

Driver Drowsiness Detection & Emergency Alert System



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Why Driver Drowsiness is Dangerous



- Feeling drowsy while driving can cause brief moments of sleep without noticing.
- Even a few seconds of lost focus can lead to serious accidents.
- Many drivers ignore tiredness and keep driving.
- Often, they realize the danger only when it's too late.

THAT WHY CREATE DRIVER DROWSINESS DETECTION SYSTEM

Our Safety Solution

- Detect drowsiness using machine learning & sensors
- Alert driver with a buzzer
- Automatically make a call to the driver
- Ensure intervention before an accident



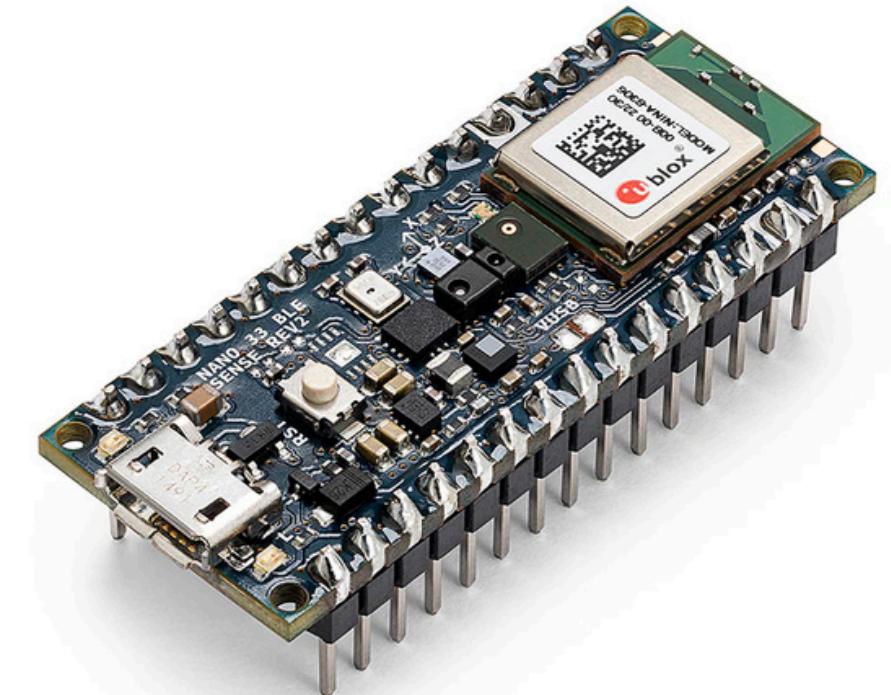
How It Works

- Sensor data fed into Edge Impulse model
- “**Down**” label detected with confidence > 0.8
- Triggers:
 - Buzzer
 - SIM900A initiates a call
- Driver can turn off buzzer with a button
- System waits until state is “**Stable**” again



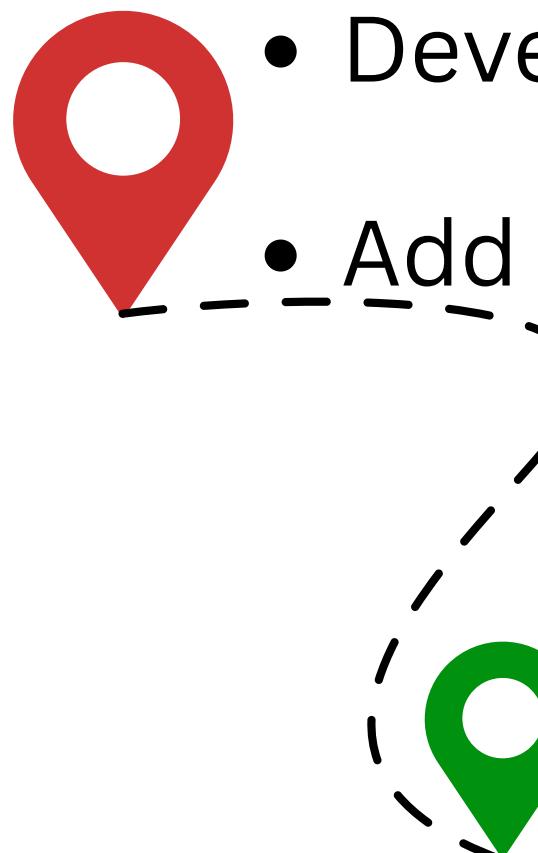
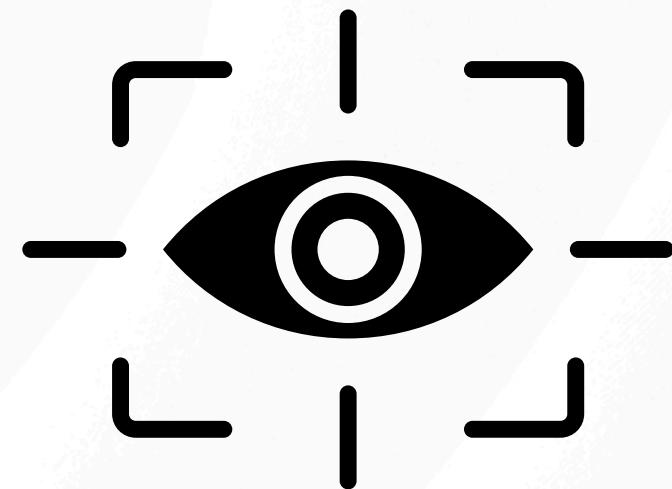
Hardware Components

- Arduino Nano 33 BLE Sense Rev2 (IMU + sensors)
- SIM900A GSM Module (makes the emergency call)
- Buzzer & Button (alert and acknowledgment)
- Power Supply (for GSM module)



Future Improvements

- Add camera-based eye tracking for more accurate drowsiness detection
- Integrate GPS module to send location with emergency alerts
- Use rechargeable battery system for better portability
- Develop mobile app integration for remote monitoring and alert logging
- Add vibration motor as an additional feedback mechanism for the driver





Thank you!

