

# SMART BAG WITH ALERT SYSTEM

Mrs. Swathi K<sup>1</sup>, Mr. Siddharth Meharwade<sup>2</sup>, Ms. Sirisha M<sup>3</sup>, Mr. Shiv Shankar Sah<sup>4</sup>, Mr. Suraj Kumar<sup>5</sup>

<sup>1</sup>Asst. Prof, Fourth Year B.E, Fourth Year B.E, Fourth Year B.E, Fourth Year B.E

Department of Computer Science & Engineering

K. S. Institute of Technology, Bengaluru-62, India

**Abstract:** Although a lot of women safety systems are already available in the market but still a more sophisticated system is required to provide more safety and security. Thus in this paper an alternative method is proposed for women security that may serve as a better alternative to rest of the available security methods through a wearable carry bag. Here the system is designed around Arduino micro-controller that uses GPS, GSM and heart beat sensor.

**IndexTerms** – GPS, GSM, Arduino, LCD.

## I. INTRODUCTION

Women safety is a very big concern in a country like INDIA where women are playing an outstanding role in each and every field. India is a peace loving country and one of the safe destination for the tourists across the world. However, a few incidents in recent past brings to attention that there is a need for women safety. Many women's in developed countries still fear to go outside alone due to number of cases of violence against women. To make women safety safer many attempts have been made but, still a safer and secure system is needed that can ensure safety during public transport and in general. This, paper presents a system that is capable of providing more security and safety.

## II. LITERATURE SURVEY

The recently developed solutions for the safety of women include Smartphone Applications, Intelligent Security Systems and Wearable devices. [1]Suraksha is a security device that can be activated in three ways; a voice command, click of a button and when it is thrown with a force. Upon activation, this system sends the location of the device to preselected contacts via an inbuilt GSM module. But during times of distress, it might not always be possible for the user to carry this device in her hand. Also, the attacker might notice the device that the victim is holding.[2]Smart Foot Device is another such security device that have security system within the sandals. It uses Bluetooth to connect to phone ,so it is not feasible to use phone in panic situation.

**Another security solution is mobile application.** The Smartphone based solutions that exist require the user to have access to her phone as all of them are triggered by some action performed on the phone. In dangerous situations, the user might not always have the opportunity to reach for her Smartphone. Some solutions use smart jewelry such as necklaces and so on to trigger an application on the user's phone. However, these devices are distinctly noticeable and can easily be removed from the victim.

Hence, there is a need to introduce a solution that can be triggered externally but in a discreet manner without the knowledge of the perpetrator. The proposed solution does require the user to press a button on the strip of bag when in emergency. This smart device will be installed inside the user's hand bag such that attacker will not have any idea about the device which is an advantage for the user. Thus, an alert can be triggered in a simple way.

## III. COMPARISON OF EXISTING APPS AND DEVICES

Table 1: Comparission of existing apps and Devices

Name	Applications	Disadvantages
VithU app	Alert messages are sent out to the listed contacts, who receive your message along with your physical location.	We have to click the power button for 2 times consecutively. It is not possible at all the situation.

Nirbhaya	Lets the user send an SMS alert or call to with single touch to the pre-selected contacts with exact location. Updates every 300 meters you move. We can also Shake to alert.	This app is also physically dependant.
SOS-Stay Safe	On shaking the device or clicking the power button it sends alert message with your name and voice recording, Your exact location and battery level of your phone. Ordinary phone can receive the message.	If girls fail to shake or click button or if girls become unconscious this app is not worth for sure safety.

#### IV. PROPOSED SYSTEM

##### 4.1 BLOCK DIAGRAM OF PROPOSED METHOD

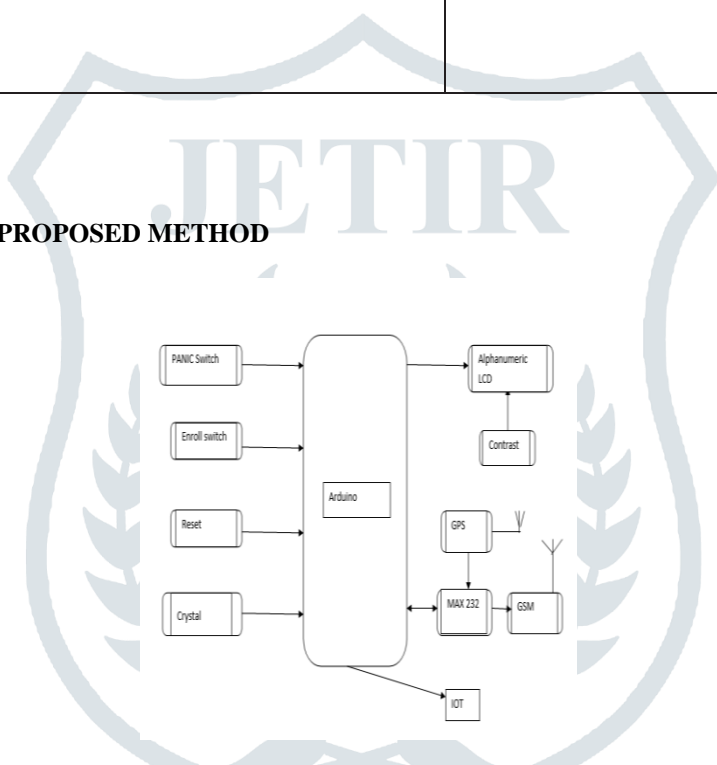


Fig 4.1: Block diagram of proposed method

As shown in the figure the circuit is designed around microcontroller unit. Here the Heart beat sensor is used to sense heart rate if above normal rate 75. The user can press the panic button in case of emergency situation then the GPS collects the data and uses GSM to send the messages to saved phone numbers of relative and police. We have another defense like Shock ,it gets activated by pressing shock button.

##### 4.2 IMPLEMENTATION-HARDWARE

**1. GPS Module:** Global positioning system (GPS) as shown below in Fig 2 is a navigation and precise positioning tool, which tracks the location in the form of longitude and latitude based on Earth by calculating the time difference for signals from various satellites to reach the receiver In six different orbits approximately 12500miles above the earth, 24 MEO (Medium-Earth Orbit) satellites revolve around the earth 24 hours and transmit location every second. It receives the data of location and transmits it to the Arduino. The Arduino thereby receives the signal from GPS and hence it performs further operations .



Fig 4.2.1: GPS Module

**2. GSM Module:** Global System for Mobile communication (GSM) SIM card is inserted inside the mobile device to send and receive the messages using GPRS. The GSM SIM card number is registered with the system. GSM is used to send data from control unit to base unit. We can use GSM 800A which operates at frequency 900MHz. It has up link band of 890MHz to 915MHz and down link Band of 935MHz to 960 MHz. GSM takes advantages of both FDMA & TDMA. In 25MHz BW, 124 carriers are generated with channel spacing of 200 KHz (FDMA). Each carrier is split into 8 time slots (TDMA).



Fig 4.2.2: GSM Module

**3. Arduino:** The Arduino Uno is a microcontroller board based on the ATmega328. It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz ceramic resonator, a USB connection, a power jack, an ICSP header, and a reset button. It contains everything needed to support the microcontroller, simply connect it to a computer with a USB cable or power it with a AC-to-DC adapter or battery to get started.

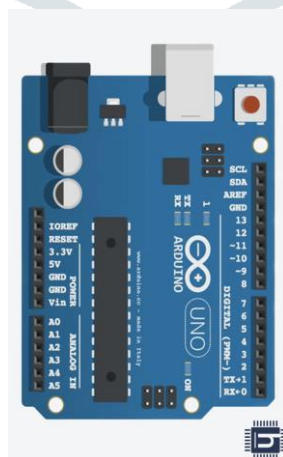


Fig 4.2.3 : Arduino Circuit

**4. Heart Beat Sensor:** The Heart Beat Sensor is a plug-and-play heart-rate sensor for Arduino. It can be used by students, artists, athletes, makers, and game & mobile developers who want to easily incorporate live heart-rate data into their projects [8]. It essentially combines a simple optical heart rate sensor with amplification and noise cancellation circuitry making it fast and easy to get reliable pulse readings. Also, it sips power with just 4mA current draw at 5V so it's great for mobile applications. Simply clip the Pulse Sensor to your earlobe or fingertip and plug it into your 3 or 5 Volt Arduino and you're ready to read heart rate.

**4.3. FLOW CHART OF PROPOSED SYSTEM**

The flow of the system work after the registration is done. Once the registration is done then user in case of emergency situation can either use panic (sms alert ) or enroll switch for the shock. Shock act as the defense system victim an give shock to attacker.

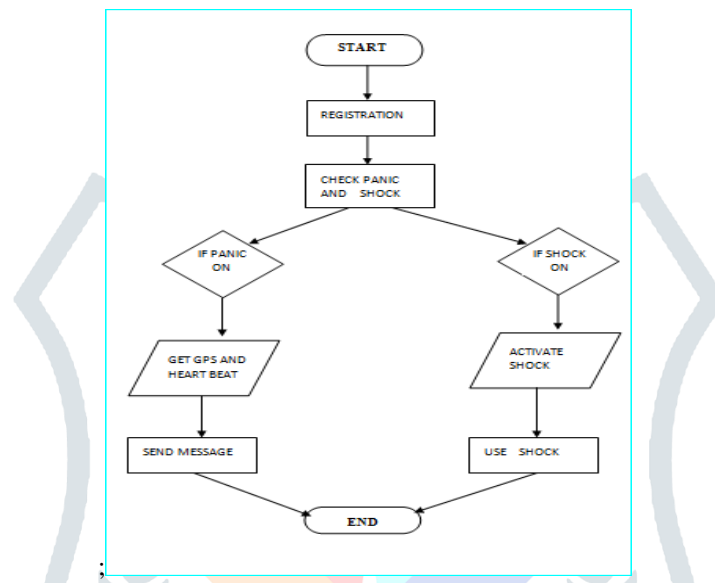


Fig 4.3.1: Flow Diagram

**V. TESTING AND RESULTS**

- Register a mobile number of the victim’s close one.
- \* followed by phone number of the person who wants to register.
- We get a message “REG” if successfully registered.
- Test Successful.

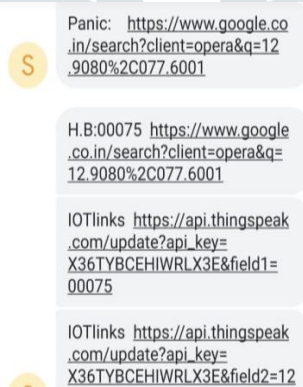


Fig 5.1: Registration Step

- After Panic Situation
- Message is sent to registered person.
- Message consist of following:
  - Heart Beats Rate
  - GPS Location

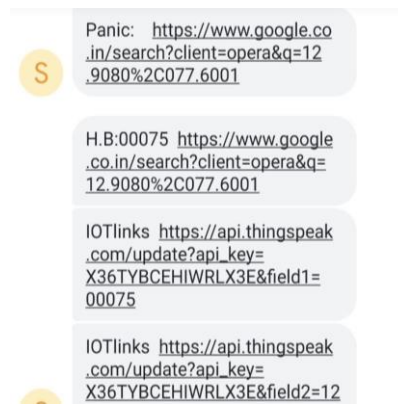


Fig 5.2: Message After Panic to Receiver

## VI. CONCLUSION

In this project work, we have studied and implemented a complete working model using a Microcontroller. The programming and interfacing of microcontroller has been mastered during the implementation. This work includes the study of GSM and GPS modems using sensors. The biggest advantage of using this project is, whenever the switch is pressed, we will be getting the location from GSM modem to our mobile numbers which are stored in GSM network so that one can save the women who is in threat. Implementing real time application and a device, we can solve the problems to an extent. With further research and innovation, This project is used as a small wearable device like watch, pendent etc.

## VII. FUTURE SCOPE and APPLICATIONS

In future, system can be interface with the Camera for capturing image and recording live video also. With the advancement in technology it can be implemented with various real-time technology for better security. Applications are:

- a) It will be used for safety of women's.
- b) It will be used for child tracking during school time.
- c) It will be used in vehicle tracking & safety system.
- d) It will be used for safety of elderly aged people.

## VIII. ACKNOWLEDGEMENT

The authors thank their management and institution K. S. Institute of Technology for providing them the resources and platform for showcasing their idea. They would also like to thank their Prof and HOD Dr. Rekha B Venkatapur and all the lecturers and professors for motivating them into framing this research.

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