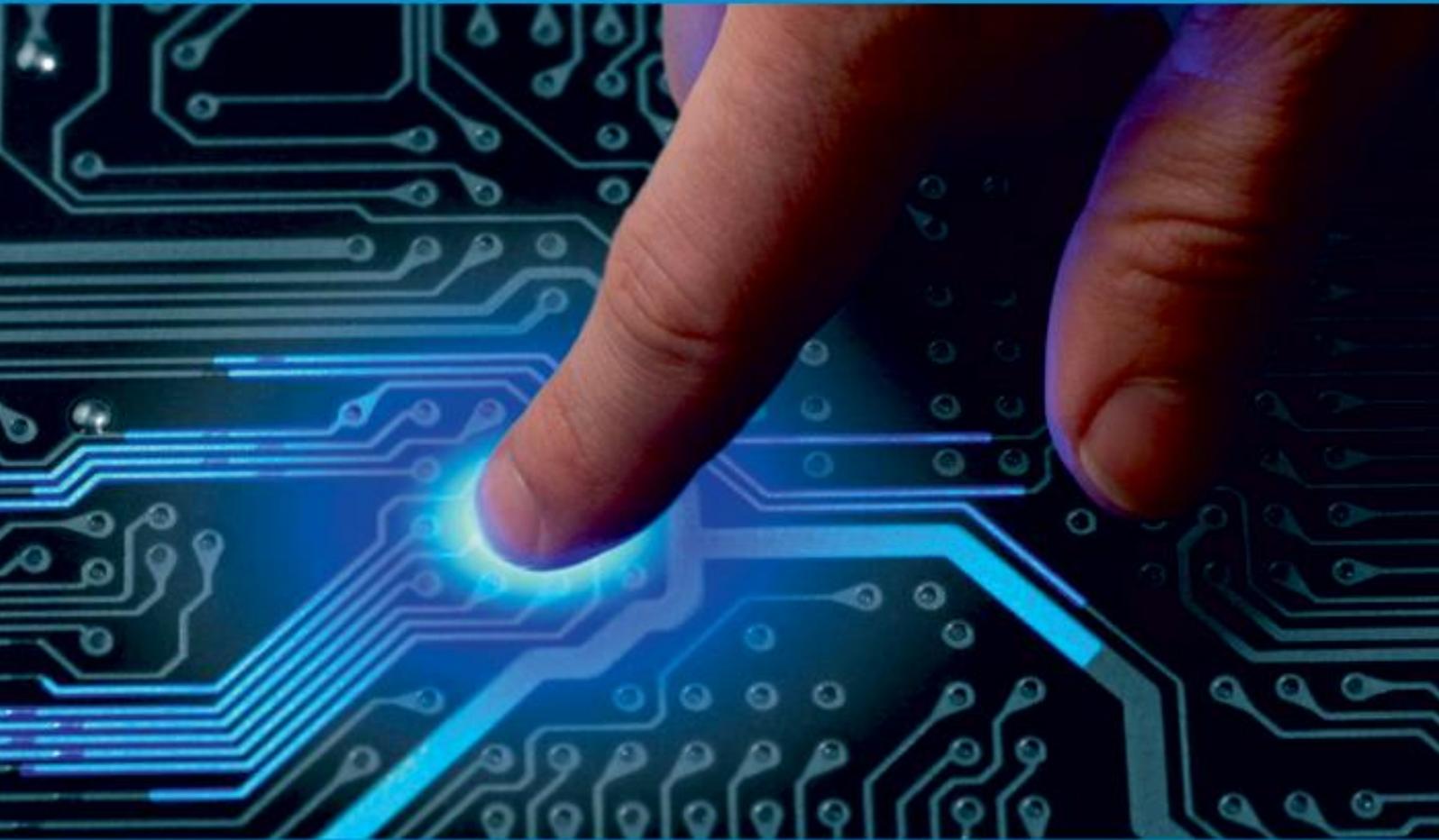




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# The Role of IOT in Women's Safety

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**ABSTRACT:** Women all over the world are facing and even subjected to unethical physical harassment. Security for women is still a major issue as the number of crimes and harassment over women and girls is increasing day-by-day. Self Defense module for women safety is like a Smart Watch for Women safety. It has the ability to help women with technologies that are embedded into a compact device. We can't change the society totally but we can increase the security of girls by using modern technology. Nowadays though there are many apps evolved for women safety via smart phone it is activated only by a touch or one click or shake. It is not possible to have mobiles on our hand in all circumstances This idea is meant to give women security when they are subjected to social problems and harassment. When a woman wearing a "watch me" is attacked sexually or in a vulnerable way, the sensor in the device measures the person's pulse rate. With embedded technologies, it might be beneficial to women. It is especially made to protect and ensure the safety of ladies

## I. INTRODUCTION

The main purpose of energy efficient algorithm is to maximize the network lifetime. These algorithms are not just related to maximize the total energy According to the National Crime records Bureau, the total number of rape cases in India was a staggering 228,650 and Delhi, the national capital accounted for 5234 of those and in 2011 according to Ministry of Home Affairs, a total of 24193 cases were reported. This is just the tip of the iceberg. Rape is a notoriously under-reported crime, thanks to its social stigma. A woman is raped every 21 minutes in India and every 18 hrs in Delhi it's shameful for the whole world. The primary reasons behind such shocking statistics is the society which is prejudiced against the girl child, lack of proper policing, ineffective laws etc. While the long term solutions should aim to correct the above factors. Now there is requirement of some change. By observing such bad conditions of women in the world, we the team "Dream Team" came up with "Smart Watch for Women the technologies included in this "Smart Watch for Women" have the potential to benefit women. The watch offered by "Smart Watch for Women" is specifically made for the safety of women. When ladies sense danger, they will utilize the button on it to alert the nearest police. When this watch is turned on, it establishes a direct GPS connection with the satellite. After then, the position is communicated via GSM, and this watch has a feature that, in an emergency, may generate 60 shock waves in a single second.

## II. LITERATURE SURVEY

"Arduino Based Security System for Women" is the project title.

Abhijeet Mane, Manoj Gharge, Omkar Pol, Karan Grover, and Prof. Vijaya Chavan are the authors. Journal of Advanced Research in Computer and Communication Engineering International Summary: Numerous issues affect women nowadays, including rape, molestation, kidnapping, etc. The incidence of crimes against women will go down because to this system's innovative design. Women's security has been given first priority, particularly those living in cities where they may encounter difficulties when traveling. Since the system is reasonably priced, many women stand to gain from it.

"SMART SOLUTION FOR WOMEN SAFETY USING IoT" is the project title.

Name of the authors: T. Sahithi Reddy, Y. Nikhila, A. Jesudoss, International Journal of Pure and Applied Mathematics is published.

Abstract: Women today deal with a variety of security-related issues. The suggested program would send notifications to the local police stations together with scanned phone numbers and is able to track whereabouts. This tool assists ladies with other health issues, such as sudden fainting, and is not just used in cases of rape and perverts taunting them. GPS is used to track the victim's whereabouts and send messages, including the victim's location and phone numbers

### III. METHODOLOGY

The accompanying figure displays the conceptual system's block diagram. All subsystem operations are managed by the microcontroller, which also serves as an embedded computing system. Emergency switch, voice recognition module, GPS receiver, WiFi modulator demodulator (MODEM), LCD display, buzzer, and wireless camera are among the interfaces that it is equipped with. The microcontroller continuously checks for incoming SMS messages from the parents or other caregivers in addition to monitoring the state of each device on a periodic basis. When the Emergency Switch is pressed in the absence of a WiFi network, the processor triggers the speech circuit to produce a loud cry in order to attract the attention of those in the vicinity and request assistance.

Thus, the buzzer will activate automatically when the user gives the spoken command. Additionally, it gets the High Voltage Electric Shock Circuit ready to shock the assailant in a way that is not fatal. If assistance is not available, and if the system is not reset within the allotted time, the system uses the GPS to determine its current location, prepares a text message with that information, and sends it to the police control room via the node mcu modem along with a distress message to the pre-programmed mobile number. An embedded microcontroller is used in the design, which is modular in nature to accommodate various location tracking scenarios. Considering the system's overall architecture, the hardware and software . The technology is set up to monitor the women in almost real time and provide rapid assistance.

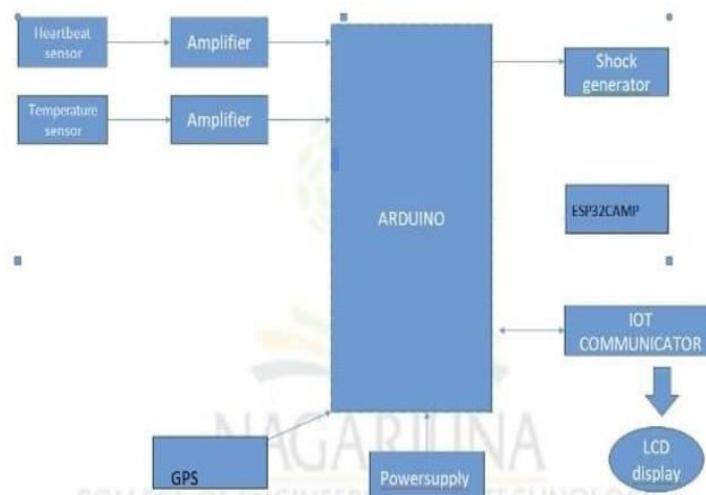


Fig no 5.1 : System Analysis

Analysing The function of the Internet of Things in women's safety involves examining how IoT technologies can be leveraged to enhance safety measures and address challenges faced by women. Here's a breakdown of key aspects to consider:

1. **Smart Surveillance Systems:** IoT-enabled surveillance cameras, equipped with features like facial recognition and motion detection, can help in monitoring public spaces and detecting suspicious activities. These systems can be particularly useful in areas prone to harassment or violence against women, providing real-time alerts to authorities or relevant stakeholders.
2. **Wearable Devices:** IoT-powered wearables, such as smart jewelry or safety bands, can serve as distress signals in emergencies. These devices may incorporate features like GPS tracking, one-touch SOS buttons, and audio/video recording capabilities to alert designated contacts or authorities when a woman feels threatened or unsafe.
3. **Connected Transportation:** IoT integration in transportation systems, such as buses, trains, or rideshare services, can improve safety for women during travel. Real-time tracking and monitoring of vehicles, along with panic buttons inside vehicles, can enable swift response in case of incidents like harassment or assault.

4. Smart City Infrastructure: IoT sensors deployed in metropolitan settings can contribute to creating safer cities for women. For example, intelligent lamps fitted with cameras and audio sensors can detect unusual activities and trigger alarms. Additionally, smart crosswalks with pedestrian detection technology can enhance safety at intersections, especially during late hours.

5. Data Analytics and Predictive Models: In order to find patterns and trends in the data gathered from IoT devices, machine learning algorithms can identify trends related to crimes against women. This data-driven approach can aid law enforcement agencies in deploying resources more effectively and implementing preventive measures in high-risk areas.

6. Community Engagement Platforms: IoT platforms can facilitate community involvement in women's safety initiatives. Mobile applications or web portals equipped with features like incident reporting, safety tips, and local resource directories can empower women to share information, seek support, and collaborate with neighbors and authorities to address safety concerns collectively.

7. Privacy and Ethical Considerations: While leveraging IoT for women's safety, it's crucial to address privacy concerns and adhere to ethical guidelines. Implementing robust data security measures, gaining approval for the collecting of data and its usage, and ensuring transparency in how IoT technologies are deployed are essential aspects to maintain trust and safeguard user rights.

### Different ways to program

A good hardware like ESP32 will be more user friendly if it is capable of being coded (written) in more than one way. And not surprisingly, the ESP32 supports multiple programming environments

Some of the commonly used programming environments are:

- Arduino IDE
- Platform IO IDE (VS Code)
- Espressif IDF (IoT Development Framework)

As Arduino IDE is already a familiar environment, we will use the same to program ESP32 in our upcoming projects. But you can definitely try out others as well.

Analyzing the role of IoT in women's safety involves examining how interconnected devices and data-driven technologies can be harnessed to address the unique safety challenges faced by women. At its core, IoT offers a framework for creating dynamic and responsive safety ecosystems that leverage real-time data collection, analysis, and communication. By integrating wearable devices with features like GPS tracking, distress signals, and biometric sensors, alongside surveillance cameras equipped with advanced capabilities such as facial recognition and motion detection, IoT systems can provide comprehensive monitoring of public spaces and transportation networks. This enables timely detection and reporting of incidents, empowering women to seek assistance and deter potential threats. Furthermore, IoT facilitates predictive analytics, allowing for the identification of patterns and trends in safety-related data, which can inform proactive measures to enhance security in high-risk areas. However, it's crucial to recognize that the effectiveness of IoT solutions depends not only on technological advancements but also on addressing social, cultural, and institutional factors that contribute to women's safety concerns. Ethical considerations regarding data privacy, consent, and algorithmic bias must be carefully navigated to ensure that IoT interventions prioritize the well-being and autonomy of women. By conducting a holistic analysis that integrates technological capabilities with social dynamics, policymakers, designers, and stakeholders can develop IoT solutions that meaningfully contribute to creating safer environments for women.

### LCD DISPLAY

Using liquid crystals' ability to modify light, an electrically modulated optical device such as a flat-panel display is called a liquid-crystal display (LCD). Liquid crystals use a backlight or reflector to create color or monochrome pictures rather than emitting light directly.

LCDs can show fixed graphics with minimal information content that can be shown or hidden, including preset words, numerals, and 7-segment displays, as in a digital clock, or arbitrary visuals, like in a general-purpose computer display. The only difference between them is that although other displays have larger parts, arbitrary images are composed of many tiny pixels.

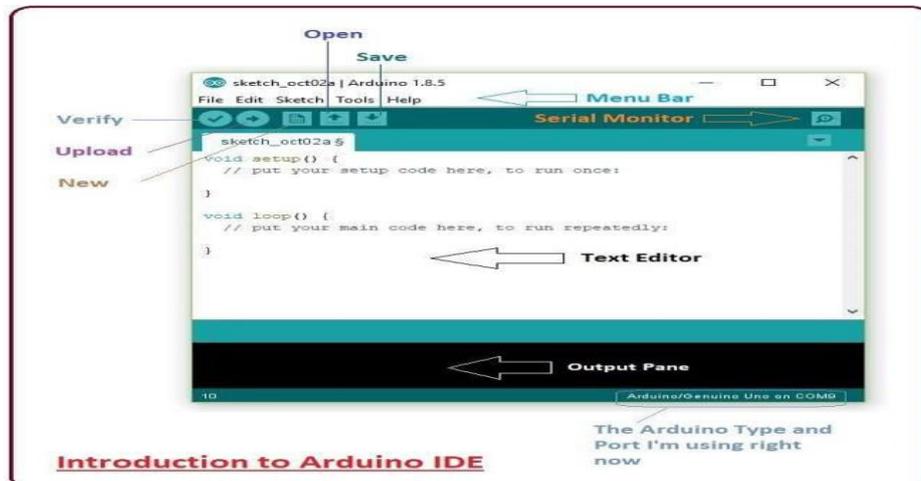
LCD is utilized in many different applications, including as computer monitors, TVs, instrument panels, cockpit

displays in aircraft, and indoor and outdoor advertising. Portable consumer electronics like digital cameras, watches, calculators, and mobile phones—including smart phones—often have small LCD screens

#### IV. RESULTS

##### Arduino IDE

The Java programming language is used to create the cross-platform Arduino integrated development environment (IDE), which is available for Windows, macOS, and Linux. It is used to write and upload programs to boards that are compatible with Arduino, as well as other vendor development boards when third-party cores are utilized. The Arduino IDE has specific code organization guidelines to accommodate the C language. Because it is an official Arduino program, code compilation is so simple that even a layperson with no prior technical experience may begin learning the basics.



##### Embedded c

The C programming language has an extension called Embedded C that makes it easier to create effective embedded applications. That isn't included in the C language. The most popular programming language for embedded controllers and processors is C. Assembly is also utilized, but mostly for implementing code sections where things like extremely high timing precision and code size efficiency are essential

#### V. CONCLUSION

The project grants designing about the women faced the lot of critical situation at present days and will assist to clarify them scientifically with compressed kit and concept. Making use of wrist band and spectacles, the mechanism like tear gas release, loud the messages with the location. From the above mentioned product can runover the suffering of every woman in the world about her assurance and security. As the main aim in the world is to ensure women's security so by this model we can achieve our aim also slowly it would reach the rural areas and the women in can benefit themselves at a low price and women might go from their homes with no worries. This system can be more advanced by adding calling feature also the location can also be send to the nearest police station. Images can be clicked in the advanced system

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