WOMEN PROTECTION DEVICE USING STUN GUN DRESS

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Abstract— **Empower Her is a groundbreaking women's safety system built upon Raspberry Pi technology. It integrates GPS for precise location tracking, flex sensors to detect private touch incidents, a webcam for image capture, an LCD display for real-time feedback, and GSM communication for instant alerts. The primary objective of this system is to provide women with a comprehensive safety solution in potentially dangerous situations, fostering a greater sense of security.**

When a flex sensor identifies unwarranted physical contact, it triggers the Raspberry Pi to capture images and transmit them, along with the GPS location, to a remote server. Simultaneously, alert messages are dispatched to predetermined contacts through GSM technology, ensuring prompt assistance when needed. The LCD display serves as a visible deterrent to potential threats, further enhancing personal security.

Empower Her embodies a holistic approach to women's safety, merging cutting-edge technology, connectivity, and proactive measures to create a protective environment, offering women the confidence and peace of mind they deserve in various circumstances, day or night.

Keywords- LCD, Python, Raspberry pi, Flex Sensor,Web Camer,GPS/GSM.

I. INTRODUCTION

Empower Her is a pioneering women's safety system that leverages the capabilities of Raspberry Pi technology to address the critical issue of women's safety in contemporary society. Women's safety is a paramount concern, and empowering women with innovative solutions can provide them with the security and confidence they deserve. This system is designed to be a proactive and comprehensive response to various safety challenges that women may face.Utilizing Raspberry Pi as its foundation, Empower Her integrates essential components such as GPS for precise location tracking, flex sensors to detect private touch incidents, a webcam for image capture, an LCD display for real- time feedback, and GSM communication for immediate alerts. Thecombination of these technologies results in a versatile and multifaceted safety system that can be a game-changer for women'ssecurity.Empower Her embodies a holistic approach to women's safety, merging cutting-edge technology, connectivity, and proactive measures to create a protective environment, offering women the confidence and peace of mind they deserve in various circumstances, day or night.

II. LITERATURE SURVEY

In this paper there is an endeavor to develop an effective self-defense gadget which would provide protection to women in case of any assault or unsolicited contact. The major merit of this product is its simplicity and is also economical and effective handy device for women who travel alone. This gives more confidence to the women about their safety. Since it is implemented in the form of a ring the device can be easily concealed and extremely accessible in dangerous situations. But there is always room for improvement. Some improvements can be made so that it expects to enhance the performance without altering the existing design. Presently the application is compatible only to android smart phones. So, by making it compatible with any OS, can improve the system. The system can be further developed by adding few sensors to sense the fear and anxiety and thus automatic response can be obtained. Addition of a voice recognition system for the access will also help to improve the performance.[1]. In this project an alternative approach for device switching which combines fingerprint identification technique with Web server and GPS functionalities has been proposed. This approach allows more than one person to control the device functionality and the authentication facility provided by the switch helps to reduce the fault correction time.[2]. The node MCU is the main component that connects the pulse, temperature, GPS module, and LCD. The vibration sensor, ESP32cam, and FTDI are connected to the Arduino. This paper IoT based Wrist Band for Women safety uses an Arduino UNO module used to connect the sensors and other components. The node MCU is the main component that connects the pulse, temperature, GPS module, and LCD. [3]. Connecting with GSM Module and Prompting for Fingerprint.Once the user activated the device with her fingerprint, the continuous monitoring begins, which keeps on checking for fingerprint on the fingerprint module. In case, there is no finger impression for one-minute buzzer starts to beep as shown in Figure2.15 When the buzzer starts to beep, the GSM module sends message to all in case of emergency (ICE) numbers along with the latitude and longitude values. [4]. In this paper, SMS will be received to only one person, e-mails can be sent to 4 members, and voice messages through call will be received to the people who downloaded the app and login with those Credentials of the smart locket. Using this smart locket, we can alert many people at a time so that we can say that we have more percentage to save us from that situation. [5].

The prototype's architecture consists of ATMEGA 2560 Arduino incorporated with the GSM module, location accessing protocol, IOT module, buzzer, heart-beat sensor, neuro-stimulator, SOS button, zig-bee module and buzzer. The Arduino Mega 2560 is a microcontroller board based on the ATmega2560. It has 54 digital input/output pins (ofwhich 15 can be used as PWM outputs), 16 analog inputs, 4 UARTs (hardware serial ports), a 16 MHz crystal oscillator, a USB connection, a power jack, an ICSP header, and areset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with an AC-to-DC adapter or battery to get started.[6]. The main purpose of this project is to ensure the woman safety by a device to act as a rescue and prevent any harm at the time of hazard especially for women. Through the proposed system a smart device for women's safetywhich automates the emergency alert system is designed. Through the process of customization, this prototype can be modified to wearable like smart watches, bracelets, necklaceetc. The main advantage of our proposed system is that both

automatic and manual mechanisms are implemented. [7]. This prototype is developed with the hope that it would be capable of providing better safety to women than many devices that are available nowadays. This system consists of an Arduino Nano, SIM module, Display, Power supply, additional protection circuit, and a smart phone.The GPS tracking, messaging and the alarm facility of the smart phone are also utilized will be sent to one or more predefined number. [8]. In this paper, WoSApp is a straightforward method for a woman to place an emergency call when in a crisis. This clear-cut sequence of events ensures that help can be provided to women in crises as quickly as possible. Our application ensures that questions regarding the user's location or whom to contact, as well as confusion at police stations regarding where the officers must be dispatched from, do not arise. [9]. The central objective of this paper is to outline the conceptualization and development of a mobile application explicitly tailored to enhance women's safety. This paper delves into the development, design principles, and key considerations involved in crafting a mobile application dedicated to women's safety. By exploring the symbiotic relationship between user experience and technological prowess, we aim to contribute to the ongoing discourse on leveraging technology for social good. Together, let us navigate the intricate intersection of safety, technology, and empowerment, bridging the gap between aspiration and scheme for the mobile sensors in wireless sensor network. Here we uses a proposed technique called Spinal Scheduling (SPS) for power conservation in mobile sensors. [11].

III. METHODS AND MATERIAL

A. Methodology

The working of our proposed system is to design the flex sensors serve as a critical component by automatically detecting unwarranted physical contact, which triggers the Raspberry Pi to capture images and relay them to a remote server. Simultaneously, alert messages are sent via GSM to predefined contacts, ensuring swift assistance. The system is designed to empower women by offering a proactive, multifaceted, and real-time response to safety concerns. Empower Her is a vital step toward ensuring the safety and peace of mind of women in today's world.

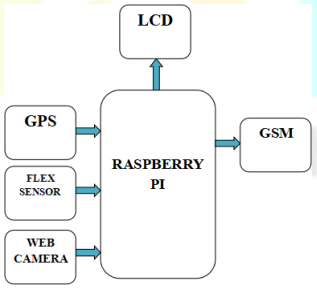


Figure 1 Block Diagram of Methodology

B. Components used

Raspberry pi
LCD Display
Flex Sensor
GPS/GSM
Camera Module
Python

a. Raspberry pi

Raspberry Pi is based on a Broadcom SoC (System of Chip) with an ARM processor [~700 MHz], a GPU and 256 to 512 MB RAM. The boot media is an SD card [which is not included], and the SD card can also be used for persist data. Now that you know that the RAM and processing power are not nearly close to the power house machines youmight have at home, these Pi's can be used as a Cheap computer for some basic functions, especially for experiments and education. The Pi comes in three Configurations and we will discuss the specifications ofthose in the coming sections. The cost of a Pi is around $35 for a B Model and is available through many online and physical stores.

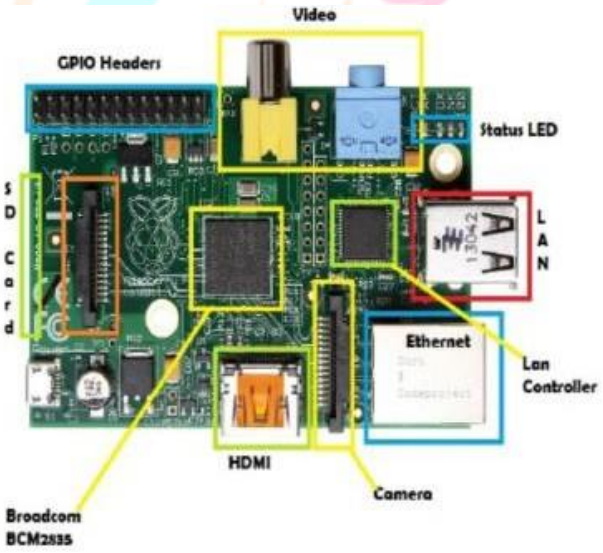


Figure 2 Raspberry Pi

b. LCD Display

A liquid crystal display (LCD) is a thin, flat electronic visual display that uses the light modulating properties of liquid crystals (LCs). LCs does not emit light directly.

They are used in a wide range of applications including: computer monitors, television, instrument panels, aircraft cockpit displays, signage, etc. They are common in consumer devices such as video players, gaming devices, clocks, watches, calculators, and telephones. LCDs have displaced cathode ray tube (CRT) displays in most applications. They

are usually more compact, lightweight, portable, less expensive, more reliable, and easier on the eyes.

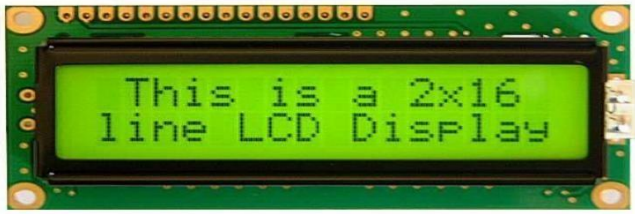


Figure 3 LCD Display

c. Flex sensor

The force can be measured with the help of flux sensor. The resistance variation in the sensor will be converted into voltage. Then sensor output will be low voltage, so to gain the voltage using SCU.

An amplifier is a device for increasing the power of a signal. It does this by taking energy from a power supply and controlling the output to match the input signal shape but with a larger amplitude. In this sense, an amplifier may be considered as modulating the output of the power supply.

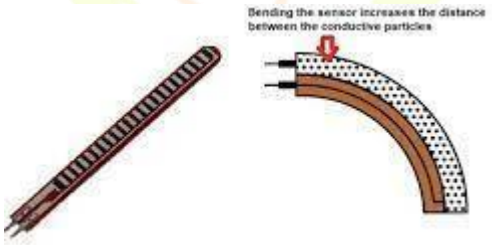


Figure 4 Flex Sensor

d. Global Positioning System

Of all the applications of GPS, vehicle tracking and navigational systems have brought this technology to the day-to-day life of the common man. Today GPS fitted cars; ambulances, fleets and police vehicles are common sightson the roads of developed countries. Known by many namessuch as Automatic Vehicle Locating System (AVLS), Vehicle Tracking and Information System (VTIS), Mobile Asset Management System (MAMS), these systems offer an effective tool for improving the operational efficiency and utilization of vehicles.

The switching off of SA has improved the accuracy of GPS to better than 30 meters, which makes it an ideal position sensor for vehicle tracking systems without the overhead of DGPS. We're interested in designing, building, and testing a GPS antenna that would be implemented onthe body or inside of a vehicle. This antenna would be different than others on the market in that it would not only utilize the L1 frequency (1575.42 MHz), but also the L5 frequency (1176.45 MHz) to be introduced in the future.

Our goal is to also make it interoperable with the European counterpart to GPS, Galileo which uses 1164–1214 MHz and 1563–1591 MHz bands. In addition, we intend to gather the specifications for the LNA that would be needed for our specific antenna based on its gain, impedance, and other characteristics. If time allows, we intend to design and simulate the LNA using Agilent's Advanced Design System software package at the end as well.

Figure 5 GPS based vjs

e. GSM Module

GSM (**Global System for Mobile Communications**: originally from ***Groupe Special Mobile***) is the most popular standard for mobile telephony systems in the world. The GSM Association, its promoting industry trade organization of mobile phone carriers and manufacturers, estimates that 80% of the global mobile market uses the standard.[1] GSM is used by over 1.5 billion people[2] across more than 212 countries and territories.[3] Its ubiquity enables international roaming arrangements between mobile network operators, providing subscribers the use of their phones in many parts of the world. GSM differs from its predecessor technologies in that both signaling and speech channels are digital, and thus GSM is considered a *second generation* (2G) mobile phone system. This also facilitates the wide-spread implementation of data communication applications into the system.

Figure 6 GSM

f. Web Camera Module

The Wireless Wi-Fi camera is used with Raspberry pi for collecting evidence of any crime. After turning on the camera, it will start capturing video or image continuously and will store all those in Raspberry pi. It connects to your computer via a USB port or a built-in port, and you can use it to record video calls or take pictures. Some webcams also come with built-in microphones, whichallow you to record audio.

Figure 7 Web Camera Module

g. Python

Python is a high-level, interpreted scripting language developed in the late 1980s by Guido van Rossum at the National Research Institute for Mathematics and Computer Science in the Netherlands. The initial version was published at the alt.sources newsgroup in 1991, and version 1.0 was released in 1994. Python 2.0 was released in2000, and the 2.x versions were the prevalent releases until December 2008. At that time, the development team made the decision to release version 3.0, which contained a few relatively small but significant changes that were not backward compatible with the 2.x versions. Python 2 and 3 are very similar, and some features of Python 3 have been back-ported to Python 2. But in general, they remain not quite compatible. Both Python 2 and 3 have continued to be maintained and developed, with periodic release updates for both. As of this writing, the most recent versions available are 2.7.15 and 3.6.5. However, an official End Of Life date of January 1, 2020 has been established for Python 2, after which time it will no longer be maintained. If you are a newcomer to Python, it is recommended that you focus on Python 3, as this tutorial will do. Python is commonly employed in women's security devices for several compelling reasons. First and foremost, Python's versatility and readability make it an ideal programming language for developing intricate algorithms and sophisticated functionalities, which are crucial in crafting effectivesecurity solutions. Its simplicity enables quick prototyping and efficient development cycles, crucial in the rapidly evolving landscape of security technology. Additionally, Python boasts an extensive collection of libraries and frameworks tailored for tasks like image recognition, machine learning, and signal processing, which are integral components in enhancing the capabilities of women's security devices. The language's widespread adoption also means a vast community of developers, fostering collaboration and the exchange of innovative ideas for creating robust and user-friendly security systems. Moreover, Python's cross-platform compatibility ensures seamless integration with various hardware components andoperating systems, contributing to the accessibility and usability of women's security devices across diverse environments. In summary, Python's attributes of versatility, readability, extensive libraries, community support, and cross-platform compatibility collectively make it an optimal choice for developing advanced and effective security solutions designed to enhance women's safety.

C. Proposed Work

To design smart security device for women using python technology. The deployment is used to monitor and send a alert message to the family members and near by police station.Flex sensor detect the temperature and pressure of the device holder. It will intimate message and notification for LCD display. Raspberry Pi continuously monitoring the states Flex sensor it will identify by device holder using LCD.

IV. Result And Conclusion

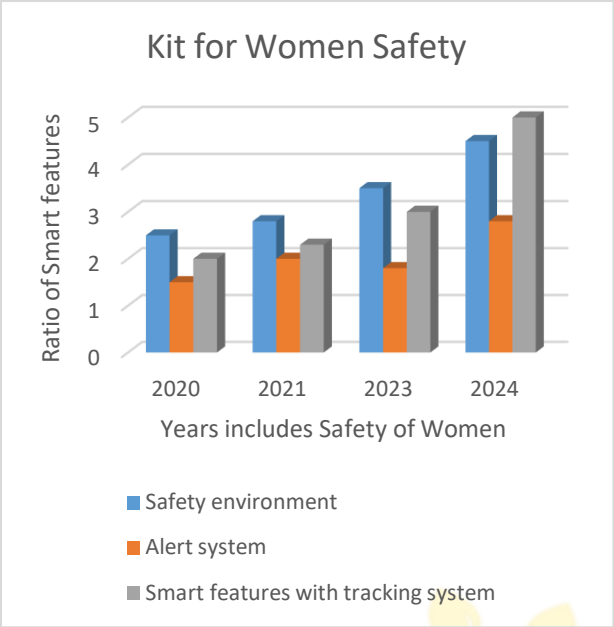
In conclusion, the Empower Her system represents a trans-formative solution for women's safety, addressing the pressing need for proactive measures in an increasingly uncertain world. This innovative system, built on Raspberry Pi technology, integrates multiple components such as GPS, flex sensors, a webcam, LCD display, and GSM communication to create a holistic and advanced approach to safeguarding women.

Empower Her offers a proactive response to potential threats through automatic detection of unauthorized physical contact, real-time communication with trusted contacts, and a visible deterrent. It enhances women's sense of security and empowerment, providing them with the tools to protect themselves in various settings, from public spaces to college campuses and workplaces.

By bridging the gaps in existing women's safety systems, Empower Her not only offers enhanced security but also peace of mind to women, empowering them to navigate the world with confidence. This system represents a significant step toward ensuring that every woman can live, work, and travel without fear, contributing to a safer and more equitable society.

V. FUTURE ENHANCEMENT

Now we are making a prototype of the women security device with smart features.And in Future we will add on some extra features like long battery durability and waterproof and convert the prototye into wearable device. And here is a planning features for our Smart security device.



Graphical representation of women safety using smart security device

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