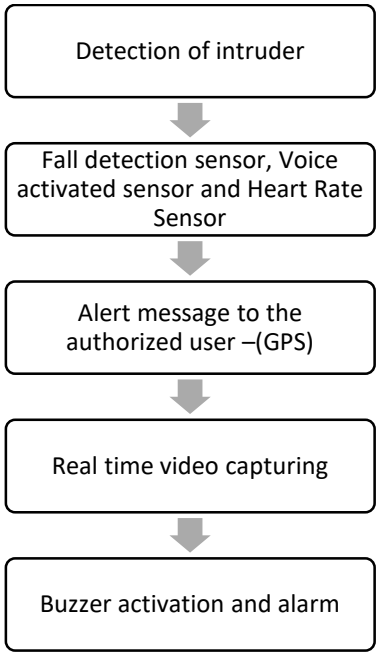


3. PROPOSED SYSTEM

Our proposed system aims to provide women with sense of security and enable prompt responses to

incidents of violence. The proposed system would consist of several components, including:

1. Fall detection sensor: Measure the amount of deflection produced on to the surface.
2. Sound Level Meter: Voice activated by detecting with high decibel.
3. GPS module: Allows tracking the current location of the user and Interfaced with Raspberry Pi.
4. Heart rate sensor: Tracking heart rate.
5. Buzzer: Alarm in envelope to distract the intruders.



4. MODULES

The IoT-based women safety envelope project can be broken down into several different modules, including:

1. **Sensor module:**
   This module contains different types of sensors such as fall detection sensor, heart rate sensor, voice-activated sensor, etc. These sensors will monitor the woman's vitals and detect any emergencies that require immediate attention.

2. **Microcontroller module:**
   This module will contain the microcontroller that will process the data received from the sensors and analyze it to determine if there is an emergency situation. It will also control the other modules of the system.

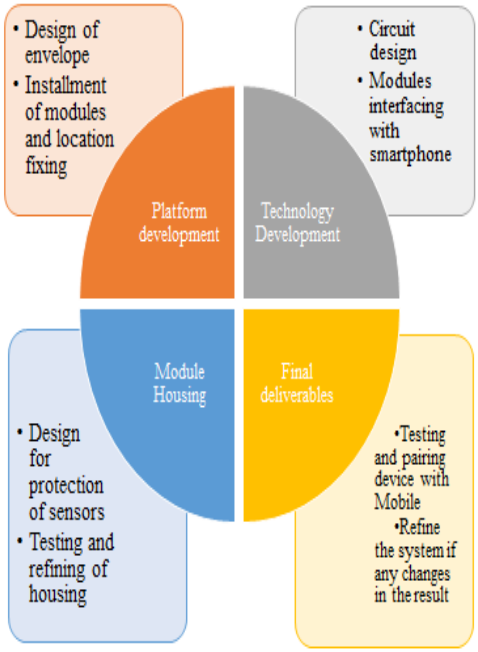
3. **Buzzer activation module:**
   This module will contain the buzzer that will be activated in case of an emergency to attract attention.

4. **Real-time video capturing module:**
   This module will contain the camera that will capture real-time video footage of the woman's surroundings. The footage will be transmitted to the user's phone or a cloud server.

5. **Wireless module:**
   This module will be used to transmit data from the sensors and the camera to the user's phone or a cloud server.

6. **User interface module:**
   This module will contain the application that will be installed on the user's phone. It will display the data from the sensors, receive alerts in case of an emergency, and provide the user with the ability to call for help.

Each of these modules will work together to create an integrated system to ensure the safety of women.



5. DESIGN OF ENVELOPE

The design of an envelope for the IoT-based women safety envelope is durable, secure, and provides the necessary protection for the sensors. The following are the steps involved in the design:

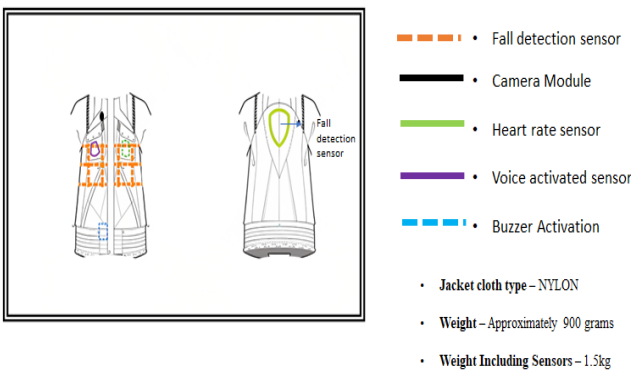
1. **Material selection:**
   Nylon is a strong and durable material that can withstand wear and tear, making it an ideal material for the envelope. It is also waterproof, which will help protect the electronics inside.

2. **Envelope design:**
   The envelope can be designed to be compact and lightweight so that it can be easily carried by the woman. It can be made in a rectangular shape with a zipper or Velcro closure to keep the electronics secure. The envelope can also have a strap or handle to make it easier to carry.

3. **Sensor housing:**
   The sensors can be fixed inside the envelope using housing. The housing can be made of plastic or metal and should be designed to fit each sensor snugly. The housing will help protect the sensors from damage and keep them in place.

4. **Wiring:** The wiring for the sensors can be done using flexible wires that can be routed through the envelope to connect to the microcontroller module.

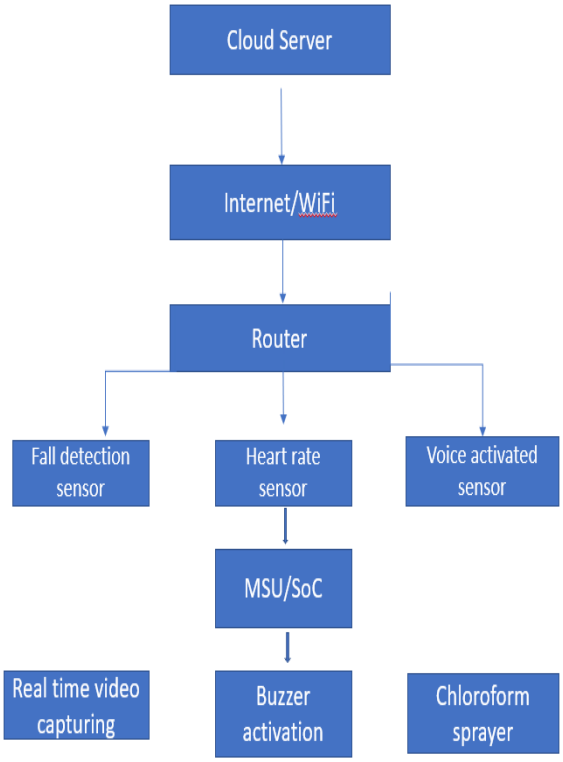
5. **Microcontroller module:** The microcontroller module can be housed inside the envelope in a separate compartment. It should be fixed securely in place to prevent any movement during use.



The final design should be compact, lightweight, and easy to use.

6. WORKING FLOW

In this architecture, the fall detection sensor, heart rate sensor, and voice-activated sensor are connected to a microcontroller, which serves as the central processing unit.



- The MCU is connected to the real-time video capturing module, buzzer activation module, and chloroform sprayer module.
- The MCU is connected to the router using Wi-Fi or another internet connection method. The router is connected to the cloud server, which serves as a centralized platform for data storage and processing.
- When an event is detected by any of the sensors or modules, the MCU sends a notification to the cloud server. The cloud server can then process the data and send alerts to the user's emergency contacts or authorities.

- ❖ The real-time video capturing module can also stream video to the cloud server for further analysis.

- ❖ This architecture allows for real-time monitoring of the user's safety and enables quick response in case of an emergency.

7. CONCLUSION

One of the world's most critical crimes is women harassment. Our envelope safeguards the women during dangerous situation. First alarm will activate and distract the intruders by using buzzer then send the message to the authorized person by using GSM module.

8. FUTURE SCOPE

The further enhancement of our envelope is to help blind people in uncertain situations by fitting it with a direction sensor that will guide them in the correct way. Also, Heart rate sensors are commonly used to measure heart rate, with the threshold value usually set manually. However, in the future, it may be possible to implement automatic adjustment of the threshold value for more precise heart rate measurements.

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