



Smart Device for Women Safety with Automatic Location Tracking

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III. HARDWARE ARCHITECTURE

Abstract— In the current global situation, the prime focus in each girl's intellect is usually about her safety and security. Each young lady is constantly worried about her safety on the roads. This paper recommends an innovative new approach to solving this problem. The status of women has changed throughout history, with women now playing an important role in all areas of life. Despite this progress, women are still not treated fairly when it comes to their treatment both openly and locally. The concept of "women's safety" is important to address in India following high levels of crime against women. This is in hopes of controlling the violations and providing safety for women.

Keywords— *Arduino Board, GPS/GSM, Smart phone application.*

I. INTRODUCTION

There are many challenges related to women's security today, as many people within society are still reticent to provide them with the same level of protection and support as men. The rate of crime is increasing every day. Schools and workplaces require high levels of security to protect children and women. Smartphones are playing an important role in guaranteeing the security of places. Portable applications can provide guidance to the control room of adjacent police station during a crisis. The literature seems that location-based devices are available in advertising, but does not provide a complete solution to the problem. The solution to this problem is to plan an IoT device that detects the women's area and surroundings and in case of emergency should to send the alarm to the guards automatically.

The Internet of Things (IoT) plays an important role in our daily lives. The main difference between IoT and embedded frameworks is that for embedded frameworks a set of protocols/software is built into the chip whereas IoT gadgets can look around to find gadgets and make decisions. A sharp device that can Advances in sensor innovation, accessibility of internet related gadgets. Information discovery computation ensures that IoT devices can respond immediately to emergencies without human intervention.

II. EASE OF USE

Panic Button.

The primary purpose of this device is to act as a crisis device for women who are potentially at risk of assault. A woman wearing this gadget presses the panic button in case of danger. An SMS with perimeter and longitude coordinates is sent to a ready-made multi-purpose number, informing you of the threat and area. You can view the facilities you received on Google Maps to identify women's areas and provide appropriate assistance.

- Arduino Nano
- SIM900 Modem
- NEO6M GPS module
- 433 MHZ RF Transmitter and Receiver
- Button
- Battery
- Breadboard
- Jumpers

Here we are creating a band that a woman can wear and use to send an SOS emergency text message to the police or someone next to her current area. Using this data, police can rescue injured people from the area.

A. GPS Module:



Figure 1: GPS Model

Here we use the GPS module NEO6M. The NEO-6M GPS module is a well-known GPS collector with a built-in ceramic antenna that provides robust satellite tracking capabilities. This receiver can find and track up to 22 satellites and detect any location in the world. The module's network status can be monitored with an integrated flag indicator. An information boost battery is included so that the module can retain information if most power supplies are accidentally disconnected.

SMART DEVICE FOR WOMEN SAFETY WITH AUTOMATIC LOCATION TRACKING

B. Features:

- working voltage: (2.7-3.6) V DC
- Operating Current: 67 mA
- Baud rate: 4800-230400 bps (9600 Default)
- Communication Protocol: NEMA
- Interface: UART
- External antenna and internal EEPROM.

C. GSM Module SIM900:

It is a GSM/GPRS compatible quad-band mobile phone operating at frequencies of 850/900/1800/1900 MHz and can be used for various applications such as Internet access, voice calls, sending and SMS retrieval. Repeat groups for GSM modems can be specified with AT commands. The baud rate can be set from 1200 to 115200 using AT commands. GSM/GPRS modems have an internal TCP/IP stack that allows them to connect to the Internet via GPRS. It is usually an SMT sorting module, and it has a very powerful single-chip processor combined with AMR926EJ-S core, which is widely used in various mechanical devices.

Technical Specifications:

Supply Voltage: 3.4V-4.5V
Power Saving Mode: Power consumption in sleep mode = 0.5mA
Frequency Band: SIM900A Dual Band: EGSM900, DCS1800.
Operating temperature: -30°C to +80°C Supports MIC and audio input
Speaker input Supports
UART interface Firmware upgrade via debug port

D. Connection Diagram:

The women's safety frame with GPS tracking and warnings can be divided into two segments like the transmitter and collector areas. The wiring diagram for each section is represented as follows:

I. Transmitter Section:

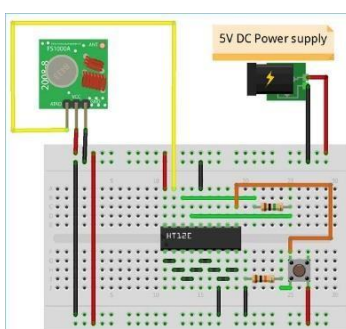


Fig 2. RF Transmitter

The RF transmitter part has an SOS button that works in conjunction with a 433MHz RF transmitter that can send information wirelessly to the receiver part. The reason for making it two pieces here is to make the transmitter module smaller so that it can be worn as a bracelet. A wiring diagram for the transmitter section is shown below.



Fig 3. Circuit chart for RF Transmitter

II. Receiver Section:

The RF receiver sends this data to the Arduino via computer controlled pins. At this point the Arduino Nano gets the flag and uses the flashed program to process it. When the victim presses her SOS button on the transmitter part, a Hello flag is generated and passed to her Arduino side, and the Arduino side sends the flag along with her existing GPS coordinates to her SIM900 modem. . gain. Send SMS to registered devices. The client was housed in a microcontroller using a NEO6M GPS module. Here is the schematic of the collector side:

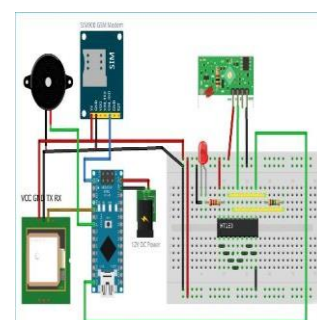
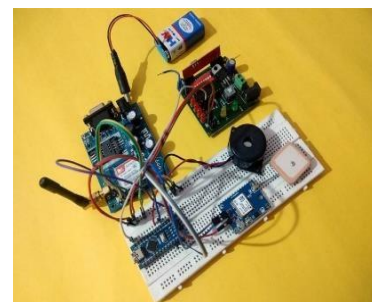


Fig 1. RF Receiver

SMART DEVICE FOR WOMEN SAFETY WITH AUTOMATIC LOCATION TRACKING

III. PROGRAMMING FOR ARDUINO:

- Now that we've effectively assigned the device, it's time to program the Arduino Nano.
- Add the required library entries to your code. B. TinyGPS++.h for the NEO6M GPS board. SoftwareSerial.h to define serial pins for program
- Here we use the TinyGPS++.h library to generate a GPS array using the GPS collector module.
- Here is the relevant pin of the GPS module and its default baud rate (9600 in this case). It also characterizes the computer program's serial pins that the GPS uses to communicate with the Arduino. • Now pronounce the TinyGPSPlus course objects. It also uses the previously declared pins as arguments to characterize objects of the SoftwareSerial class.
- Declare all enter and output pins in setup(). Next, initialize the hardware serial and software program serial features and specify the default baud rate (9600 on this case). • Inside the loop (), the virtual enter popularity on pin 12 is study and saved in a variable. If this popularity is HIGH, it shows that the transfer is pressed at the transmitter side, the Arduino activates the buzzer and additionally calls the sendms() feature to ship an SMS with the placement data.
- Code was written to constantly check incoming data from the GPS module on the serial terminal to receive GPS coordinates. If valid data is found for GPS coordinates, these are stored as latitude and longitude in two separate variables.
- Finally, write a function to send an SMS to the registered number. Here the SIM900 GSM modem is switched to SMS text mode with the command AT + CMGF. The recipient number is then defined using the format shown. You can replace this with your mobile phone number. Messages with position variables are sent over the serial terminal.

IV. ARDUINO SECURITY DEVICE FOR WOMEN WITH GPS TRACKING AND ALERTS.

After pressing the SOS button, a buzzer will begin to ring and an SMS will be sent to an approved number containing the perimeter and longitude of the accident victim's area. A screenshot of the output is below.

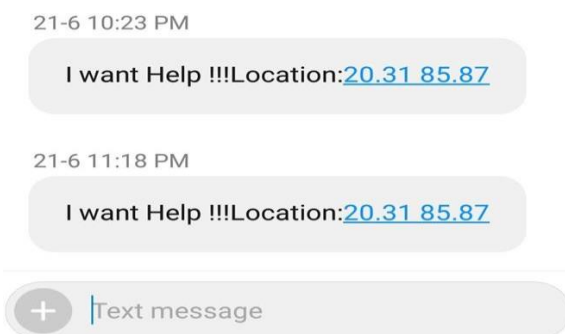


Fig 4. Snapshot of SMS received on authorized number.

CONCLUSION

Women's Security Gadget is the leading conservative solution to the problems facing women in India. It gives a real-time indication to trusted contacts, but this can be a nuisance that allows you to anticipate larger losses. Useful for device miniaturization. Because it uses low control, rechargeable batteries can be used to make the device more portable. Current measures are not strong enough to prevent women from being criminalized. This operation makes it possible to immediately identify the experts involved if they are at risk. Our framework can be a client's neighborhood gadget that demonstrates emergency safety preferences suitable for women at basic times.

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