
Design and Implementation of Women Safety System Based on IOT Technology

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Abstract.

The increasing rate of crimes against women has made the world unsafe for them, particularly for those employed. In a bid to resolve this, the paper outlines a quick response mechanism that would come in handy in case of distressed women. When a woman feels danger, she can press the fingerprint sensor with her finger to activate the device. Then, the GPS tracks her current location and sends an emergency message via GSM to a registered mobile number and the nearest police station. The IoT module continuously tracks and updates the location on a webpage. Audio is recorded using the microphone, which is saved to the SD card. In emergency cases, the tazer produces a non-lethal electric shock to inhibit the attacker. In case the device gets damaged, the fingerprint sensor will pass the last known location. The above project's major advantage is portability since it's so small, making it easy to carry anywhere.

Keywords. Women Safety, Wearable IOT Device, Location Tracking.

1. INTRODUCTION

In today's society, women are excelling alongside men in various fields and contributing significantly to the nation's development. However, they face increasing threats of harassment and violence, making their safety a critical concern. Traditional safety apps often prove cumbersome, requiring several steps to use, and attackers tend to target phones first. Thus, there is an urgent need for discreet, standalone devices such as safety bands, rings, and key rings which can send alarm messages with geolocation information without much delay.

IoT constitutes a very big part of modern life. One of the distinctive features of this technology is its ability to perform as smart devices that can even make decisions due to their situational awareness. [1]. Today, more than 80% of the world population uses mobile phones, smart devices, and many other advanced technologies, which demonstrate the pervasive reach of IoT.

This system proposed here would give peace of mind to the parents as it allows them to get updates regarding their infant's well-being. The programmable alarm conditions within the system ensure the growing kidnappings of children, especially aged 14-17 years. The voice-enabled alerting system tracks the children's locations in real time for their safety. Furthermore, this system ensures safety for women; they can now work late in the night without any fear.

Advances in healthcare, medicine, and hygiene coupled with declining birth rates driven by family planning have increased life expectancy globally. According to the World Health Organization, by 2017, there will be more elderly people than children under five years of age. This shift in demographics calls for new strategies and technologies that will provide affordable, high-quality healthcare to the aging population and those with limited access.

2. LITERATURE SURVEY

Haibin Zhang et al. proposed "Connecting Intelligent Things in Smart Hospitals using NB-IoT". They have implemented the use of Internet of Things (IoT), especially smart wearables, to significantly improve the quality of medical care. In light of this, the authors provide an architecture connecting intelligent devices within smart hospitals with the help of NB-IoT and introduces edge computing as a solution for latency requirements of medical processes. The paper also discusses the challenges and future directions for building smart hospitals by connecting intelligent devices.[2]

"A Novel Cardiac Auscultation Monitoring System Based on Wireless Sensing for Healthcare" was proposed by Haoran Ren et al. The invention showcased is the creation of a wireless sensing system that uses the Internet of Things (IoT) to send data to caregivers and medical professionals in order to monitor and assess cardiac problems. A subsequence segmentation algorithm based on double-threshold is developed to extract physiological parameters.[3]

"Interoperable End-to-End Remote Patient Monitoring Platform based on IEEE 11073 PHD and ZigBee Health Care Profile" was offered by Malcolm Clarke and colleagues. The implementation of an end-to-end remote monitoring platform for personal health devices (PHD) based on IEEE 11073 standards is described in this work. [4]. In a referenced paper [5], parents can send a message to the GSM module and get various details about their children. The location of the child appears on Google Maps. In emergency cases, pressing the button of the device captures a picture with user details and sends it to enrolled mobile numbers, which may ultimately save the child's life.

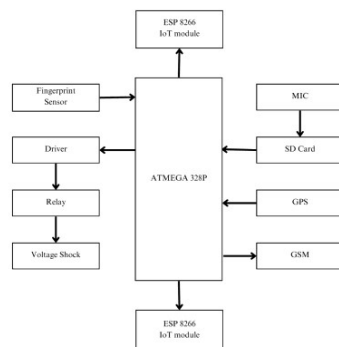
Digital technology also plays a massive role in connecting people via the internet where an Android-based solution is presented before parents to track their children. Different parts are connected through a single device that is linked to a server [6]. Parents can trace their children in real time using GSM and a microcontroller. Increasing missing child cases require solutions and hence different methods and systems have been developed to solve the issues of child care[7].

A proposed solution for child care involves a GPS-based system with two nodes: a child node with a Bluetooth module and GPS receiver, and a parent node with a Bluetooth-enabled mobile. The child's location is tracked by GPS and displayed to parents via the designed system. Additionally, a wearable device collects information such as heart rate and physical body movements, transmitting it to parents[8][9]. A wearable sensor badge, made from electronic components, detects perambulatory activities for context awareness. A wearable sensor jacket, engineered using the latest techniques and soft fabric with a stretch sensor, measures the movement of the upper limbs and the rest of the body. Worn as clothing, these sensors provide information [10].

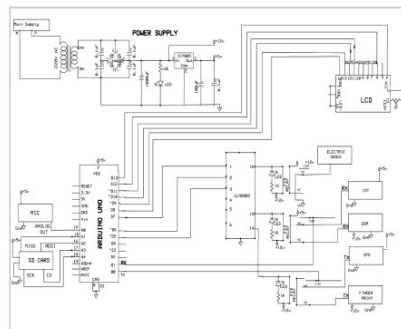
The existing system makes use of several electronic devices and systems which provide security for humans. Spy cameras, though popular for security purposes, are often unreliable. The current systems consist of wired connections and are mainly an alarm-based system, conventional without having efficient communication. A complete system has been designed for heart sound acquisition, storage, and asynchronous analysis, covering information uploading through IoT and signal analysis.

3. PROPOSED SYSTEM

This proposed system gives peace of mind to loved ones as it provides live feedback regarding the well-being of infants. Another plus point is the ability to program shock conditions. There has been a significant rise in child kidnapping cases, especially of children in the age group of 14 to 17 years. Due to these reasons, parents are growing worried about the safety of their children and women. This paper proposes a Recorder-enabled safety system designed to track the real-time location of children and women. In today's world, where women are competing with men in all fields of life, the prevalence of crimes against women is a growing concern. Our system provides the necessary security for women, enabling them to work late at night safely.



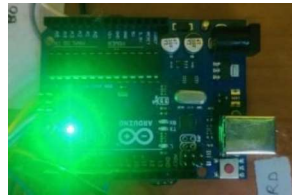
2.1. Block Diagram



2.2 Circuit Diagram

3.1 Circuit Implementation & Output

The fingerprint module is used for user authentication. The microphone captures audio, possibly to detect distress signals. The GPS module provides location tracking. The IoT module sends data to a remote server or mobile device. The electric shock module might be an emergency self-defense mechanism. The LCD displays system status and messages.



Arduino UNO



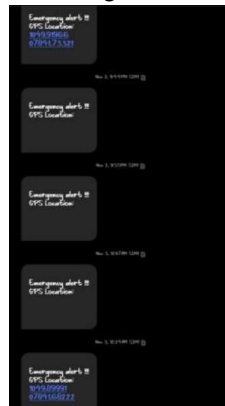
SIM900A module



LED Display

3.1 Results And Discussion:

The goal of the Women Safety Management project is to create a device that is so small that it can benefit women in criminal situations by offering personal security and emergency response capabilities. It is an inexpensive device that may keep member data in a certain area and send out instant alerts in the event that a crime against women occurs. This protects women. The goal of the day is to feel secure. In a tense scenario, the women's safety gadget can keep her safe. It instantly notifies the parent and the closest police station of the location, which could be perilous in that specific setting.



Response messages

4. CONCLUSION:

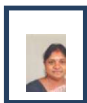
We have now created a project that will address important problems that women confront in today's society and provide them with the strength to resist. It keeps an eye on things and acts on its own initiative to keep her safe. When IoT is implemented throughout India, this project will attain its full potential. The prototype may be further simplified from a band to a chip that can be worn with any kind of jewelry. The goal of this work is to lessen the societal issues that have been destroying the lives of numerous women and their families.

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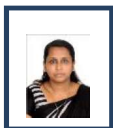
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Biographies



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