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# Person's Safety Device with GPS

using NodeMCU

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## Project Report

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## ABSTRACT:

With all the technology at our disposal today, creating a safety gadget for a person that will not only sound an emergency alarm but also communicate with their friends, family, or other concerned parties is simple. Here, we'll embed the switch secretly in their handbags or other things they use to send SOS emergency SMSes to anybody, including the police, along with their present position. Here, we're utilising an ESP8266, which can be connected to a GPS and GSM module to send SMS warnings and determine their location.

## ACKNOWLEDGEMENT:

We have taken efforts in this project. However, it would not have been possible without the kind support and help of many individuals and organizations. We would like to extend our sincere thanks to all of them. We are highly indebted to our faculty (***Dr. Prakash R***) for his guidance and constant supervision as well as for providing necessary information regarding the project & also for his support in completing the project. We would like to express our gratitude towards our parents for their kind co- operation and encouragement which helped us in the completion of this project. We would like to express our special gratitude and thanks to lab attendants for giving us such attention, guidance and time.

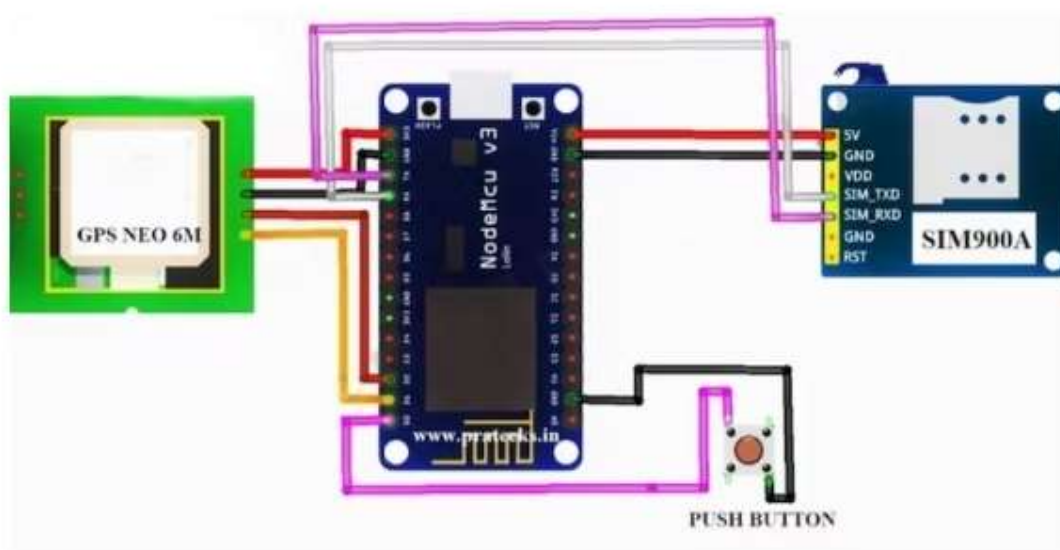
## PROJECT DESCRIPTION:

With the use of GPS and GSM modems, this project shows off a method for detecting person's safety. The system may be connected to an alarm system to notify the nearby residents. A GPS receiver, a microcontroller, and a GSM modem make up this detection and messaging system. Latitude and longitude are the two coordinates that the GPS receiver uses to determine its location. The GSM modem is used to send the processed information to the user when the microcontroller has finished processing it. The MCU is connected to a GSM modem. To the chosen cell phone number, the GSM modem sends an SMS. A woman can use the switch that is designated for her for self-defence when the person is in danger. By pressing the switch, the complete system is enabled, and an SMS containing the concerned person's position and GSM and GPS data is sent right away.

## COMPONENTS REQUIRED:

- NodeMCU ESP8266
- Pushbutton Switch
- GPS Module
- GSM Module SIM900A
- Buzzer
- Breadboard

## CIRCUIT DIAGRAM:



## CODE:

```
#include <SoftwareSerial.h>

#include <TinyGPS++.h>

static const int RXPin = 2, TXPin = 3;

static const uint32_t GPSBaud = 9600;

int m = 9740;

int y = 71;

TinyGPSPlus gps;

SoftwareSerial ss(RXPin, TXPin);

SoftwareSerial SIM900(7, 8);

int Buzzer = 4;

String textForSMS;

int Switch = 5;


String datareal;

String dataimaginary;

String combined;

int raw = 1000000;


String datareal2;

String dataimaginary2;

String combined2;


double longitude;

double latitude;


void setup()

{

    SIM900.begin(19200);
```

```

Serial.begin(9600);
ss.begin(GPSBaud);
delay(10000);
Serial.println(" logging time completed!");
randomSeed(analogRead(0));
pinMode(Switch, INPUT);
digitalWrite(Switch, HIGH);
pinMode(Buzzer, OUTPUT);
digitalWrite(Buzzer, LOW);

Serial.println(F("DeviceExample.ino"));
Serial.print(F("Testing TinyGPS++ library v. "));
Serial.println(TinyGPSPlus::libraryVersion());

Serial.println();
}

void sendSMS(String message)
{
  SIM900.print("AT+CMGF=1\r");
  delay(100);
  SIM900.println("AT + CMGS = \""+918830584864 "\"");
  delay(100);
  SIM900.println(message);
  delay(100);
  SIM900.println((char)26);
  delay(100);
  SIM900.println();
  delay(5000);
}

```

```

void loop()
{
    int reading;

    while (ss.available() > 0)
        if (gps.encode(ss.read()))
            displayInfo();

    if (millis() > 5000 && gps.charsProcessed() < 10)
    {
        Serial.println(F("No GPS detected: check wiring."));
        while (true);
    }

    if (digitalRead(Switch) == LOW)
    {
        displayInfo();
        latitude = gps.location.lat(), 6 ;
        longitude = gps.location.lng(), 6 ;
        long datareal = int(latitude);
        int fahad = ( latitude - datareal ) * 100000;
        long datareal2 = int(longitude);
        int fahad2 = (longitude - datareal2 ) * 100000;
        textForSMS.concat(fahad);
        //textForSMS = "Longitude: ";
        textForSMS.concat(datareal2);
        textForSMS = textForSMS + ".";
        textForSMS.concat(fahad2);
        //textForSMS = textForSMS + " Latitude: ";
        textForSMS.concat(datareal);
        textForSMS = textForSMS + ".";
    }
}

```



```

    sendSMS(textForSMS);
    Serial.println(textForSMS);
    Serial.println("message sent.");
    delay(5000);
}
else
    digitalWrite(Switch, HIGH);
    digitalWrite(Buzzer, LOW);
}
void displayInfo()
{
    Serial.print(F("Location: "));
    if (gps.location.isValid())
    {
        Serial.print(gps.location.lat(), 6);
        Serial.print(F(", "));
        Serial.print(gps.location.lng(), 6);
        Serial.print(" ");
        Serial.print(F("Speed:"));
        Serial.print(gps.speed.kmph());
    }
    else
    {
        Serial.print(F("INVALID"));
    }

    Serial.print(F(" Date/Time: "));
    if (gps.date.isValid())
    {
        Serial.print(gps.date.month());
        Serial.print(F("/"));
    }

```

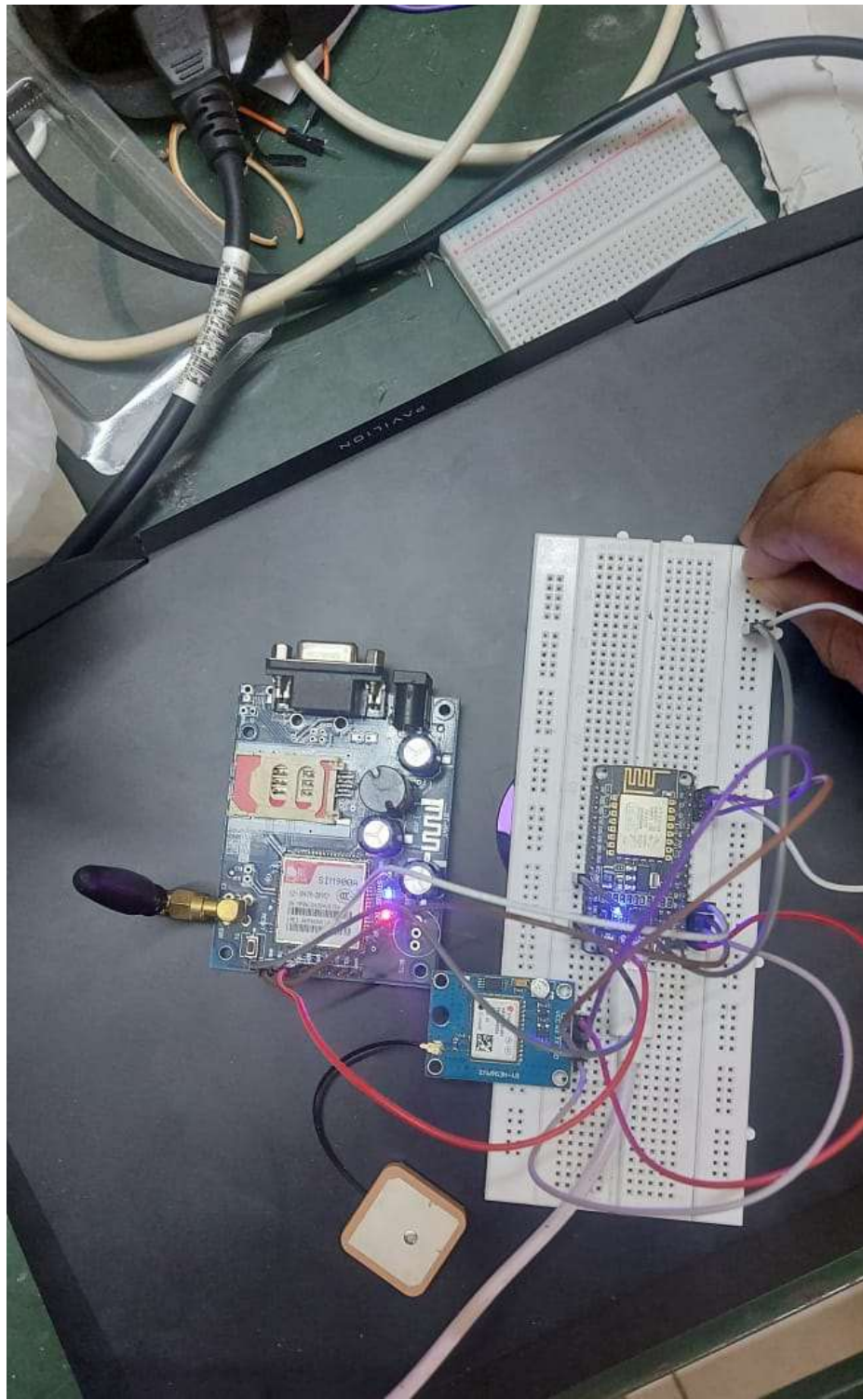
```

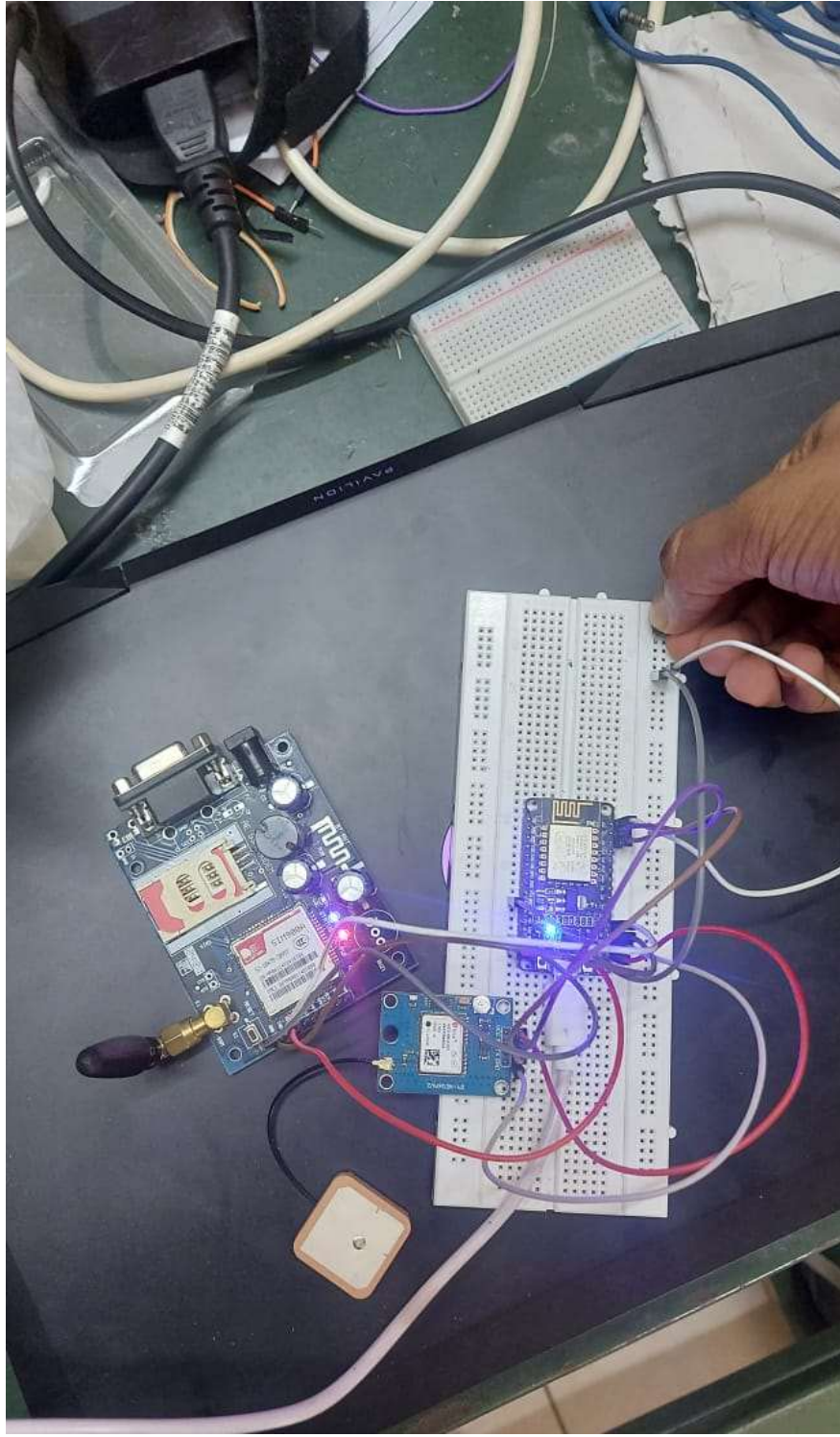
    Serial.print(gps.date.day());
    Serial.print(F("/"));
    Serial.print(gps.date.year());
}
else
{
    Serial.print(F("INVALID"));
}
Serial.print(F(" "));
if (gps.time.isValid())
{
    if (gps.time.hour() < 10) Serial.print(F("0"));
    Serial.print(gps.time.hour());
    Serial.print(F(":"));
    if (gps.time.minute() < 10) Serial.print(F("0"));
    Serial.print(gps.time.minute());
    Serial.print(F(":"));
    if (gps.time.second() < 10) Serial.print(F("0"));
    Serial.print(gps.time.second());
    Serial.print(F("."));
    if (gps.time.centisecond() < 10) Serial.print(F("0"));
    Serial.print(gps.time.centisecond());
}
else
{
    Serial.print(F("INVALID"));
}

Serial.println();
}

```

## HARDWARE:





Link to video of hardware model :

[https://drive.google.com/file/d/1\\_Xyp8cj7q2\\_O6TepAoXWpnBLzI\\_fJdg8/view?usp=share\\_link](https://drive.google.com/file/d/1_Xyp8cj7q2_O6TepAoXWpnBLzI_fJdg8/view?usp=share_link)

## RESULT:

After the switch is pressed, the message is sent to the number given in the code with the current location of the person who pressed it.