

# **Adaptive Horn Control System**

Project Title: Adaptive Horn Control System

Student Name: Ravi Krishna

Date: 27-07-2025

## **1. Overview:**

The Adaptive Horn Control System is designed to intelligently manage a vehicle's horn based on environmental and situational context such as speed, location, and time. This system aims to reduce noise pollution and enhance urban driving discipline, especially in residential or silent zones.

## **2. Problem Statement:**

Excessive and unnecessary use of vehicle horns, especially in sensitive areas or at night, leads to noise pollution and public disturbance. There is a growing need to automatically regulate horn usage without depending on driver discipline alone.

## **3. Objective:**

To design and implement a horn control system that activates or deactivates the horn based on real-time parameters including:

- Vehicle speed
- GPS-based location
- Time of the day

## **4. Components Used:**

- Arduino Uno

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- GPS Module (NEO-6M)
- Speed Sensor (Hall Effect)
- Buzzer (or Car Horn)
- Power Supply
- (Optional) Raspberry Pi for data logging

### **5. Working:**

The GPS module provides real-time location and time. The speed sensor monitors the vehicle's movement. The Arduino processes these inputs:

- If the vehicle is moving slowly in a residential zone during night hours (10 PM - 6 AM), the horn is disabled.
- Otherwise, the horn remains functional.

This promotes responsible horn usage.

### **6. Code & Circuit:**

- Arduino controls horn activation based on logical checks.
- Fritzing diagram shows sensor and module connections.
- Sample logic includes `digitalWrite(hornPin, LOW)` during restricted conditions.

### **7. Advantages:**

- Reduces noise pollution automatically.
- Encourages mindful honking.
- Enhances public health and environment.

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### 8. Future Enhancements:

- Integration with cloud for logging.
- AI-based horn prediction.
- Mobile override in emergencies.

### 9. Conclusion:

This project demonstrates a sustainable approach to controlling noise pollution from vehicles through embedded technology. It's an excellent example of using IoT for social benefit.