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AUTOMATIC ENGINE LOCKING SYSTEM FOR DRUNK AND DRIVE

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Abstract: The main aim is to reduce roadside accidents, drunken driving is one among them. To avoid this problem, we have developed an automatic engine locking system. In This prototype, alcohol detection and engine locking system by using an Arduino uno microcontroller interfaced with an alcohol sensor along with a DC motor to demonstrate the concept. The system uses an MQ-3 alcohol sensor to continuously monitor the blood alcohol content (BAC) to detect the existence of liquor in the exhalation of a driver. By placing the sensor on the steering wheel, our system has the capacity to continuously check the alcohol level from the driver's breath. The ignition will fail to start if the sensors detect the content of alcohol in the driver's breath. In case the driver got drunk while driving, the sensor will still detect alcohol on his breath and stop the engine so that the car would not accelerate. If the seat belt is not detect then ignition will fail to start.

1. INTRODUCTION

Drinking and driving is already a serious public health problem, which is likely to emerge as one of the most significant problems in the near future. The system implemented by us aims at reducing road accidents soon due to drunkenness and driving. This paper presents the progress in using the alcohol detector, a device that senses a change in the alcoholic gas content of the surrounding air. This device is more commonly referred to as a breath analysis. The system detects the presence of alcohol in the vehicle and immediately locks the engine of the vehicle.

The fluctuations of fatal accident rates, the human factor typically has the greatest impact, where they also present the findings from this paper. Even though seat belt use for drivers and passengers is nearly universally required by law, statistic son accidents show that many people who suffer

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Vol 19, Issue 1, 2025

fatal or serious injuries are either not wearing their seat belts or are not wearing them properly, a 12.92% increase [1].Previous research has delved into various methods and products intended to deceive alarm systems, and conventional seat belt use has also been observed. This section provides an overview of existing literature and products associated with seat belt alert and evasion, highlighting the need for effective countermeasures to ensure road safety.

Seat belt is one of the best safety features in the modern car where it can secure passengers in a car during collisions and other accident [1]. All cars are equipped with the three pointed seat belt for driver (mandatory), front passenger (mandatory), and rear passenger (optional). Seat belt plays a vital role in preventing injuries. The basic idea of a seat belt is very simple; it keeps you from flying through the windshield or hurdling toward the dashboard when your car comes to an abrupt stop. A seat belt applies the stopping force to more durable parts of the body over a longer period of time to prevent injuries. A typical seat belt consists of a lap belt

Which rests over your pelvis, and a shoulder belt, which extends across your chest? The two belt sections are tightly secured to the frame of the car in order to hold passengers in their seats. In modern car ECU's are intelligent enough to alert the driver/passenger about the seatbelt information whether it is buckled/unbuckled through different ways- sometime only a tell-tale, sometime tell-tale with buzzer (if vehicle moving) or tell-tale + buzzer + text warning display [2–5]. According to a study by the Malaysian Institute of Road Safety Research (MIROS) [6], Malaysia's survival survivors are guaranteed 60% when they wear seat belts. The attitude of the public to consider the use of seat belts as trivial is the major contributor to the increase in death rate due to accidents. The excuse given includes a feeling of comfort or travel just near, while wearing a seat belt only takes a couple of seconds. The user considers the air bag in the car is suf client to minimize the impact at the accident, whereas the equipment should also be used with the main safety device namely seat belts [5].

2. LITERATURE SURVEY

Modern cars have many safety features which are playing a significant role in reducing traffic injuries and deaths. One of the reasons that cause cars accident's fatalities is not wearing a seat belt. In order to overcome this problem, an attempt has been made to design a car safety system

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whereby the car will not run unless the driver and passengers use the seat belt first before turning on the car. In the proposed system, the ultrasonic devices and limit switches are used to detect driver and passengers and also to detect seat belts that have been used, respectively. In addition, the switch of electric circuits is designed and installed between seat belts and ignition systems to control start engines. Arduino Mega microcontroller act as a signal processing unit to control the security system in the car. The experimental results show that the system is accurately able to enhance the safety aspects of driver and passengers

The survey conducted as a part of a study for road transport ministry for developing a comprehensive strategy to improve road safety has thrown up these interesting aspects at a time when the government data show that 70% of the accidents are caused due to drink and driving. The traffic police across states also don't have adequate number of breathalyzers to test drunk drivers. Furthermore, there are some rural areas around the world where the traffic of people is less. In such a situation, rider loss their lives due to delay in providing emergency service. Hence, we proposed a system which is designed in such a way that it will not ignite the vehicle until the rider wears seat belt and pass the alcohol test. The additional feature of this project is it consists of Global Positioning System and Internet of Things cloud platform with the help of which we are sending message to the end users in case of any emergency detected.

On a survey that has been done recently, said that nearly 75% of road accidents occur due to drunken drive, with a range of 45% to 68% in small cities. They also conveyed that overall of 56 accidents and 14 to 15 deaths occur on our roads per day due to not wearing the seat belts. In the already available system, the alcohol sensor is kept on the car steering and thereby controls the vehicle according to the presence of alcohol. But road safety is indeed important in other aspect that is the reason we are controlling the system based on the seatbelt wearing and monitoring speed of vehicle.

Drink and drive has become a main cause of road accidents in the modern world. It has been found that more than 62% of road accidents are caused due to drink and drive. Drunk driving not only puts the person who has drowned at risk but also the person sitting in the same car with him and the people on the road, and also causing many deaths due to avoiding the use of seatbelts. Therefore, this growing threat should be

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Vol 19, Issue 1, 2025

given immediate attention. The aim of our project is to build a system that can take care of this hazard, a system that can sense the alcohol in the driver's breath and ensure proper use of seatbelts and preventive measures shall be taken. As if there are many laws to penalize such drivers but it cannot be implemented on a large scale as the police cannot check drunk drivers on every road. Perhaps this is the main reason for the accidents. Therefore, there is an urgent need for a system that can check drunk drivers drunken driving wearing seatbelts are increasing day by day which raises a question that who can reduce the .

The system is a best way to find out drunken people and also proper usage of seatbelt. The system will basically comprise of breath analyzing sensor, MQ-3, which will sense the level of alcoholic drivers breath. In India, the quality legal limit of alcohol in bloodies 0.03% that means 30 micro litters of alcohol in 100 milliliters of blood and IR Sensor will near seatbelt retractor will ensure proper use of seatbelt, If the alcohol content in drivers breath is above this threshold limit and seatbelt is not used properly then the engine will not start and the person will not be able to drive. Thus, by using such system, we can reduce car accidents and deaths. This project cans help prevent life and property loss because of drunk driving and deaths due to avoiding seatbelt.

3. EXISTING SYSTEM

These days, majority of road accidents are caused by drink-driving. Drunken drivers are in an unstable condition and so, rash decisions are made on the highway which endangers the lives of road users, the driver inclusive. The enormity of this menace transcends race or boundary. In Nigeria, the problem is being tackled by issuing laws prohibiting the act of drivers getting drunk before or while driving as well as delegating law enforcements agents to arrest and persecute culprits. However, effective monitoring of drunken drivers is a challenge to the policemen and road safety officers. The reason for this stems from the natural inability of human beings to be omnipresent as well as omniscience within the same space and time. This limited ability of law enforcement agents undermines every manual effort aimed at curbing drink-driving. One major reason of deaths on Indian roads is accidents due to drunken driving. This happens because of drunk people being able to take control of vehicle even after being drunk. In our project, we propose to solve this problem by designing a system which automatically switches off the

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vehicle's engine whenever alcohol of certain quantity is detected in the driver's breath. As soon as the presence of alcohol is detected, the microcontroller stops the engine of the vehicle and a siren is blown to alert nearby people to convey that something is wrong with the vehicle and a message "Alcohol Detected" is flashed on the LCD screen [2]which is installed in the system, so that nearby people can interpret gravity of the situation and inform the concerned authorities to avoid any kind of incident

SmartStart by Intoxalock: A widely used ignition interlock device that measures BAC and prevents vehicle operation if alcohol is detected.

DriveSafe Ignition Interlock: Similar to Intoxalock, this system ensures drivers are sober before starting their vehicle.

previously, there was no technology to lock the engine of the vehicle after sensing the alcohol consumption by the driver which was considered to the main cause of the accidents. There was manual checking after particular distance on the roads or the highways but still these checks were not sufficient to stop the happening of the misshapes. To avoid these problems, this project vehicle detection and alcohol sensing alert with engine locking system is developed

4. PROPOSED SYSTEM

The alcohol detector and engine locking system is a safety feature that is designed to prevent drivers from operating their vehicles if their blood alcohol content (BAC) level is above a certain limit. The system typically consists of a breathalyzer device that measures the driver's BAC level and a computer system that controls the engine and ignition.

When a driver enters the vehicle, they are required to blow into the breathalyzer device. The device measures the alcohol content in their breath and calculates their BAC level. If their BAC level is above the set limit (usually 0.08% in the United States), the engine will not start. If the driver attempts to start the engine multiple times and continues to have a high BAC level, the system may trigger an alarm or notify law enforcement.

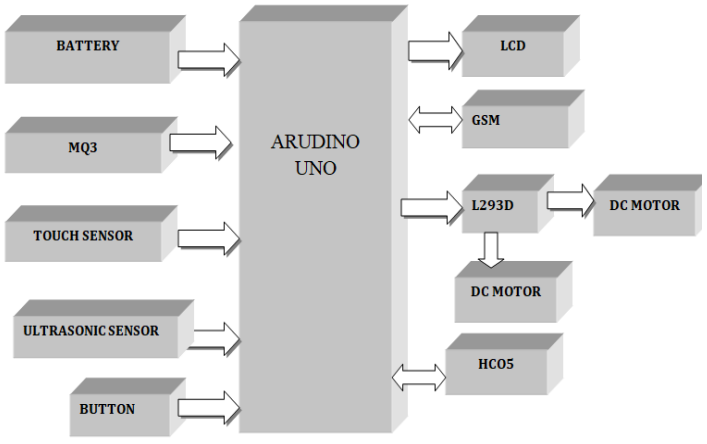

Fig 1 Block Diagram

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www.ijasem.org
Vol 19, Issue 1, 2025

Our proposed work consists of various units that make up the system: the power supply unit, the alcohol detection unit, the engine locking unit, ignition system unit, display unit, alarm unit and indicating unit. An LCD display will be fitted inside the car to act as an indicator to the motorist together with everyone in the vehicle. A DC motor is used as the car engine to demonstrate the concept of engine locking. The ATmega328 microcontroller under the brand name of Arduino Uno will be used to keep looking for the output from the alcohol sensor. The Arduino Uno sketch which is the environment for programming is used to write the code, compile, generate hex file and load it to the microntroller.

If the alcohol is present, then the system automatically locks the seat belt slot and in turn locks the seatbelt, by which ignition can never be started. The controller decides whether to twitch the detonation as all the utilities are carried out by it .If alcohol is not detected, then even on keying, the controller looks for input from the touch sensor. Only if the seat belt is lay on properly, the system makes the car ignition to start all through keying. In case of driver drinks during driving, the ignition system will robotically stop.

The Android application (AMR – Voice) is connected to Bluetooth Module (HC – 05), which is directly connected to Arduino Uno R3. We give command to the robot and it performs work according to the given command.

Each carmaker has its own automatic braking system technology, but all of them believe some sort of sensor input. The ultrasonic sensor contains transmitter and receiver units, and the ultrasonic transmitter detects the obstacle by transmitting the signals and reflects back to the ultrasonic receiver unit. The ultrasonic sensor input is then used to determine if there are any objects present in the path of the vehicle. If an object is detected, the system can then determine if the speed of the vehicle is bigger than the speed of the thing ahead of it.

GSM electronic equipment (modulator-demodulator), SIM, is a very important part of the system that facilitates remote communication of ‘SMS alerts’ with location and vehicle number of drunk driver to the mobile phones of authorized persons

5. RESULT

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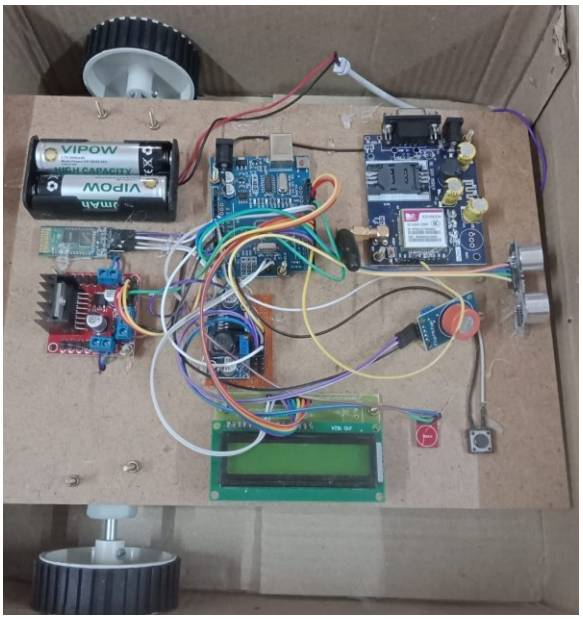

6. CONCLUSION

The proposed system checks for the drunken drive and avoids it effectively. Nowadays, with emerging technologies, the automobile industry uses various sensors and controllers to provide an equipped environment. Taking advantage of this phenomenon, we have developed a mechanism for providing secured driving near the seat belt buckle. The driver is not permitted to drunken driving and also without the seatbelt.

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