

Fabrication of Alcohol Detection Engine Locking System

<https://www.youtube.com/watch?v=xzxiSWtOt2s>

This project presents the design and implementation of a Smart Vehicle Safety System for preventing accidents caused by drunk and drowsy driving. The system is developed using an Arduino Uno as the main controlling unit, which continuously monitors the driver's condition and vehicle safety status through various sensors.

The system incorporates an alcohol sensor to detect the presence of alcohol from the driver's breath and an eye blink sensor to monitor driver drowsiness. Whenever the driver starts the vehicle, these sensors continuously check whether the driver is in a safe condition to drive. If alcohol consumption is detected or if the driver's eye blink pattern indicates drowsiness, the system immediately activates a warning alarm and automatically turns OFF the vehicle ignition system to prevent accidents.

An accident detection sensor is also integrated into the system to identify abnormal vehicle conditions such as collisions or sudden impacts. In case of an accident, the system automatically sends an emergency alert message containing the vehicle's live location to a predefined mobile number using GSM technology. The GPS module is used to track and obtain the exact location coordinates of the vehicle.

The current status of the system, including alcohol detection, drowsiness alert, accident information, and GPS location status, is displayed on a 16×2 LCD display for user monitoring. The combination of safety sensors, automatic alert mechanisms, and vehicle control features makes this system highly effective for improving road safety and reducing accidents caused by human negligence.

This project is mainly useful for automobiles, public transport vehicles, and commercial transportation systems to ensure safer driving conditions and enhance passenger safety.

The main objectives of the project are:

- ▶ Sensors based automatic alcohol detection, automatic eyeblink detection and Automatic tilt detection.
- ▶ GPS and GSM based location tracking and alerting system.
- ▶ Audible alerts using Buzzer.
- ▶ Visible alerts using LCD display.
- ▶ Automatic ignition control based on driver condition.

The major building blocks of this project are:

- ✓ Battery power supply.
- ✓ Arduino UNO Microcontroller.
- ✓ Eye blink sensor.
- ✓ Alcohol sensor.
- ✓ Accident sensor.
- ✓ GSM.
- ✓ GPS Receiver.
- ✓ LCD display.
- ✓ Buzzer.
- ✓ DC Motor along with Relay driver.
- ✓ LED indicators.

Software's used:

1. Arduino IDE for compiling and dumping code into Microcontroller.
2. Express SCH for Circuit design.

Block diagram of the project

