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Personal Device Assistance for Woman Safety

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Abstract: ***This Paper presents a women safety detection system using GPS and GSM modems. The system can be interconnected with the alarm system and alert the neighbours. This detection and messaging system is composed of a GPS receiver, Microcontroller and a GSM Modem. GPS Receiver gets the location information from satellites in the form of latitude and longitude. The Microcontroller processes this information and this processed information is sent to the user using GSM modem A GSM modem is interfaced to the MCU. The GSM modem sends an SMS to the predefined mobile number. When a woman is in danger and in need of self-defence then she can press the switch which is allotted to her. By pressing the switch, the entire system will be activated then immediately a SMS will be sent to concern person with location using GSM and GPS.***
Keywords: GSM, GPS, Woman Safety, Security, Self defence, SMS.

I. INTRODUCTION

Security is the condition of being protected against danger or loss. In the general sense, security is a concept similar to safety. The nuance between the two is an added emphasis on being protected from dangers that originate from outside. Individuals or actions that encroach upon the condition of protection are responsible for the breach of security. The word "security" in general usage is synonymous with "safety," but as a technical term "security" means that something not only is secure but that it has been secured. This project is designed with RASBERRY PI. This Project presents a women safety detection system using GPS and GSM modems. The system can be interconnected with the alarm system and alert the neighbors. This detection and messaging system is composed of a GPS receiver, Microcontroller and a GSM Modem. GPS Receiver gets the location information from satellites in the form of latitude and longitude.



Fig 1.1: Delhi Police QR Code App for Better Women Safety.

The Microcontroller processes this information and this processed information is sent to the user using GSM modem. A GSM modem is interfaced to the RASPBERRY PI. The GSM modem sends an SMS to the predefined mobile number. When a woman is in danger and in need of self-defence then she can press the switch which is allotted to her. By pressing the switch, the entire system will be activated then immediately a SMS will be sent to concern person with location using GSM and GPS. This project uses regulated input to the circuit is applied from the regulated power supply. The a.c. input i.e., 230V from the mains supply is step down by the transformer to 12V and is fed to a rectifier. The output obtained from the rectifier is a pulsating d.c voltage. So in order to get a pure d.c voltage, the output voltage from the rectifier is fed to a filter to remove any a.c components present even after rectification. Now, this voltage is given to a voltage regulator to obtain a pure constant dc voltage.

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II. RELATED STUDY

Let me start this IoT tutorial by introducing the person who coined the term "Internet of Things". The term "The Internet of Things" (IoT) was coined by Kevin Ashton in a presentation to Proctor & Gamble in 1999. He is a co-founder of MIT's AutoID Lab. He pioneered RFID (used in bar code detector) for the supply-chain management domain. He also started Zensi, a company that makes energy sensing and monitoring technology. So, let me first take you through a quote by Kevin Ashton, which he wrote in 2009 for RFID journal. This will help you in understanding IoT from its core. If we had computers that knew everything there was to know about things using data they gathered without any help from us we would be able to track and count everything, and greatly reduce waste, loss and cost. We would know when things needed replacing, repairing or recalling, and whether they were fresh or past their best. We need to empower computers with their own means of gathering information, so they can see, hear and smell the world for themselves, in all its random glory. The above Kevin's quote would have given you an idea about the ideologies behind the development of IoT. Let's now try to further simplify this term and understand IoT fundamentally. After this, we will be moving forward and looking towards the benefits of IoT. Now you would be wondering what the required hardware for preparing an IoT solution is. The answer to this question is, you'll first require sensors that will sense the environment, then you require a remote dashboard to monitor your output and display it in a clearer & conceivable form. At last, you will require a device with the capability of serving & routing. The key task of the system would be detecting specific conditions and taking actions accordingly. One thing to keep in mind is securing the communication between the devices and the dash board. Some of the common sensors that you are surrounded by are accelerometers, temperature sensors, magnetometers, proximity sensors, gyroscopes, image sensors, acoustic sensors, light sensors, pressure sensors, gas RFID sensors, humidity sensors & micro flow sensors. Nowadays we also have many wearable devices like smart watches, shoes & 3D glasses. This is the best example of a smart solution. 3D glasses adjust television's brightness and contrast according to your eye and your smart watches keeps track of your daily activities and fitness.

But I feel the most important device which has tremendously contributed to IoT is the cell phones. Mobile apps have immensely contributed to revolutionizing the technology world. Cell phones are already encased with applications and sensors that reveal lots of information about its user. It has Geo-location information, it can sense and trace light condition, the orientation of your device and a lot more information. It also comes with multiple connectivity options like Wi-Fi, Bluetooth and cellular that helps them to communicate with other devices. Thus, due to these default qualities of cell phones, it is the core of the IoT ecosystem.

Today, Smartphone can interact with smart watch and fitness band to further ease and enhance the user experience. IoT uses multiple technologies and protocols to communicate with devices based on the requirements. The major technologies & protocols are Bluetooth, wireless, NFC, RFID, radio protocols and WiFi-Direct. Among from all the works we can found some of the drawbacks as follows. All the existing systems must be connected to the GPRS service to work properly, hence cannot be used during emergency if there is no internet connectivity.ere is no hidden camera detector which is portable to ensure our privacy. Also the Monitoring was tedious and Mischance in arriving rate.

III. METHODOLOGY

The proposed system was implemented using Raspberry Pi 3,Sensor and Buzzer along with Linux Operating System.In this proposed system, Raspberry pi is installed with the night vision camera which help the system to go for the automation and help to find the human or any problem detected using the sound sensor and according to the sound produced it automatically capture the image and send it to user using IOT technology. The vision camera captures the live images and videos.

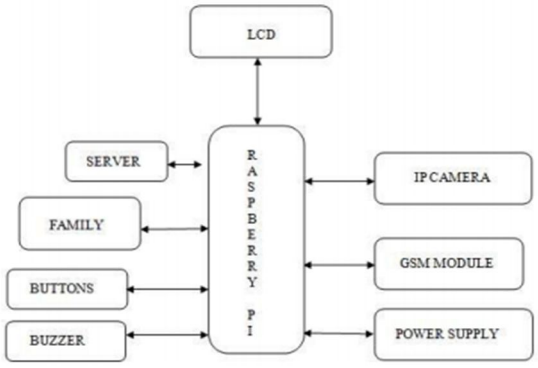


Fig.3.1.Block diagram.

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The technical issue usually raised during the feasibility stage of the investigation includes the following:

1) Does the necessary technology exist to do what is suggested.
2) Do the proposed equipments have the technical capacity to hold the data required to use the new system.
3) Will the proposed system provide adequate response to inquiries, regardless of the number or location of users.
4) Can the system be upgraded if developed.
5) Are there technical guarantees of accuracy, reliability, ease of access and data security.

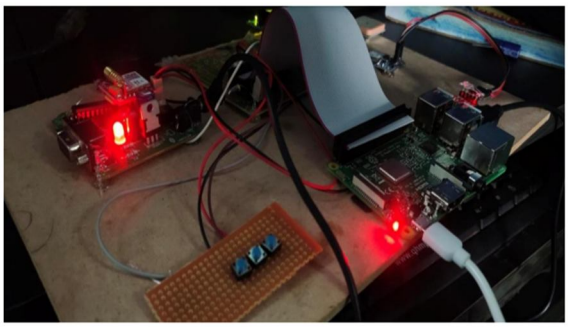


Fig.3.2. Hardware Kit Image.

Earlier no system existed to cater to the needs of 'Secure Infrastructure Implementation System'. The current system developed is technically feasible. It is a web based user interface.



Fig.3.3 .Initially Device in Normal Condition.

Thus it provides an easy access to the users. The database's purpose is to create, establish and maintain a workflow among various entities in order to facilitate all concerned users in their various capacities or roles. Permission to the users are granted .Therefore, it provides the technical guarantee of accuracy, reliability and security. The work for the project is done with the current equipment and existing software technology. This project clearly uses two main modules GSM and a microcontroller.

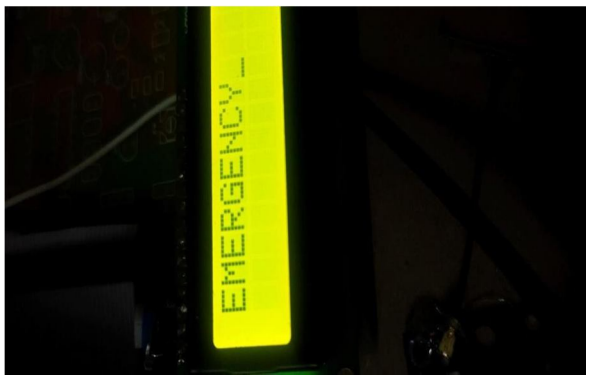


Fig.3.4.The Device Response when it found Emergency Condition.

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Fig.3.5.The Device got GPS Location when it found Emergency Condition.

Whenever the user knows that he/she in risk will press the button which was placed in device that sends the exact location of user in the form of messages through gsm and at the same time an image will be captured by using camera which was placed on device and later the image will be uploaded to the server along with location,where the server can be accessed by an user id and password. And also the spectating person of user can also know the location of user without user permission by sending a text msg ”*LOC#” to the GSM module and after GSM module receiving the reply from person it again passes the information and all these process will be found on LCD display.

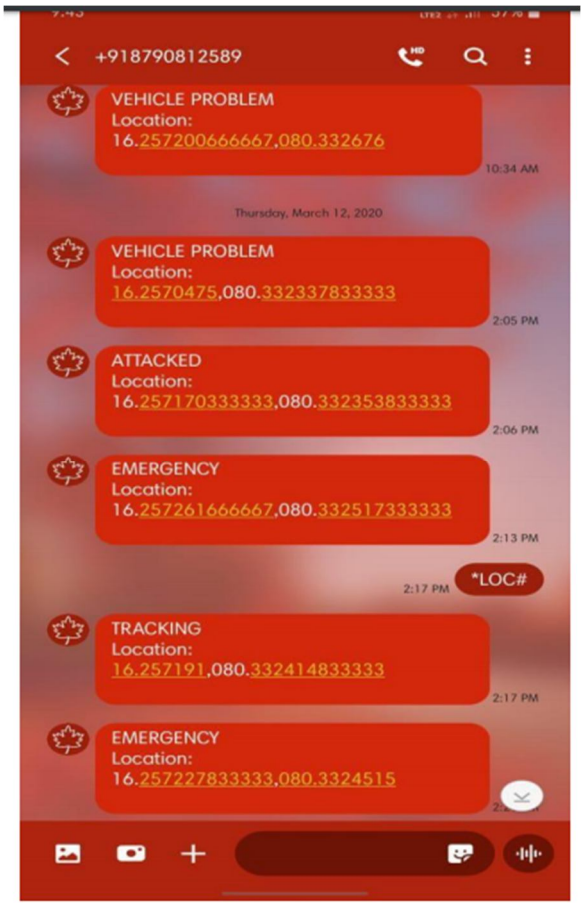


Fig.3.6. Output results.

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A. Algorithm

1) Initialize GPS sensor with 9600 baud rate.
2) Connect GPS TX Pin connected to raspberry pi.
3) Once power is on it takes 3 min to 5 min to activate gps sensor.
4) GPS sensor is giving different data like GPGGA, GPGSV, and GPGSA
5) In that we require GPGMC.
6) From that we have to extract the required data.
7) Finally display the data on the LCD display.

B. Advantages

1) Sophisticated security.
2) Monitors all hazards and threats.
3) Alert message to mobile phone for remote information.
4) Mobile number can be changed at anytime.

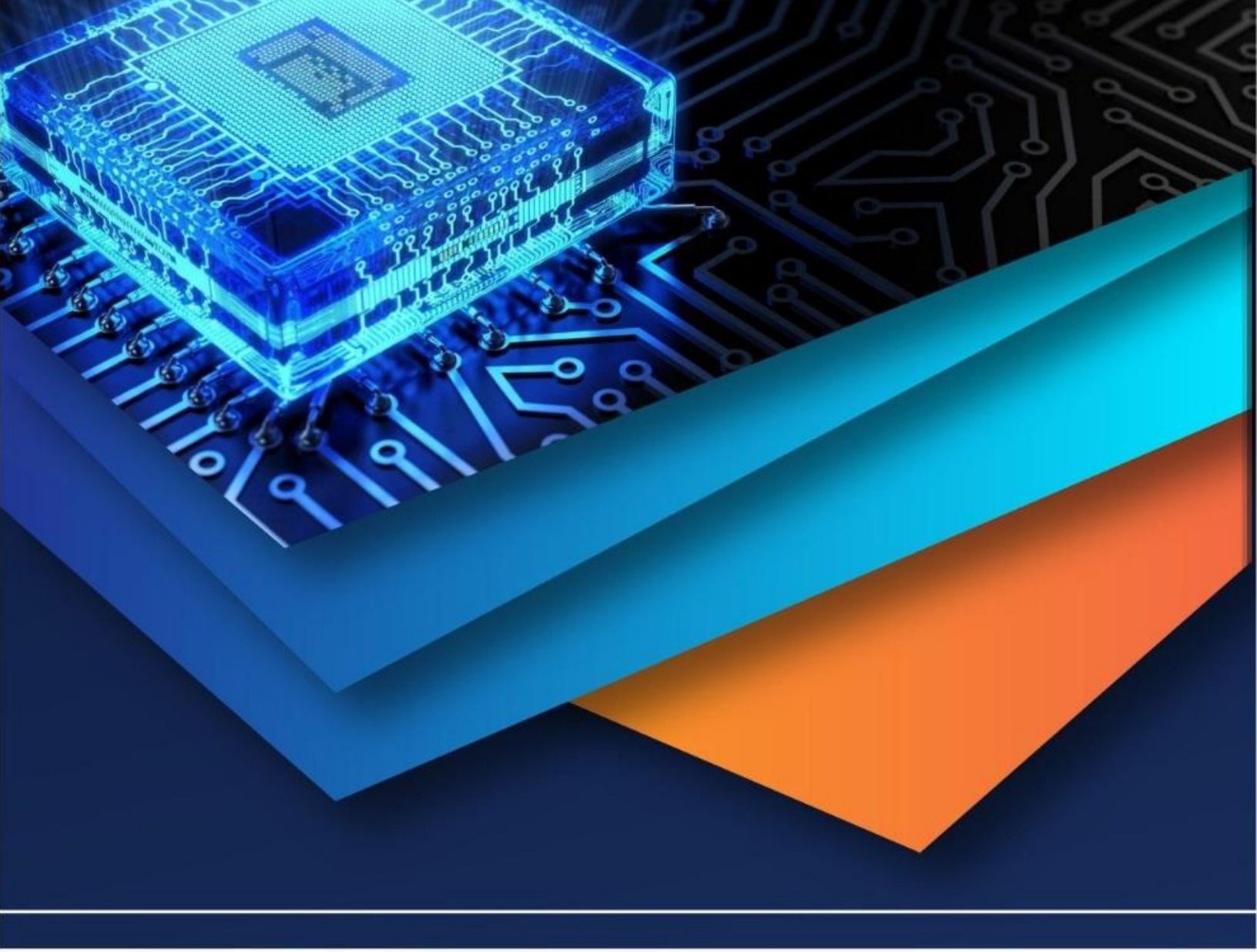
IV. CONCLUSION

Our effort behind this project is to design and fabricate a gadget which is so compact in itself that provide advantage of personal security system the emergency response system which is helpful for women in the incidents of crime. It is low cost system which can and provide immediate alert in case of crime against women. This provides women security. Being safe and secure is the demand of the day.

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