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SOS Device – Safety device

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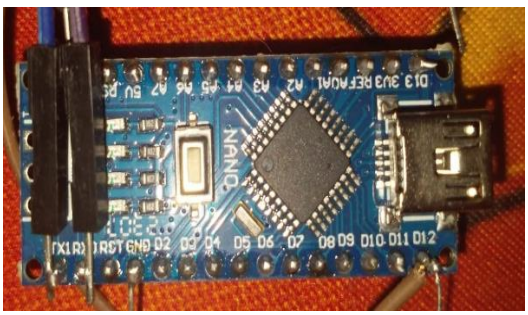
Abstract: The aim of this paper is to design and implement a safety device using GPS, GSM, Arduino, etc. to send distress signals in emergency situations The proposed safety device consists of microcontroller-based Arduino board, GPS module, GSM module and push- button switching. The device is designed to be compact, portable and easy to use. In an emergency, the user can simply press a push-button switch to trigger the device to send a distress signal to a pre-configured mobile number The device will fetch the location of the user from the GPS module and send a distress message to the preconfigured number. Overall, the proposed safety net provides an innovative solution to improve safety and security in emergency situations and can be easily customized to the user's needs specifically revealed.

***Keywords*- Location Tracking using gps, Arduino Programming, Gsm module**

Ⅰ. Introduction

Safety and security have become a high priority in today's fast-paced world. In an emergency, every second counts, and a quick response can make all the difference. To solve this problem, a security device has been developed that sends helpful information when needed through GPS, GSM, Arduino, etc . These devices provide a convenient and reliable option for individuals through which distress messages will be sent to the emergency contacts in real time indicating where they have clues.



The security device is designed to be user-friendly and accessible. It is portable and easy to carry. In the event of an emergency, the user simply needs to press the emergency button, and the device sends a pre- configured SMS message to their emergency contact with their current location inf-ormation

That thing can be especially useful for individuals traveling alone or in an unfamiliar location. The device is made up of a combination of hardware and software components. Hardware includes GPS , GSM modules, and Arduino boards. The GPS module provides location information, while the GSM module enables the device to send SMS messages to pre-configured numbers.

The Arduino board acts as the brain of the device and facilitates communication between GPS and GSM modules. The software includes a micro controller program and a user interface app-lication, which allows the user to configure the device settings and monitor its performance.

Overall, security devices using GPS, GSM, Arduino, etc. provide a reliable and convenient way to send helpful information when needed with a button you just press on. It is a simple and effective solution to improve personal safety and security, especially in emergencies

Background description of the problem:

The safety device using GPS, GSM, Arduino, and different gadgets that can send SOS texts with an easy press of a button can deal with lots of safety concerns in present day international. Some of the particular issues that this device can resolve consist of:

1. Travelling in shady places: Many individuals, can also feel unsafe whilst journeying on their own, specifically in unfamiliar or poorly lit regions. The safety device presents an introduced layer of safety, permitting individuals to quickly and effortlessly alert emergency responders to their vicinity and request assistance.

2. Uncomforting due to humans : There are conditions where individuals may additionally experience uncomfortable or threatened using the behavior of others, however, won't be capable of touching the overnment or reaching out for assistance. The safety device can provide a right-away method of looking for assistance, enabling individuals to quickly and discreetly alert emergency responders to their vicinity and request help. Three. Medical emergencies : In conditions in which individuals won't have the ability to call for assistance or provide designated vicinity facts, together with at some stage in a clinical emergency or twist of fate, the protection device can offer an effective approach to searching for assistance. Emergency responders can quickly discover the man or woman through the usage of the tool's GPS coordinates and offer well-timed clinical assistance.

4. Natural screw-ups: In emergencies along with natural disasters, extreme climates, individuals won't have immediate access to standard methods of searching for assistance, which include creating a smartphone name. The safety device can provide a powerful approach to seeking assistance and speaking with emergency responders in real time. In conclusion, the safety device using GPS, GSM, Arduino, and different devices that could send SOS texts with an easy press of a button can provide a powerful solution to deal with quite a few safety worries in modern-day global. By offering people an additional layer of protection and a way of searching for help in emergencies, this device can assist individuals feel greater stable and offer peace of mind.

II. Literature Review

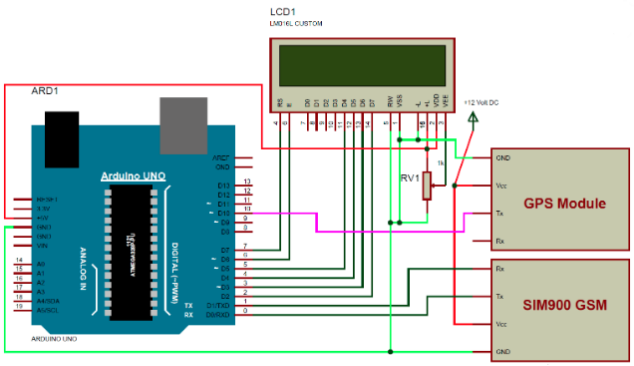
1. "Design and Development of GPS-GSM Based Vehicle Tracking and Alerting System" by S. Mandal et al. (2018) - This study discusses the design and development of a vehicle tracking and alerting system using GPS and GSM technologies. The system uses an Arduino microcontroller to receive data from the GPS module and send the data to the GSM module for transmission. The system is capable of tracking the location of the vehicle and sending alerts in case of emergencies.

2. "Smart Helmet using Arduino and GSM Technology for Accident Detection and Reporting System" by M. Ahmad et al. (2018) - This study proposes a smart helmet using Arduino and GSM technology for accident detection and reporting system. The helmet contains sensors that detect accidents and send alerts to emergency services via a GSM module. The system can also track the location of the accident using GPS technology.

3. "Real-Time Vehicle Tracking System using GPS and GSM Technology" by V. K. Pandey et al. (2015) - This study discusses the design and implementation of a real-time vehicle tracking system using GPS and GSM technologies. The system uses an Arduino microcontroller to receive data from the GPS module and send the data to the GSM module for transmission. The system is capable of tracking the location of the vehicle and sending alerts in case of emergencies.

In conclusion, the literature shows that the use of GPS, GSM, and Arduino for personal safety devices has been widely explored. The proposed systems are capable of tracking the location of the user and sending alerts to emergency contacts in case of an emergency.
The inclusion of panic buttons in these systems also provides users with a manual means of sending emergency alerts. These studies demon -strate the potential of these technologies to improve personal safety and provide peace of mind to users.

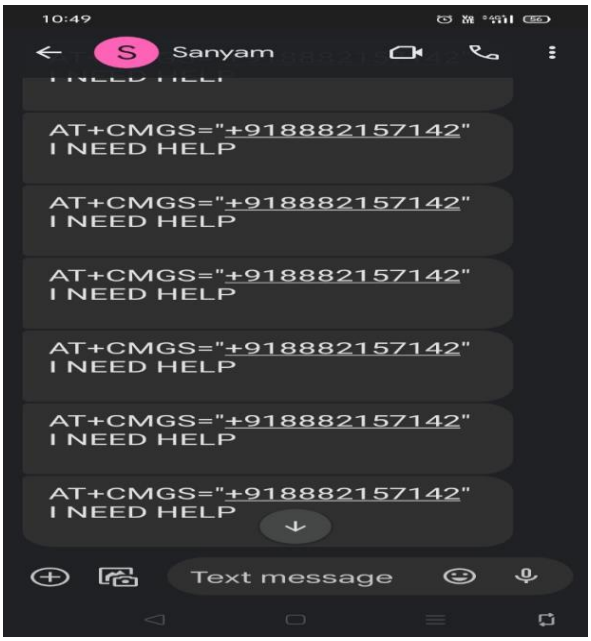
III. Methodology



The methodology used in "SOS/Safety device using Arduino and GSM Technology" involves designing and implementing a real-time safety system using Arduino and GSM modules. The study used a combination of hardware and software components , including an Arduino microcontroller, GPS module, and GSM module, to develop the safety system.

The first step in the methodology was to acquire and test the required hardware components, which involved selecting and connecting the Arduino microcontroller, GPS module, and GSM module. Next, the software was developed using Arduino programming language to integrate the hardware components and ensure the proper functioning of the system.

The study conducted experiments to evaluate the accuracy of the GPS module and the effectiveness of the GSM module in sending location- based alerts to emergency contacts. The experiments also tested the panic button's ability to trigger a manual emergency alert.
Finally, the study conducted a user acceptance test to assess the system's usability and effectiveness in providing a reliable personal safety solution for women.
The test involved participants using the system in different scenarios, such as walking alone at night or in crowded areas and providing feedback on their experience using the system.
Overall, the methodology used in this study involved designing and implementing a real-time personal safety system using a combination of hardware and software components conducting experiments and user acceptance tests to evaluate the system's performance and effectiveness.



IV. Need and Significance

The need and significance of the "SOS/Safety device for using Arduino and GSM Technology" study lies in addressing the growing safety concerns for women in public spaces. Women are often subjected to violence, harassment, and other forms of physical and emotional abuse in public spaces. Hence, there is a pressing need for a reliable personal safety solution that can help women feel more secure and protected.

The study proposes a real-time personal safety system that uses Arduino and GSM technology to provide location - based alerts to emergency contacts in case of an emergency. The system also includes a panic button for manual alerts, allowing women to call for help in case of danger or threat.

The significance of the study lies in the use of innovative technology to address a critical social issue. The study provides an affordable and effective solution to help women feel more secure and confident while traveling alone or in public spaces. Th system's real-time location tracking feature and emergency alerts can help women get timely assistance to support during an emergency.

Overall, the study's significance lies in potential to contribute towards creating a safer and more inclusive society, where women can enjoy equal rights and opportunities without the fear of violence or harassment.

V. Conclusion

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The suggested system study offers a practical solution to address the growing safety concerns for women in public spaces. The proposed system using Arduino and GSM technology provides an affordable and effective way to ensure women's safety by sending location - based alerts to emergency contacts during an emergency.

The study's significance lies in its potential to contribute towards creating a safer and more inclusive society, where women can enjoy equal rights and opportunities without the fear of violence or harassment. The system's real-time location tracking feature and emergency alerts can help women get timely assistance and support during an emergency.

Overall, this study is an essential step toward addressing the safety concerns of women and improving their overall well-being. The study provides a foundation for future research and development of more advanced personal safety systems to ensure the safety and security of women in public s paces.

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