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Vehicle Accident Control System

Suzan Vadgave, Saniya Kamble , Sneha Koravi , Roshani Kamble, Mr. Pravin Chavan
Students, Department of Electronics and Telecommunication Engineering
Guide, Department of Electronics and Telecommunication Engineering
Sanjay Ghodawat Institute, Atigre, India

Abstract: *Road accidents are a leading global concern, with human error—specifically drowsiness and impaired driving—being a primary cause. This project proposes the development of a Vehicle Accident Control System, a cost-effective and efficient solution to prevent accidents by monitoring the driver's condition in real time. The system uses an integrated combination of hardware and software components to detect unsafe driving behaviors and take immediate corrective actions. This system is built around an Arduino Nano, a compact and versatile microcontroller that processes data from multiple sensors and drives the vehicle's control mechanisms. The design includes: Eye Blink Sensor: Monitors the driver's eye movements to detect drowsiness. By analyzing the blink frequency and duration, the system identifies fatigue-related behaviors and triggers preventive measures. MQ3 Alcohol Sensor: Detects the presence of alcohol in the driver's breath. If the measured alcohol concentration exceeds a predefined threshold, the system assumes impairment and halts the vehicle. L298N Motor Driver: Controls two 100 RPM DC gear motors that simulate vehicle wheels. The motor driver receives commands from the Arduino Nano to start, stop, or control the vehicle's movement based on sensor inputs. 16x2 LCD Display: Provides real-time feedback to the user by displaying status updates and alerts such as "Alcohol Detected" or "Drowsiness Detected." Buzzer and Red LED: Serve as alert mechanisms to warn both the driver and nearby individuals about potential hazards. PCB and Jumper Wires: Facilitate compact and organized connections between components to ensure reliability and ease of assembly.*

Keywords: Road accidents