

User Manual: Driver Sleep Detection and Emergency Alert System

1. Introduction

This system monitors driver alertness and prevents accidents caused by fatigue. It detects drowsiness using a motion sensor and sends emergency alerts via SMS, phone call, and Blynk notifications.

2. System Components

- ESP8266 NodeMCU Wi-Fi Module
- IR Motion Sensor
- GPS Module (Neo-6M)
- SIM800L GSM/GPRS Module
- Buzzer
- LED Indicator
- Emergency Push Button
- Power Supply (Battery Pack or USB Power)

3. Safety Instructions

- Ensure proper wiring insulation.
- Use a stable 5V power supply.
- Keep modules away from water and heat.
- Verify GSM network signal strength.

4. Setup Instructions

Hardware Setup:

- Connect IR Sensor to D4, Buzzer to D7, SIM800L to D8 (RX) & D3 (TX), GPS to D2 (RX) & D1 (TX), Emergency Button to D0, Sleep LED to D6.
- Power with 5V battery or USB.

Software Setup:

- Install Arduino IDE.
- Install Blynk and TinyGPS++ libraries.
- Upload the code with Wi-Fi credentials, Blynk token, and emergency phone number.

Blynk Setup:

- Create a new project.
- Add Notification widget and optional GPS Map widget.
- Insert Auth Token into the Arduino sketch.

5. Operating Instructions

Normal Monitoring Mode:

- IR sensor checks for movement.
- No movement for 10 sec -> LED ON & Buzzer sounds.

Emergency Alert Mode:

- If still no movement -> send SMS, call emergency number, and send Blynk notification.

Manual Emergency Activation:

- Press emergency button to trigger emergency alerts manually.

6. Troubleshooting

| Issue | Cause | Solution |

|-----|-----|-----|

| No Blynk alerts | Wi-Fi issue | Check credentials |

| No SMS/Call | GSM issue | Check SIM, wiring |

| No GPS | Poor signal | Go outdoors |

| No Power | Supply issue | Check cable/battery |

7. Maintenance Tips

- Regularly check all sensor and power connections.
- Keep SIM active with balance.
- Clean IR sensor for best performance.
- Update software for improvements.

8. Technical Specifications

| Parameter | Value |

|-----|-----|

| Voltage | 5V |

| GSM Band | 850/900/1800/1900 MHz |

| GPS Accuracy | ± 2.5 meters |

| Wi-Fi Protocol | 802.11 b/g/n |

9. Contact and Support

For support or improvements, contact the project developer via the official repository or email.

Thank You

Thank you for using the Driver Sleep Detection and Emergency Alert System! Stay safe on the roads!