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Smart Shoe for Women Safety Device

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Abstract: *This paper presents a smart safety sandal designed to enhance the personal security of women using GSM and GPS technology. When the wearer presses a panic switch, the system sends a real-time location alert to pre-defined emergency contacts. The sandal also includes a non-lethal electric shock mechanism that serves as a self-defence measure. The device is compact, wearable and designed for quick response in emergency situations.*

Keywords: Women Safety, GSM, GPS, Panic Button

I. INTRODUCTION

Incidents of harassment and unsafe conditions faced by women continue to highlight the need for a reliable and immediate personal safety solution. Existing safety measures often lack quick response, real-time location tracking and active self-defence features. Therefore, there is a need for a compact wearable device that can provide instant alerts and protection during an emergency situation.

This work proposes a Smart Safety Sandal that combines a GSM module for emergency alerts, a GPS module for location tracking, and an electric shock generator for non-lethal self-defence, all integrated into a sandal that is easy to wear and use.

II. OBJECTIVES

The main objectives of the proposed work are:

- To design a wearable Smart Safety Sandal for women.
- To provide real-time location tracking using GPS.
- To send emergency alerts via GSM to predefined contacts.
- To incorporate a non-lethal self-defence mechanism.
- To ensure quick response, portability and ease of use.

III. SCOPE

This project focuses on developing a smart wearable safety sandal that provides real-time location and emergency alerts using GPS and GSM. It is intended for personal safety in high-risk situations, especially for women during travel. The scope of the work can be extended by integrating mobile applications.

IV. SYSTEM DESCRIPTION

Hardware Requirements

The proposed system is built around the following hardware components:

- Microcontroller
- GSM module
- GPS module
- Electric shock generator
- Panic button

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- Rechargeable battery

Software Requirements

A serial monitor is used for programming, testing and monitoring the data received from the GPS and GSM modules.

Working Principle

The panic button is pressed by the wearer in an emergency. The microcontroller then reads the current location from the GPS module and the GSM module sends this location as an alert message to the predefined emergency contacts. The electric shock generator fitted in the sandal provides a non-lethal self-defence mechanism, and the rechargeable battery powers the complete system.

V. EXPECTED RESULT

The Smart Safety Sandal is expected to provide quick emergency alerts with real-time location tracking and to actively provide a non-lethal self-defence mechanism, ensuring reliable and easy-to-use protection for women in unsafe situations.

VI. CONCLUSION

A compact and wearable Smart Safety Sandal using GSM and GPS has been presented. By combining instant location-based alerts with a non-lethal electric shock mechanism, the device addresses the need for a quick, portable and reliable personal safety solution for women. The work can be further extended by integrating mobile applications.

VII. ACKNOWLEDGMENT

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