ECS2002– ENGINEERING CLINICS PROJECT

WOMEN SAFETY SECURITY SYSTEM

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ABSTRACT

The **Women Safety and Security System** is a comprehensive solution designed to address the growing concerns about women's safety in society. This project leverages advanced technologies, such as GPS tracking, real-time monitoring, and mobile applications, to ensure immediate assistance during emergencies. The system is designed as an integrated platform combining hardware and software components to enhance women's safety in both public and private spaces.

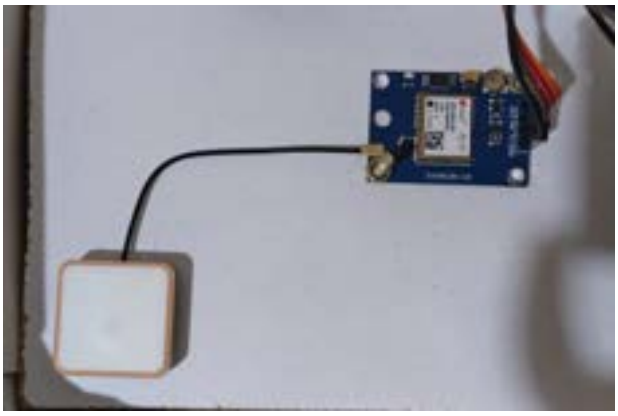
The proposed system incorporates wearable devices (e.g., smart bands or pendants) equipped with panic buttons or sensors that can be activated in distress situations. Upon activation, the device sends an emergency alert to pre-registered contacts, law enforcement agencies, or local security networks, along with the user's real-time location. The system also features predictive analysis powered by artificial intelligence to detect potentially unsafe environments or situations, enabling preventive actions.

Key objectives of the system include reducing response time during emergencies, increasing awareness of personal safety, and empowering women to navigate their surroundings with confidence. This project also addresses critical challenges such as ensuring user privacy, maintaining low operational costs, and enabling offline functionalities in areas with limited connectivity.

Through the integration of IoT, GSM technology, and mobile applications, the Women Safety and Security System offers a scalable, efficient, and user-friendly solution to mitigate safety risks. The project envisions a future where such systems are widely adopted, contributing to societal progress by fostering equality, empowerment, and freedom for women in all spheres of life.

INTRODUCTION

GPS MODULE:



The GPS module (e.g., NEO-6M or similar) provides real-time location data (latitude and longitude) of the device. This data is processed by the Arduino Uno, which collects and updates the current position of the tracked device.The GPS coordinates are sent to the Arduino, which processes the data to calculate the current location.

ARDUINO UNO:

Arduino boards are affordable, costing under ₹4,000, and are widely accessible as the software is compatible with Windows, macOS, and Linux. The programming environment is user-friendly for beginners while still versatile enough for advanced users, making it a great tool for learning and teaching. As an open-source platform, both the software and hardware can be customized, extended with C++ libraries, and

support deeper learning through AVR-C. The hardware, based on Atmel microcontrollers, is licensed under Creative Commons, allowing users to modify and improve designs. These features make Arduino an adaptable, accessible choice for users of all experience levels.

SIM 900 MODEM

The **SIM900 modem** is a vital component in a Women Safety and Security System, enabling emergency communication through SMS and calls. When a distress signal is triggered, it sends alerts, including the user's real-time location, to pre-registered contacts or authorities via GSM networks. Its quad-band GSM support ensures global connectivity, while offline functionality allows operation in areas without internet. Compact and power-efficient, it integrates seamlessly into wearable devices or compact modules. The SIM900 uses AT commands for easy communication with microcontrollers like Arduino.

CONNECTING WIRES :

Connecting wires are crucial in electronic projects as they enable communication between components, ensuring reliable data and power transfer. In TrackIt, wires link the Arduino microcontroller, GPS, Wi-Fi modules, LED indicators, and buzzer, creating a cohesive system. High-quality wires minimize resistance and signal interference, enhancing device accuracy and responsiveness. Properly organized and insulated wires prevent short circuits, contributing to system safety and longevity**.**

BACKGROUND

In today's world, ensuring the safety of women has become a pressing concern due to the increasing instances of harassment, violence, and unsafe environments. Traditional safety measures, while helpful, often lack the immediacy and reliability needed during emergencies. The advent of technology presents an opportunity to create innovative solutions that can empower women and ensure their security.

This project focuses on leveraging communication technologies like the SIM900 GSM module, GPS tracking, and IoT-based devices to build a real-time, reliable Women Safety and Security System. The SIM900 modem plays a crucial role in enabling instant alerts, calls, and location-sharing to trusted contacts and authorities. Wearable devices and compact systems integrated with these technologies can provide discreet and effective solutions, even in offline or low-connectivity areas.

By addressing challenges like delayed response times and limited awareness, this system aims to create a safer environment for women, empowering them with confidence and ensuring that help is always just a trigger away. The project not only highlights the importance of safety but also showcases the potential of technology in addressing societal issues.

OBJECTIVE

Introduction

The primary objective of the Women Safety and Security System project is to provide a reliable, efficient, and accessible solution to ensure the safety of women in distress situations. The system aims to enable rapid emergency response through instant alerts, real-time location tracking, and communication with trusted contacts or authorities using GSM technology, such as the SIM900 modem. It focuses on integrating GPS tracking and wearable devices to provide discreet and user-friendly tools for women. Additionally, the project seeks to address challenges like privacy concerns, accessibility, and affordability, ensuring its widespread usability. By leveraging advanced technologies like IoT and AI, the system aims not only to respond to emergencies but also to predict and mitigate risks, empowering women with confidence and promoting awareness about safety solutions.

The objective of the Women Safety and Security System project is to develop a comprehensive solution that enhances women's safety by leveraging modern technology. The system aims to provide immediate assistance in emergency situations through real-time

alerts and location tracking, ensuring swift responses from trusted contacts or authorities. By integrating GSM technology, such as the SIM900 modem, and GPS modules, the project facilitates communication and precise location sharing, even in areas with limited connectivity. The system also focuses on user-friendly wearable devices, making it easy for women to activate the safety system discreetly. Additionally, the project strives to address challenges such as privacy concerns and affordability, ensuring the system is accessible to a broad audience. Ultimately, the goal is to create a sense of security and empowerment for women, promoting awareness and prevention of unsafe situations through technological innovation.

CONCLUSION

In conclusion, the Women Safety and Security System project represents a significant step towards enhancing the safety and well-being of women itoday's society. By integrating advanced technologies like GSM communication, GPS tracking, and wearable devices, the system ensures a swift and reliable response in emergency situations, providing women with a sense of security and control. The use of affordable, user-friendly devices ensures accessibility for all, while the system's ability to function in offline and remote areas makes it adaptableto various environments. Beyond responding to crises, the system also promotes prevention through predictive features, contributing to a safer and more aware society. Ultimately, this project highlights the power of technology to address critical social issues, empowering women and fostering a safer, more equal world.

FUTURE SCOPE

The future scope of the Women Safety and Security System project holds vast potential for further development and impact. In the coming years, the system can be enhanced with advanced AI and machine learning algorithms to predict and analyze potential risks based on user behavior and environmental factors. Integration with smart city infrastructure can provide a seamless connection with public surveillance and law enforcement, ensuring faster response times. Expanding the system to include real-time video streaming or facial recognition could improve incident identification. The system can also be scaled globally, with localized features tailored to different regions' needs. Increased collaboration with government and NGOs could drive widespread adoption, especially in underserved areas. Future versions may incorporate health monitoring features, such as detecting sudden distress signs or medical emergencies. Integration with mobile payment systems could help users alert authorities or access emergency services quickly. As

technology advances, the system could become more affordable, further increasing its accessibility. Ultimately, this project has the potential to evolve into a comprehensive platform for women's safety, fostering a global movement towards gender equality and security.

APPENDIX

```
#include <Wire.h>
#include <Adafruit_Sensor.h>
#include <Adafruit_ADXL345_U.h>
Adafruit_ADXL345_Unified accel = Adafruit_ADXL345_Unified(12345);
int xval,yval,zval,magnitude;
#include <TinyGPS.h>
TinyGPS gps;
float flat=0, flon=0;

#define buz A1
#define sw A0

void read_gps()
{
  bool newData = false;
  unsigned long chars;
  unsigned short sentences, failed;
  for (unsigned long start = millis(); millis() - start < 1000;)
  {
    while (Serial.available())
    {
      char c = Serial.read();
      if (gps.encode(c))
        newData = true;
    }
  }

  if (newData)
  {

    unsigned long age;
    gps.f_get_position(&flat, &flon, &age);

  }
}


void setup() {
  Serial.begin(9600);

  pinMode(sw,INPUT_PULLUP);

  accel.begin();
  pinMode(buz,OUTPUT);
  digitalWrite(buz,0);
```

```
}

void loop() {


 sensors_event_t event;
 accel.getEvent(&event);
 xval=event.acceleration.x;
 yval=event.acceleration.y;


 if(xval < -5 || xval>5 || yval<-5 || yval>5)
 {
  digitalWrite(buz,1);
  read_gps();
Serial.print("Person is in danger at
https://www.google.com/maps/search/?api=1&query=16.4971,80.4992,^0\n");
 // Serial.print("Person is in danger at
https://www.google.com/maps/search/?api=1&query=" + String(flat,6)+ "," +
String(flon,6)+"^0\n");
   delay(5000);
 }

 if(digitalRead(sw)==0)
 {
  digitalWrite(buz,1);
  read_gps();

  Serial.print("Person is in danger at
https://www.google.com/maps/search/?api=1&query=16.4971,80.4992,^0\n");
  // Serial.print("Person is in danger at
https://www.google.com/maps/search/?api=1&query=" + String(flat,6)+ "," +
String(flon,6)+"^0\n");
   delay(5000);
  }
 }
```