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A Research Paper on Women Safety Device with Stun Gun

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Abstract - Various projects aim to enhance women's safety using innovative technologies. Examples include wearable devices with GPS and GSM for real-time alerts, IoT-based systems with fingerprint authentication and panic switches, and smart jackets incorporating GPS, GSM, and shock circuits. These solutions provide comprehensive security, addressing issues like harassment and assault. Electroshock weapon technology, stun gun dresses, and smart shoes further empower women with self- defense tools and advanced safety features. These projects collectively strive to create a safer environment for women globally.

Key Words: GPS, GSM, Buzzer, Switch, ARM LPC2148,StunGun,Relay ON-OFF,Women Safety.

1.INTRODUCTION:

In today's world, women's safety is a paramount concern, impeding their freedom due to the pervasive threat of physical and sexual abuse. Despite technological advancements, ongoing challenges persist in ensuring the safety of women. This paper addresses this urgent need by proposing a low-cost, portable device utilizing Raspberry Pi, integrating temperature, heart rate, and voice data.

Employing IoT, the device triggers alerts via SMS with location and incident images, and makes phone calls to configured contacts, enhancing women's security comprehensively. The project acknowledges prevalent safety concerns for women in contemporary India, aiming to empower them for safer mobility, particularly during night shifts in the corporate sector.

Another innovative research initiative designs a cost-effective smart device resembling a power bank, featuring finger scanning, automatic SMS alerts, health monitoring, and a teaser gun for self-defense. These engineering solutions aim to empower women for safer daily living, contributing to a reduction in violence against them and fostering a secure environment.

2.LITERATURE REVIEW:

The proposed women's safety solutions encompass a range of innovative devices and applications. One approach involves an ARM controller and Android application, synchronized via Bluetooth, providing independent triggering. This system records audio, issues alert calls, and messages preset contacts with instant location updates. A distinct feature includes a hidden camera detector for enhanced privacy. Another initiative introduces a mobile-based application, I safe Apps, designed to assess women's safety through fake phone calls, video forwarding, and location sharing.

Several research projects contribute to the discourse on women's safety. A GPS and GSM-based child tracking system offers location alerts to parents. A wearable device embedded in sandals triggers a hooter, sends SMS to guardians, and shares location via GPS. The Smart Girls Security System utilizes Arduino, GSM/GPS modules, alarms, and pressure sensors to activate automatically and send location-based SMS alerts. An emergency app, IPROB, employs a tri-axial accelerometer for shaking detection, ensuring prompt alerts to guardians.

The FEMME safety device, utilizing ARM control, includes features such as GPS tracking, SOS alerts, and audio/video recording. Another project introduces a safety band with GPS tracking activated by a panic button or motion sensor. The STUN GUN - SELF DEFENSE SYSTEM WITH GSM SOS MESSAGE ALERT combines a stun gun with a GSM module, offering quick self-defense and emergency message transmission. This innovative project, driven by an Arduino micro-controller, provides a distinctive amalgamation of technologies in the realm of self-defense systems, contributing significantly to women's safety.

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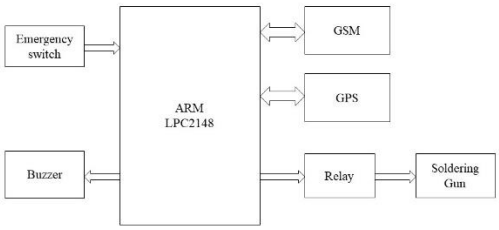
3.BLOCK DIAGRAM:



4.METHOLOGY:

The Raspberry Pi, a versatile single-board computer, utilizes an SD card as its primary storage medium, akin to a personal computer's hard disk. Comprising essential components such as CPU, GPU, GPIO pins, USB ports, HDMI output, and Ethernet, the Raspberry Pi is well-suited for diverse applications. The Raspbian operating system, later rebranded as Raspberry Pi OS, is loaded onto the board for seamless functionality. With onboard memory varying across models, the Raspberry Pi 4 stands out with up to 8GB RAM.In the context of women's safety, innovative solutions integrate GSM, GPS, and Electric Teasers.

One system deploys a shoe-mounted switch to activate a shock circuit powered by piezoelectric sensors, providing a means to incapacitate potential assailants. Another integrates a stun gun, GSM, and GPS modules triggered by a microcontroller, sending distress signals with precise location details. A third system, emphasizing safety during solo walks, incorporates a stun gun circuit powered by a Lead-Acid battery, with misaimed activations prompting GSM alerts for enhanced user protection.Furthermore, a self-defense system features a microcontroller-operated stun gun with GSM integration.

Pressing the switch initiates a high-voltage AC output, while misaimed attempts trigger GSM alerts to preconfigured emergency numbers. These innovative technologies underscore the integration of hardware, microcontrollers, and communication modules to enhance personal safety, showcasing creative applications in addressing real-world challenges related to women's safety and self-defense.

5.COMPONENTS OF MODEL:

1. ARM Microcontroller (LPC2148):

The ARM LPC2148, part of the ARM7 family, boasts a 32-bit RISC architecture, renowned for its performance and power efficiency. Widely employed in embedded systems, it's favored for its flexibility, driving innovation in microcontroller technology.

Fig .1: LPC2148

2.GSM Module:

The GSM/GPRS Modem-RS232, powered by the SIM800C Quad-Band GSM/GPRS engine, operates across 850/900/1800/1900MHz frequencies. Featuring an RS232 interface and MAX232 chip, it supports baud rates from 9600 to 115200, making it perfect for M2M applications.

Fig.2: GSM Module SIM800C

3.GPS Module:

The NEO-6M GPS module, with a ceramic antenna, tracks up to 22 satellites globally. It features the u-blox NEO-6M chip for fast and accurate positioning, -161 dBm sensitivity, and a 50-channel engine. Supporting baud rates from 4800 to 230400 bps, it ensures versatile communication.

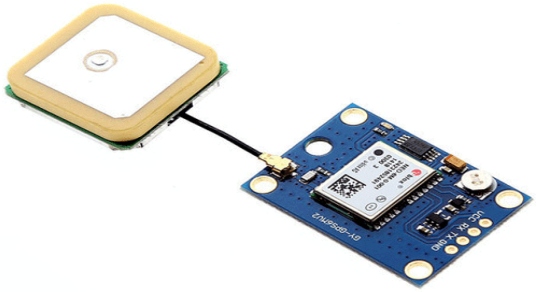


Fig.3: GPS Module

4. Buzzer:

A buzzer, an audio signaling device, operates on DC voltage and comes in electromechanical, piezoelectric, or mechanical types. Widely used in alarms and timers, it has a two-pin configuration with positive (‘+’) and negative (‘-’) terminals for effective integration.

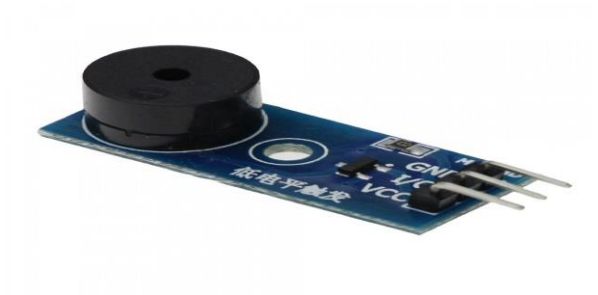


Fig.4.: Buzzer 5v DC

5.Relay:

A relay is an electromechanical switch that uses an electrical signal to control an electromagnet, thereby connecting or disconnecting circuits. Components include an electromagnet, a movable contact, switching points, and a spring for default state return. Types include electromechanical and solid-state relays.

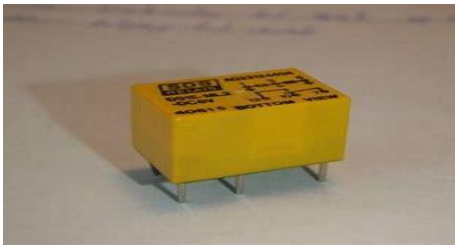


Fig .5: Relay

6.Switch:

A slide on-off switch, or slider switch, controls electricity flow using a sliding lever to open or close contacts. In the "off" position, contacts are separated, halting current flow; in the "on" position, the circuit completes, enabling current flow.

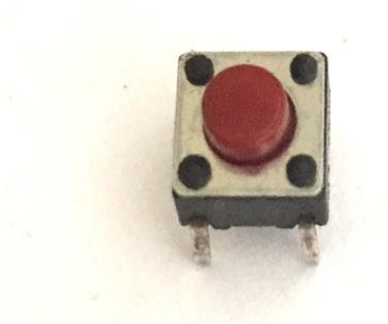


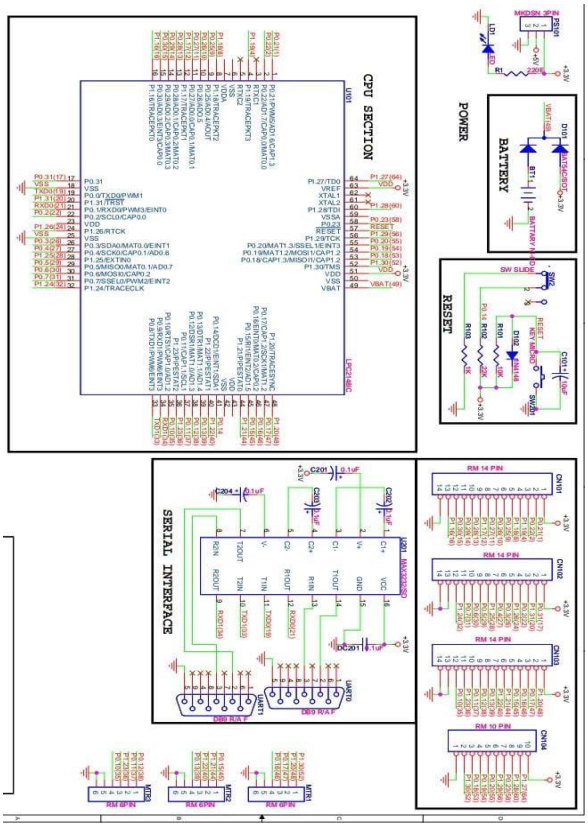
Fig. 6: Push Button

7.Stun Gun Module:

Stun guns, vital for personal safety, prioritize high voltage and low current for effective incapacitation. They temporarily disable attackers by disrupting muscle control with electric shocks emitted through metal prongs upon contact. Responsible use and safety understanding are crucial.

Fig .7: Stun gun(Soldering Gun)

6.WORKING PRINCIPLE OF ARM BOARD CIRCUIT SCHEMATIC



7. CONCLUSIONS

The project on women's safety, featuring the "Self Defense System with GSM SOS Message Alert," offers a comprehensive solution with real-time defense mechanisms, GPS tracking, and simultaneous SOS message transmission. Ongoing developments in wearable safety devices prioritize user convenience and inconspicuous integration. The life-saving shoe, a cost-effective and durable safety measure, deters potential criminals, while future enhancements explore nanotechnologies and wearables. The woman safety device, emphasizing dual mechanisms and wearability, acts as a versatile rescue tool with audio-video recording capabilities. Initiatives like the smart protection jacket and cost-effective smart device promote gender equality and provide multifaceted safety solutions, instilling confidence in women's active engagement. The design for girls in danger, featuring an embedded camera, ensures self-rescue and contributes to a safer environment.

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