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 ijirset@gmail.com

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Safety Gadget: An IOT Based Security System

Aditi R Pillai ¹, Krutika Malgi ², Priyanka AR ³, Sandhya Mahadevappa Nyamati ⁴, Dr. Naveen Kumar K R ⁵, Prof. Arjun H ⁶

U.G. Student, Department of Computer Science and Engineering, Bapuji Institute of Engineering and Technology, Davanagere, Karnataka, India¹

U.G. Student, Department of Computer Science and Engineering, Bapuji Institute of Engineering and Technology, Davanagere, Karnataka, India²

U.G. Student, Department of Computer Science and Engineering, Bapuji Institute of Engineering and Technology, Davanagere, Karnataka, India³

U.G. Student, Department of Computer Science and Engineering, Bapuji Institute of Engineering and Technology, Davanagere, Karnataka, India⁴

Associate Professor, Department of Computer Science and Engineering, Bapuji Institute of Engineering and Technology, Davanagere, Karnataka, India⁵

Assistant Professor, Department of Computer Science and Engineering, Bapuji Institute of Engineering and Technology, Davanagere, Karnataka, India⁶

ABSTRACT: In today's world women and men are sharing equal responsibilities to run the family. However, women in today's date face physical harassment in public places, schools and at workplaces or while traveling. The only question that arises in a woman's mind is when they are going to move freely on the streets, in the offices without worrying about safety and security even at the odd hours. For this, we propose a wearable smart gadget which will help them to face critical situations. The system suggests a smart wearable device for security which contains different modules such as GSM, GPS, Buzzer, micro-controller, laser, switch and sensors. The proposed system helps women in emergency situation by activating the modules on clicking the switch and provide emergency self-defence. Although this device has been designed primarily for women security, it can also benefit other members of the society including elderly people, a girl child or anyone who faces an unsafe situation

KEYWORDS: Security, Smart Wearable device, Emergency Self- defence

I. INTRODUCTION

The Internet of things (IoT) describes physical objects (or groups of such objects) with sensors, processing ability, software, and other technologies that connect and exchange data with other devices and systems over the Internet or other communications networks. Renesas is a 16 bit microcontroller which is a family of microcontrollers, with various in-built features. Its Minimum instruction time can be changed from ultra-low speed (30.5us) to high speed (0.03125us). Most of the pins of Renesas have multi-task features. and cost of Renesas microcontroller is comparatively less. Rigid body of microcontroller makes it less prone to damages due to electrostatic charge.

In this system, with the implementation of IoT platform, we can track the information of women remotely. If a woman goes through any kind of harassment she can press the panic switch, which in turn helps her to raise an alarm. On raising the alarm, SMS is sent to the predefined number by using the GSM through Renesas Controller. Also, we can get the location data through SMS and we can track the exact location of the victim by using the GPS which sends the information regarding the longitude and latitude of the victim so that police can easily find the victim and the attacker and thereby the incident can be easily avoided and can save the women. Buzzer and Laser alerts are used to indicate that the women is in need of help.



II. RELATED WORK

1. Sangeetha K, R. Lakshmi Devi, Ananya A, Suvetha M M, Visshnu Priya R V “Women Safety System using IoT”, in International Conference on Applied Artificial Intelligence and Computing (ICAAIC), May 2022

This paper proposes a novel method to safeguard women from the stalkers. The proposed model consists of components like Arduino microcontroller, sensors like piezoelectric for sensing the pressure, accelerometer sensor for getting the values for all the directions. In this model, Sim808 module which comprises of both the functionalities of GPS and GSM is used. GSM module is used for sending alert message to the known contacts and nearby Police station whenever emergency situation arises. In addition to the above feature, a push button system is also included, which helps in activating the sim 808 to send alert message and a Piezoelectric buzzer to alert the nearby public in case of emergency.

2. Md Imtiaz Hanif, Shakil Ahmed, Wahiduzzaman Akanda, Shohag Barman etal, " Anti molestation : Ab IoT based device for womens self security system to avoid Veslawful Activities,"American International University" 2020

This paper highlights on an IoT based embedded device that is able to communicate with the law enforcement agency by dealing " 999" (An emergency Telephone Number in Bangladesh) On demand. The device contains Arduino Pro-Mini MicroController with a GSM module and can send SMS with the Victims present area via GPRS. The device is 85% accurate.

3. Prof. Sunil K Punjabi, Prof. Suvarna Chaure, Prof. Ujwala Ravale, Prof. Deepti Reddy “Smart Intelligent System for Women and Child Security,” IEEE 9th Annual Information Technology, Electronics and Mobile Communication Conference (IEMCON), November 2018.

This paper surveys about the security system for women and children which allows immediate responses in any harassment in public places, societies etc. Women all over the world are facing unethical physical harassment and Children cannot be left unattended at a social event or outside the home. Our project solves both the problems. A portable device which will have a pressure switch. As soon as an assailant is about to attack the women/child or when they senses any insecurity from a stranger, he/she can then put pressure on the device by squeezing or compressing it. Instantly the pressure sensor senses this pressure and a conventional SMS, with the victim's location will be sent to their parents/guardians cell phone numbers stored in the device while purchasing it, followed by a call. If the call is unanswered for a prolonged time, a call will be redirected to the police and the same message will be sent. The main feature of our system is less response time will be required for helping the victim.

4. A.Priyadarshini, R.Thiyagarajan, V.Kumar, T.Radhu “Women Empowerment towards developing India,” IEEE Region 10 Humanitarian Technology Conference, April 2017.

The work aims at designing an IoT based safety device that relies on providing security to women by fingerprint-based method of connectivity to the device and alerting nearby people and police when a woman is not safe. An unsafe situation is sensed by the device and then it will automatically alert nearby people, parents and police. Additional features such as sending messages, audio recording, capturing the image of the situation are also part of the device.

5. Md Imtiaz Hanif, Shakil Ahmed, Wahiduzzaman Akanda, Shohag Barman etal, " Anti molestation : Ab IoT based device for womens self security system to avoid Veslawful Activities,"American International University" 2020

This paper highlights on an IoT based embedded device that is able to communicate with the law enforcement agency by dealing " 999" (An emergency Telephone Number in Bangladesh) On demand. The device contains Arduino Pro-Mini MicroController with a GSM module and can send SMS with the Victims present area via GPRS. The device is 85% accurate.

III. METHODOLOGY

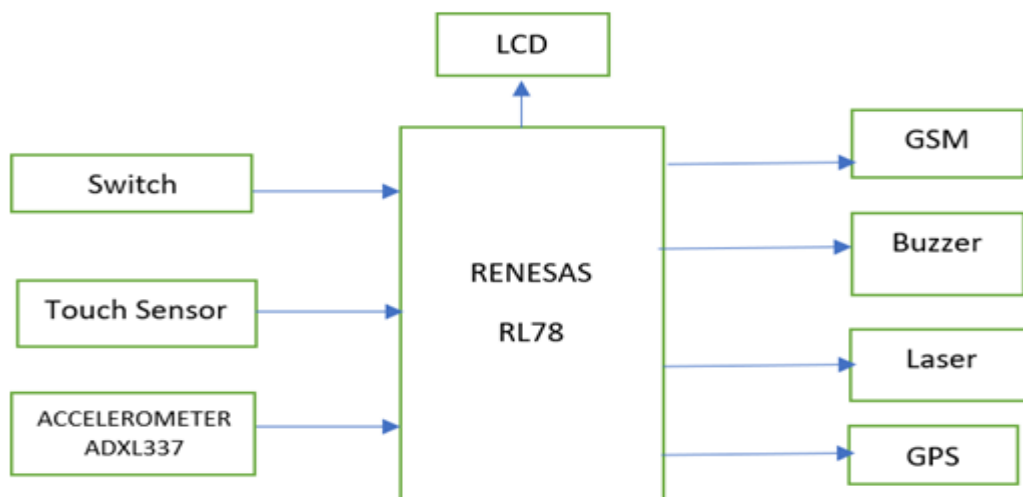


Fig: Block Diagram of the proposed system.

- The process begins with construction of Renesas board with Accelerometer sensors, Touch sensor, GPS and GSM model, laser, Piezo Buzzer, Switch and LCD
- Once the system gets power supply it will start and check for the test cases
- If accelerometer detects any static acceleration of gravity tilt or dynamic acceleration resulting from motion, shock, or vibration then the system sends the current location and send it to the concerned people with the message “Fall Detect”
- In an emergency situation the user can activate the panic switch which enables the laser, buzzer and send the SMS containing current location and “Help”
- Suppose the user is not wearing the device, the system detects through touch sensor and sends a Message consisting of current location and “Device Missing”

IV. EXPERIMENTAL RESULTS

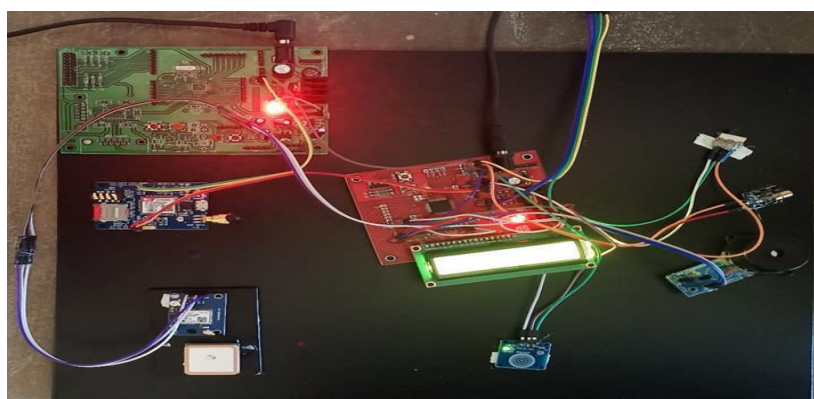


Fig 1: Implementation according to the block diagram



Fig 2: Display of output for test cases

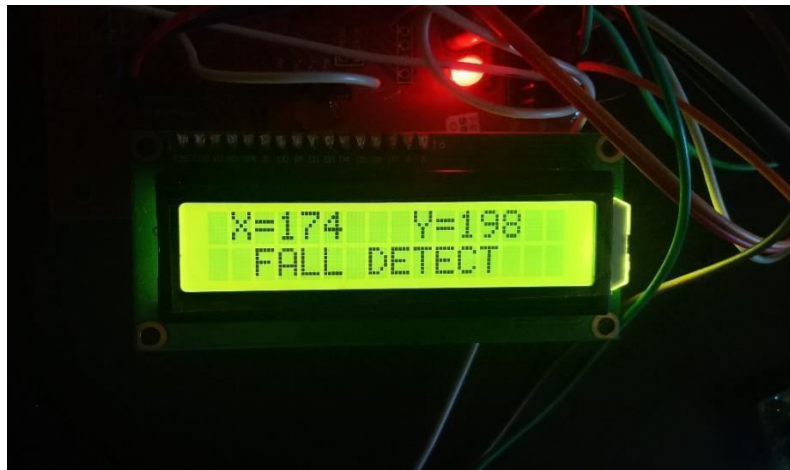


Fig 3: Working of Accelerometer

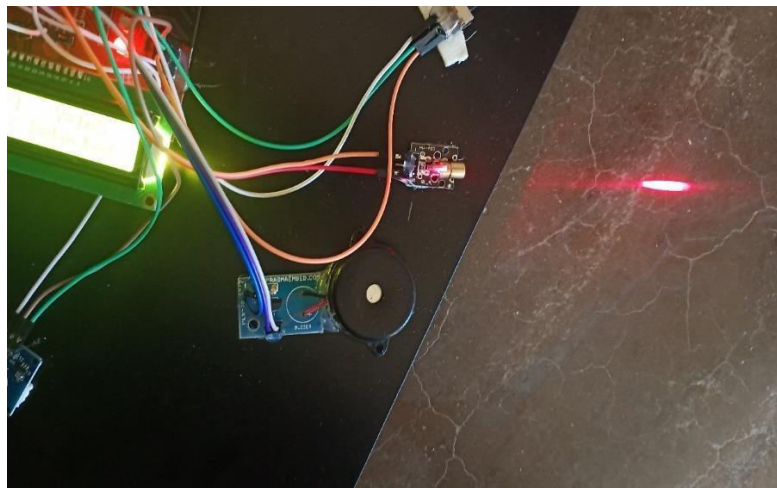


Fig.4: Working of laser



Fig 5:Working of Touch Sensor

V. CONCLUSION

The existing systems are not powerful enough to present crimes against women. As a solution to this issue, our team have put forth a safety device which can take this issue quite effectively. This project is about a technique where a woman in danger, can instantaneously intimate her concerned people if she faces any danger or Eve-teasing. Our proposed technique is devised in such a way that it can be used by people of all age group and it has the ability to process fast, low cost of development, with acceptable quality. The system has the ability to help women in emergency situation by activating modules, on clicking the switch. The major advantage of the system is that it is effective even in absence of Internet.

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