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Emergency Device Using Arduino

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ABSTRACT: The proposed system is implemented using a real time wireless network for Safety Deice system is of lossless data transmission over several minutes Crack inspection is an important task in the helping the victim in trouble. The advancement in wireless technology has provided motives to authors to develop the wireless network based Emergency Device monitoring system.

This paper presents a prototype of a novel self-powered wireless system for applications of structural Safety monitoring of Womens,Girls,as well as teenagers. From the above designed project.

It can be concluded that we are able to transmit the data which is sensed from remote button to the nearby police station by using wireless transmission technology GSM.it is much more easy to update registered mobile numbers as per need as well.

It is completely integrated so that it is possible to track anytime from anywhere. This system has many advantages such as large capability, wide areas range, effective, strong expandability and easy to use. Upgrading this setup is very easy which makes it open to future a requirement which also makes it more efficient.

KEYWORDS: Emergency Device Using Arduino.

I.INTRODUCTION

As the threat against the women increases rapidly, here we propose a system in order to provide a security precaution so that women never feel helpless while facing social challenges.

At present days, women's security plays an important role; it has always been a concern for many people and committees around the world.

- This model quite concerts to a wireless technique in the form of embedded device namely women safety device.
- Emergency alert can prevent the victim from any physical or sexual assault.
- The device can be called as "Virtual Friend" is especially designed for the women suffering.
- The basic approach of the use of arduino is sending and receiving data by the GSM shield provided in the arduino board.
- This model will be having two parts receiver and transmitter from which transmitter will be present in the form of wrist band so that it will be easy to press button quickly.

II.NECESSITY

Rising Concerns for Women's Safety:Women's safety has become a pressing concern in many societies due to the increase in incidents of harassment, assault, and violence against women. There is a clear necessity to develop effective solutions that empower women and provide them with a means to protect themselves in threatening situations.

Necessity for Women Safety Device Using Arduino Project:

1.Timely Response and Assistance: During emergencies, prompt response and assistance are crucial for ensuring the safety of women. By incorporating features such as panic buttons, GPS tracking, and communication modules, the Arduino-based safety device can quickly alert authorities or trusted contacts, enabling them to respond swiftly and effectively.

2.Discreet and Accessible Solution: It is important to develop safety devices that women can use discreetly without drawing attention to themselves, especially in situations where direct confrontation could escalate the danger. The Arduino project allows for the creation of compact, portable, and easily accessible safety devices that can be concealed within everyday items or worn as discreet accessories.



3. Empowering Women with Courage: The presence of a safety device can instill a sense of confidence and empowerment in women, knowing that they have a reliable tool to call for help in times of need. By providing women with a tangible means of protection, the Arduino-based project aims to empower them and encourage to navigate public spaces with greater assurance.

4. Technological Advancements: The rapid advancement of technology, particularly in the field of microcontrollers like Arduino, provides an opportunity to create innovative solutions for women's safety. By leveraging these technological advancements, the Arduino project can integrate multiple functionalities into a single device, making it more efficient and effective.

5. Accessibility and Economical: Arduino-based projects are known for their accessibility and affordability. Arduino boards and components are widely available and relatively inexpensive, making them suitable for creating safety devices that can reach a larger population, including women from diverse socio-economic backgrounds.

6. Public Awareness and Neutralization: The visibility and availability of safety devices can contribute to raising public awareness about women's safety issues and the importance of taking proactive measures. By showcasing the Arduino project and its functionalities, it can help initiate discussions and encourage a collective effort towards creating safer environments for women.

III. LITERATURE SURVEY

- It becomes apparent when we look out where in the identity of woman has been misunderstood by a few individuals, so an attempt must be made in order that which doesn't harm their social status.
- Device will reduce the harassment cases.
- It consists of a wearable safety device having sensors and an emergency button which when activated sends an alert message with location information to the victim's family and nearby police station.
- The projects 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.
- From the above mentioned product can run over the suffering of every woman in the world about her assurance and security.
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IV. SYSTEM DESCRIPTION

With the advancement of technology and for better functionality of the product new versions of the device can be introduced. The present system is efficiently working, but still to increase the functionality of the device, various other modules can be added without majorly affecting the present system.

- By pressing the switch, the entire system will be activated.
- Then immediately the signals are sent to the Arduino board, it processes these signals and immediately the information is sent to the user.
- A GSM modem is interfaced to the Arduino.
- The GSM module sends an SMS to the predefined mobile number with location of the victim using GPS and GSM.
- Whenever, the panic button is pressed by the victim the receiver receives the signals and the buzzer sounds and surrounding people can also help her.
- The location of the victim would be displayed on the receiver's Mobile Or on registered phone number.



V.PROPOSED METHODOLOGY

The aim's of this research is to reduce the risk of women,teenagers,and girls safety as well,that can regreat of failure to help anyone anywhere anytime introuble.

Due to the ability of fault-tree analysis (FTA) to qualitatively and quantitatively assess victim is in a trouble, it is utilized to develop the risk assessment process for this research. An advantage of FTA qualitative assessment is its ability to visually model events leading to failure and their relationships, which can be used to define the most likely events to cause trouble.

The advantage of quantitative assessment is its ability to use a variety of input data to define expected occurrence probabilities of initiating events, which allows the assessment to take place prior to the helps to peoples, if desired. The FTA process developed is used to identify the peoples are in a trouble, the events leading to trouble, and countermeasures to initiating events.

Development of a process that is easily help to womens,girls as well as teenagers by can help them to make informed decisions about their helping plans and the instant help in minimum time.

VI.DESIGNANALYSIS

In the period of making of this Device we most of the time just work on make **device more compatible,to easy to carry** with us.that's why we used Arduino Nano.Arduino Nano is a small, compatible, flexible and breadboard friendly Microcontroller board, developed by Arduino.cc in Italy, based on ATmega328p.

Arduino Nano is simply a **petiteinterpretation of Arduino (UNO)**, thus the pair has almost similarperformance.It comes with an operating voltage of 5V,however, the input voltage can vary from 7 to 12V.Arduino Nano Pinout contains 14 digital pins, 8 analog Pins, 2 Reset Pins & 6 Power Pins.

Every Digital & Analog Pins are assigned to multiple functions but their main function is to be assigned as input or output. The Arduino software will need to be programmed to control the various components of the safety device. The Arduino board will serve as the central control unit for the safety device. The GPS module will provide the user's location data, which can be used for tracking and distress signaling. The GSM module will be used to send distress messages containing the location information to predefined contacts.

We also used SIM800A Quad-Band GSM/GPRS Module with RS232 Interface is a complete Quad-band GSM/GPRS solution in an LGA (Land grid array) type which can be embedded in the customer applications. SIM800A support Quad-band 850/900/1800/1900 MHz, it can transmit Voice, SMS and data information with low power consumption.

With a **Small size, it can fit into slim and compatible demands of custom design**. Featuring and Embedded AT, it allows total **cost savings** and fast time-to-market for customer applications.



VII. BLOCK DIAGRAM

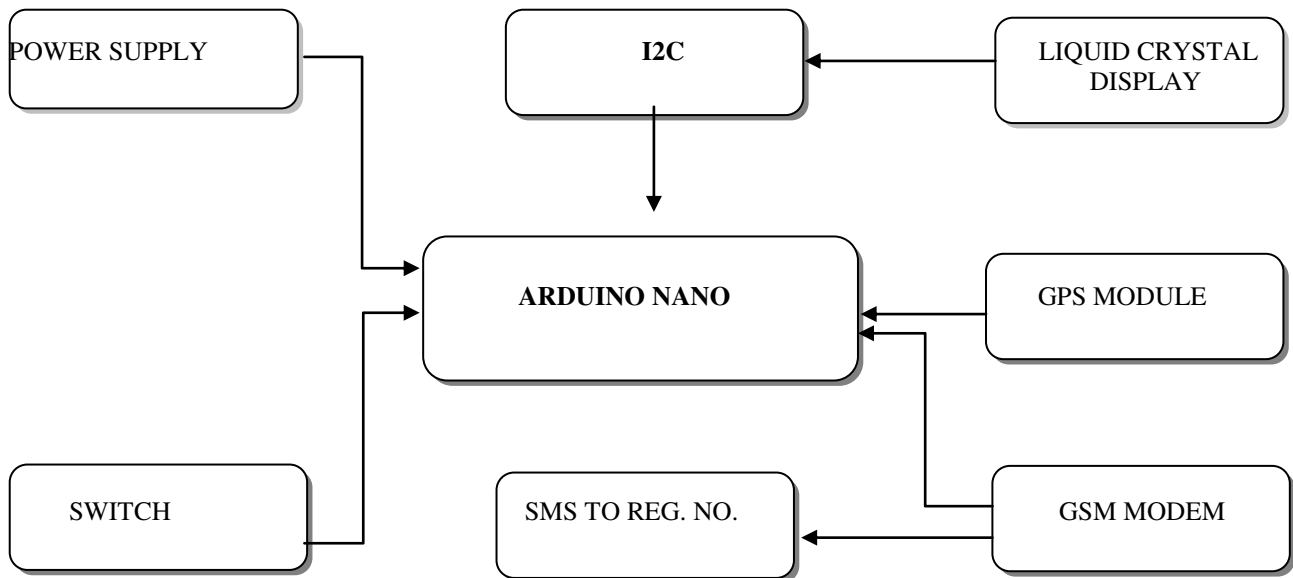


FIG.1.BLOCK DIG.

The SIM800A modem has a SIM800A GSM chip and RS232 interface while enables easy connection with the computer or laptop using the USB to the Serial connector or to the micro-controller using the RS232 to TTL converter. Once you connect the SIM800A modem using the USB to RS232 connector, you need to find the correct COM port from the Device Manager of the USB to Serial Adapter.

Then you can open Putty or any other terminal software and open a connection to that COM port at 9600 baud rate, which is the default baud rate of this modem. Once a serial connection is open through the computer or your micro-controller you can start sending the AT commands. When you send AT commands for example “AT\r” you should receive back a reply from the SIM800A modem saying “OK” or other response depending on the command sent.

Make a Voice call:

ATD+91XXXXXXXXXX;

Send Message:

AT+CMGF=1

AT+CMGS="\ +91XXXXXXXXXX\r"

Message goes here

(char)26

Receive Message:

AT+CNMI=2,2,0,0,0

AT+CMGF=1

Redial call:

ATDL

VIII.CIRCUIT DIAGRAM

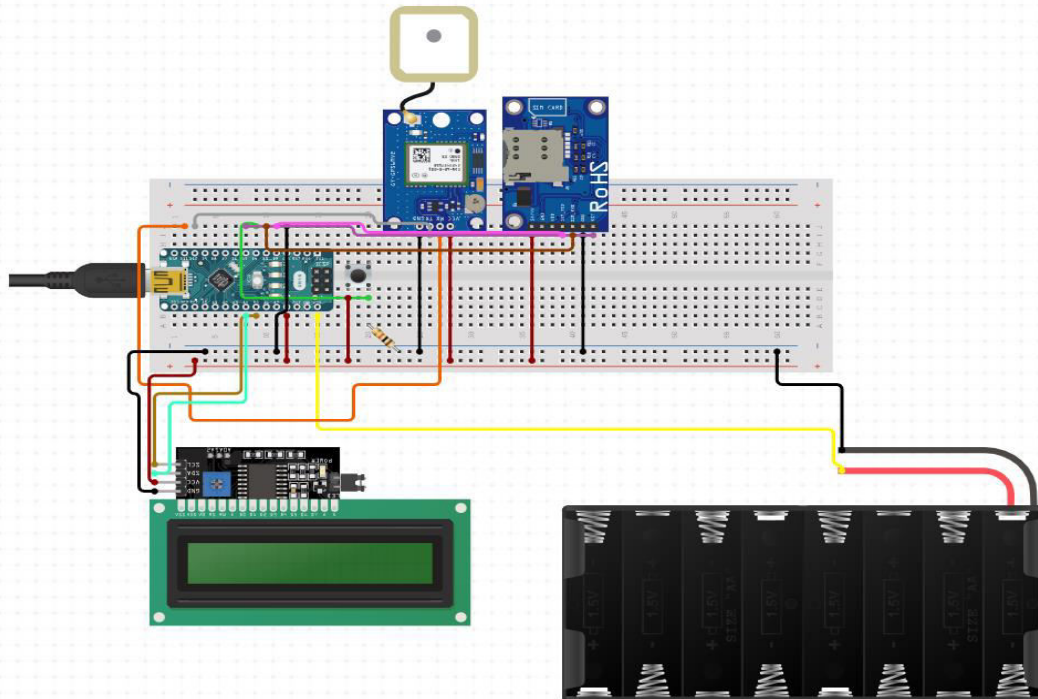


FIG.2.CIRCUIT DIG.

IX.SOFTWARE DESIGNAND ALGORITHM

Software section :

Step 1: Start.

Step 2: Switch ON the 12V power supply given to the GSM (SIM800A) Modem.

Step 3: Emergency switch is pressed.

Step 4: Firstly Buzzer starts sounding at the side of victim.

Step 5: If GPS receives signal, GPS will start calculating the current latitude and longitude values of the victim and send it as a SMS to the registered mobile number using GSM module.

Step 6: If the person is changing her position, get the last location from the GPS and send to GSM module.

Step 7: GPS module tracks the continuous location of the victim, So that whoever have received message from victim can track that location even if it is changing.

Step 8: Device will not stop until and unless we did not stop the device.

Software algorithm (Steps):

- Start the code by including all the required library files in the code like TinyGPS++.h for NEO6M GPS board, SoftwareSerial.h for defining the Software serial pins.
- Here TinyGPS++.h library is used to get the GPS coordinates using the GPS receiver module. This library can be downloaded here.



XII.CONCLUSION

This project presents a prototype of a novel self-powered wireless system for application of safety alerts. From the above designed project. it can be concluded

That we are able to transmit the data which is sensed from remote soldier to the nearby police station and registered mobile numbers by using wireless transmission technology GSM.

It is completely integrated so that it is possible to track anytime from anywhere.

Upgrading this setup is very easy which makes it open to future a requirement which also makes it more efficient.

From the above mentioned product can runover the suffering of every woman in the world about her assurance and security.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.

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