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Women Safety Device Using NodeMCU

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Abstract: **The project's goal is to create a women's safety device that makes use of a number of cutting-edge technologies to guarantee the user's safety. A Node MCU microcontroller, a GPS module, a GSM module, a camera module, a fingerprint scanner, and a buzzer are all components of the gadget. When an emergency arises, the system uses the GPS module to track the user's location and the GSM module to transmit an SOS alert to the user's registered emergency contacts. The camera module records pictures and videos of the surroundings, which can help find the offender. The smartphone has an additional layer of protection thanks to the fingerprint scanner, which makes sure that only authorised users can use it. In the event of an emergency, the buzzer can be used to.**

Keywords*— GSM, GPS, finger print module, Camera *module, finger print module, Buzzer, battery.

I.INTRODUCTION

In today's environment, women's safety is a crucial concern, especially when they travel alone or in remote locations. The development of technological advancements like the NodeMCU-based women's safety device with a GPS, GSM, and camera module has been made in response to this problem. The goal of this project is to develop a lightweight, reliable safety tool that will give women greater confidence and protection while they are out and about.

The NodeMCU-based women's safety device with a camera, GPS, and GSM module is an effective tool that offers precise location monitoring, real-time communication, and crucial proof in the event of an incident. The device's addition of a fingerprint module and buzzer adds an additional degree of protection and expedites response time in the event of an emergency.

II RELEATED WORK

Using a smartphone application, sensors and pulse rate sensors are used to automatically detect the possibility of a potential issue. [2] highlights the use of image processing to spot potential threats and offers several defence mechanisms. S. A. More's research [1] touches on using temperature. The authors of [3] created a gadget using the PIC16F876A.

When the emergency button is touched, a SIM808 module with GPS, GSM, and GPRS capabilities and a microcontroller are utilized to send an alert to friends and family. A system built around facial traits is presented in [4]. A report is made if the expression on the face is one of menace. To create a secure system, GSM, GPS, and about [5] are employed.

III .EXISTING SYSTEM

Under the current system, it is impossible to keep track of the crimes against women. The recordings from some sites' CCTV cameras are nonetheless stored. They don't do anything till everything has happened.

In order to ask for help, they can only use their mobile device to text their friends and family. The majority of women find it difficult to reach for their phone at that crucial time. Even if they do, it can be difficult to get in touch right away in case something dreadful happens. Furthermore, it is rather unreliable. These are the drawbacks of current systems. Not very dependable, expensive, and requiring manual labour.

IV.PROPOSED SYSTEM

The following elements and functionalities are part of the proposed system for the women's safety device using Node MCU coupled with GPS, GSM, camera, fingerprint, and buzzer.

A. Block Diagram

The block diagram of the system in Fig.1 shows all the components require

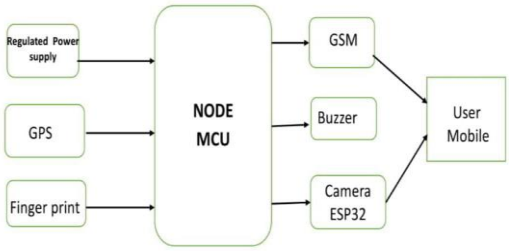

Fig. 1. Block diagram of proposed system.

B. Components

The prototype uses the following components

Node MCU: The suggested system for the women's safety device employing the Node MCU combined with GPS, GSM, camera, fingerprint, and buzzer includes the following components and features.

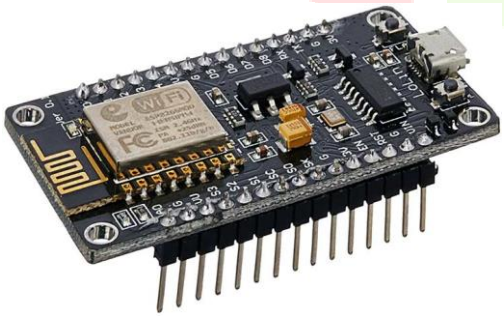

Fig 2. Node MCU

GPS Module: In case of an emergency, the GPS module will be utilized to track the user's location in real-time. The microcontroller will receive location information from the GPS module and use the GSM module to transmit an SOS alert to the designated emergency contacts.

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Fig 3.GPS

GSM Module: The SOS alert and the user's location information will be sent via the GSM module to the designated emergency contacts. In an emergency, the module will also be utilised to make and receive phone calls.

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Fig 4. GSM

Camera Module: The specified emergency contacts will receive the SOS alert and the user's location details via the GSM module. The module will also be used to place and receive phone calls in an emergency.

Finger print Scanner: Only the authorised user will be able to use the smartphone thanks to the fingerprint scanner's added layer of security. The device will be unlocked and the panic button will be turned on using the fingerprint scanner.

Fig 5. Finger print Scanner

Buzzer: When there is a crisis or danger, the buzzer will be utilised to draw attention to it. The panic button will activate the buzzer, which will thereafter make a loud noise.

Fig 6. Buzzer

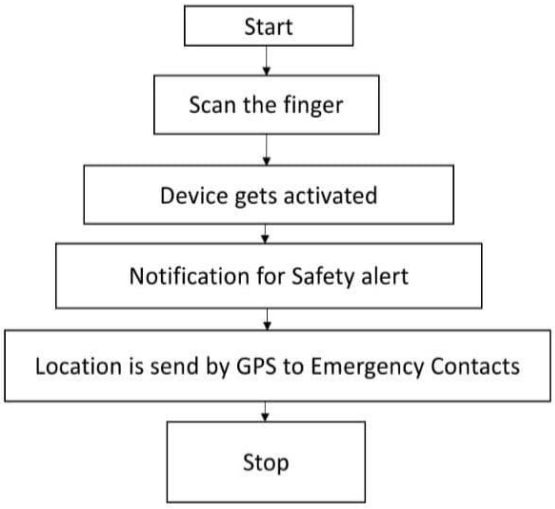
VI. METHODOLOGY

A wearable Smart band is created in accordance with the problem description from the preceding section. The first step in the procedure was choosing the safety band's parts while keeping in mind that they needed to be affordable and simple to put on. We also kept in mind the need for a wearable device. As a result, the buzzer, GPS, and microcontroller were completed. After each component had undergone testing, the wearable band was put together.

VII. IMPLEMENTATION OF THE SYSTEM

A. Flowchart

The flowchart describes the control of designed System.



B. Working

This project develops a system for women's safety that employs a GPS module to deliver real-time location information on women who are in risk. The device will track the victim's current location and update it in the google map.

Through specially developed software that acts as an interface, the device communicates with the phone. The device will be connected to a smartphone, as shown in the block diagram, and data will be transferred from the cloud to the user.

In an emergency, the software instructs the smartphone to do the following:

i. Notifies the emergency contacts and provides a live location. It continuously provides location data when the user goes from one area to another.

ii. The buzzer emits sound.

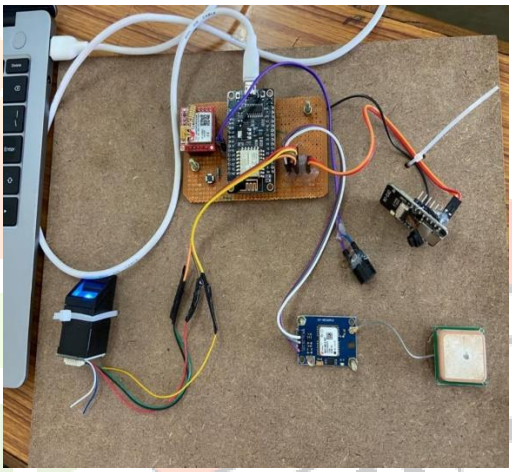


Fig 7 . Proposed system

VIII . RESULT & CONCLUSION

The mechanism for women's security was proposed in this project. They will be able to converse and alert the designated contacts with the aid of the safety band. When the button is pressed, the sensors gather the user's information, which is then sent along with the call to the predetermined number. By utilising GPS tracking, this device will help to expedite the monitoring of women's safety. The pre-programmed numbers will receive SMS messages, which will help to save time and ensure that the victim receives assistance as soon as possible.

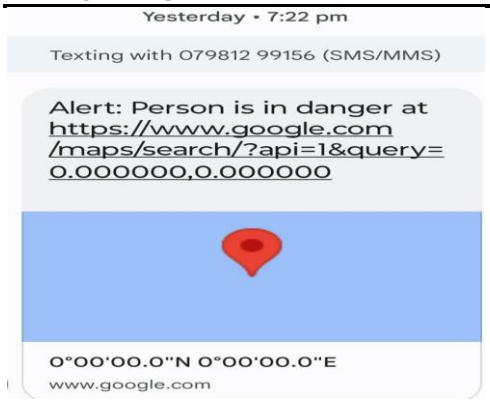


Fig 8. GPS Location message

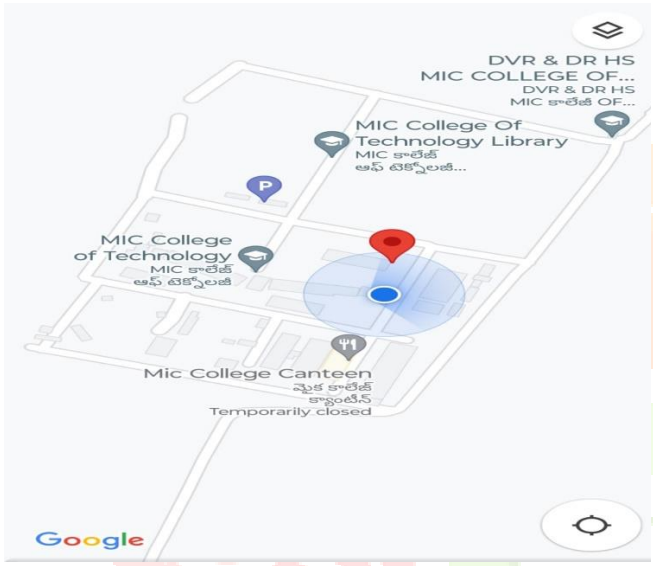


Fig 9. GPS Location on Map

IX. FUTURE SCOPE

When the alert mechanism is activated, the suggested system can be further enhanced to include features like recording audio and video of the offender, which can then be used as evidence in court. Future enhancements will enable for direct communication with local authority representatives and access to device locations for police and related departments to take timely action.

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