Drunk and Drive Detection & Prevention System Using Alcoholic Breath Analyzer and Tilt Detector Along with GSM

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Abstract— The principal goal of this initiative is to develop a system that can ensure the primary safety of a driver to wear seat belt, only then the vehicle ignition starts and also detects the alcohol content in the air exhaled by the driver, if alcohol percentage exceeds the limit then the tilt of driver and vehicle will be monitored and automatically turn off the car ignition and alert messages Should be sent via GSM. Although we all know private vehicle use is much greater than public vehicle use, 30 percent of Indians out of 48 percent use private vehicles, with 18 percent only using public transportation. In India 1,46,000 people die from traffic collisions, and 1,14,0000 people die from two-vehicle collision. India is losing USD 52 billion annually as a result of accidents. A person's life is bigger than money. Most of the deaths are attributed to drunk driving, not wearing seat belt. If these things are solved, This is therefore necessary to reduce 65 per cent of traffic injuries. To minimize all these things, we have designed this system.

Keywords—**MQ-3 gas sensor, Seat belt, GSM, Tilt Detector.**

1. INTRODUCTION

Citizens can live without food in today 's crowded world, but they can't survive a single day without being afraid of road accidents. India is known for being the second most populous nation in the world. Yet, due to the extremely crowded cars, even people on the road are scared of accidents. Because we all know private vehicle use is much higher than public vehicle use. 30 per cent of the Indian population For the 48%, private cars are used, while the remaining 18% use public transportation. In India 1, 46,000 people die from traffic accidents and 1,14,0000 people die from two-vehicle collision. India is losing USD 52 billion annually as a result of accidents. A person's life is important, rather than money. Most of the injuries was caused by dunk and driving, not wearing seat belt and heavy front-end vehicle beam. If these things are solved then 65% of the road accidents can be reduced. To minimize all these things, we planned to build a system which can be a permanent solution. There are many systems build for this purpose, which detects the seat belt and alcohol consumption of the driver. But there are no systems which can detect the tilt of the driver and vehicle. The vehicle can be started only after wearing the seat belt, and the alcohol detector comes into action and detects the ethanol content in the air exhaled by the driver and initiates the actions accordingly.

As our safety system is simple and less expensive as well as smaller in size, it can be implemented in both small vehicles and larger vehicles too. The seat belt detector is implanted inside the buckle, the alcohol detector is mounted near steering, and the tilt detector is mounted to the seat belt as well as vehicle.

When the has not fastened the seat belt the relay which is connected between battery and spark plug disconnects the battery connection to the spark plug.

When the driver is drunk then the alcohol sensor detects the ethanol content in the air exhaled by the driver and warns the driver 3 times. If the driver overrides the warnings then the tilt sensor gets activated which will monitor the movement of the driver and vehicle and if any unwanted movements are observed then the relay disconnects the battery connection with spark plug.

The GSM module helps in sending alert messages to the registered contacts in sim card.

II. LITERATURE SURVEY

Mr. Nikhil Kailas Kumbhar, Mr. Ravikumar A. Bandagar, Mr. Mayur U. Yelpale [1] proposed to design the tilt

indication in bikes and balancing it according to it. In reference to the ground, the indicator must always show the correct tilt, use a control mechanism to prevent itself from falling over when in motion, and be balanced by an accelerometer. The purpose of this project was to create a bike that would not fall or could show the amount of tilt that could prevent the accident It doesn't have any influence on alcohol detection and helmet.

Prashanth K P, Kishen Padiyar, Naveen Kumar P H and K Santhosh Kumar [2] proposed a work that uses the MQ-2 alcohol sensor which is embedded with the microcontroller to detect the drunken driver. The alcohol sensor senses the alcohol content of the driver by his breath. But it does not give any importance to the seat belt and tilt detection.

V Ramakrishna, M Vedachary and Subhan Valishaik [3] worked. It uses Alcohol sensor and a sensor for seat belt which is controlled by the microcontroller. When the driver is drunk or not fastened the seat belt the spark plug stops ignition. But it does not provide any functionalities on the tilt detection.

Rahul B, Rahul N, Godse Valmik D and Shinde Manoj B [4] tried to convince the previous work with the help of another system. The device just detects the alcohol consumption of the driver. The alcohol sensor senses the alcohol content of the driver by his breath. But even the seat belt is necessary while driving.

Saranya S, M Shankar, N Muthulingam and T sakthivarman [5] proposed a work which mainly concentrates on the health of the vehicle. It uses the microcontroller to have a check on the health and quality of the vehicle. If the vehicle is damaged then it displays on the screen using MATLAB. It does not have any influence on the driver.

Ashutosh U Jadhav and N M Wagdarikar [6] proposed a system which uses the alcohol sensor and a camera for alcohol and drowsiness. When the driver is drunk, the alcohol sensor which is connected to the microcontroller stops the ignition of the spark plug by using relay, it doesn't control the tilt

III. OBJECTIVES

As our safety system is simple and less expensive as well as smaller in size, it can be implemented in both small vehicles and larger vehicles too. The seat belt detector is implanted inside the buckle, the alcohol detector is mounted

near steering, and the tilt detector is mounted to the seat belt as well as vehicle.

> When the driver is drunk or has not fastened the seat belt the relay which is connected between battery and spark plug disconnects the battery connection to the spark plug.
> When the driver is drunk then the alcohol sensor detects the ethanol content in the air exhaled by the driver and warns the driver 3 times.
> If the driver overrides the warnings then the tilt sensor gets activated which will monitor the movement of the driver and vehicle and if any unwanted movements are observed then the relay disconnects the battery connection with spark plug.
> The GSM module helps in sending alert messages to the registered contacts in sim card.

IV. METHODOLOGY

The existing system does not have any type of safety until the police catch the drunken driver, and it does not consist of seat belt detector which does not allow the driver to start the vehicle. It doesn't consist of tilt detector and GSM module.

The main aim of our application is to overcome these drawbacks and provide a solution which is self-triggered. Figure1 shows the block diagram of Drunk and Drive Detection & Prevention System using alcoholic breath analyser and tilt detector along with GSM (DDDPS) for two wheelers and four wheelers. When the driver is drunk or has not fastened the seat belt, the relay which is connected between battery and the car key opens the connection of battery to the spark plug.
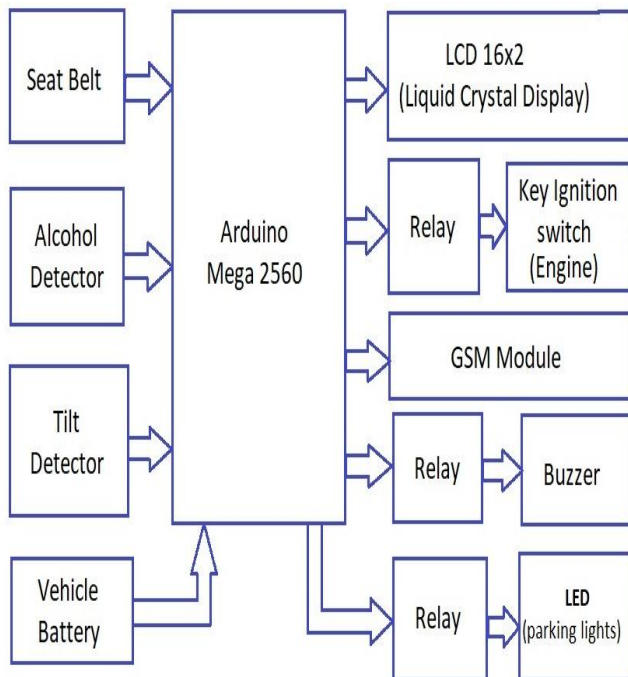
Figure 1: Block diagram of DDDPS

Our project consists of a simple circuit. It has a seat belt detector, Alcohol detector and Tilt detector to detect seat belt, alcohol in exhaled air and movement of driver & vehicle. The seat belt detector consists of wiring connection in the buckle. When the seat belt in not buckled up, the microcontroller opens the connection of battery to the spark plug through the relay .When the driver is drunk the alcohol, detector detects and gives the signal to microcontroller, which then gives 3 warnings to the user and if the driver has not stop the ignition then alert messages will be sent via GSM module to the contacts saved in the sim card. A single relay is used to have control over the spark plug after detection of seat belt or Alcohol test.
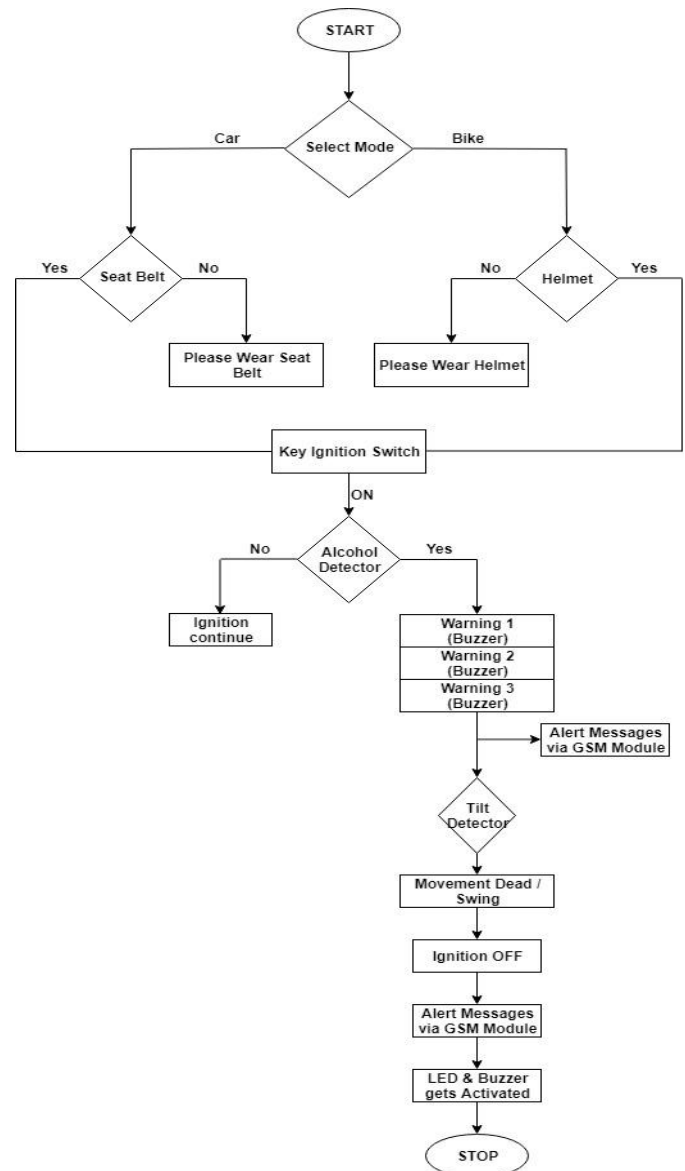

Figure 3: Flow chart

V. RESULTS

The figure 3 shows the complete working model of "Drunk and Drive Detection & Prevention System Using Alcoholic Breath Analyzer and Tilt Detector Along with GSM". It has a seat belt detector, Alcohol detector and Tilt detector to detect seat belt, alcohol in exhaled air and movement of driver & vehicle. When the driver is drunk, the alcohol detector detects and gives the signal to microcontroller. The controller then plugs through relay. A single relay is used to have control over the spark plug after detection of seat belt or Alcohol test. When the seat belt in not buckled up, the microcontroller opens the connection of battery to the spark plug. when the driver overrides the warnings of alcohol detector then the Tilt detector gets activated which will monitor the movements of the driver and vehicle and if any unwanted behavior is observed then

the ignition will be turned off and the parking lights will be turned on, the GSM module sends alert messages to all the contacts fed into the sim card. Fig(5) shows the project model of DDDPS.

Also, when the driver overrides the warnings the Tilt detector gets activated which will monitor the movements of the driver and vehicle. The movement detection consists of two types (1) If the driver swings horizontally or vertically & if the car tilts, (2) If the driver is completely down i.e., unconscious. In both the cases the ignition will be turned off and the parking lights will be turned on, the GSM module sends alert messages to all the contacts fed into the sim card.
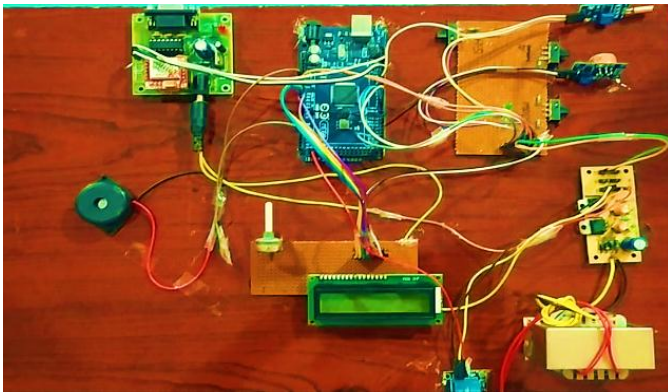

Figure 5: DDDPS

VI. CONCLUSION AND FUTURE SCOPE

The objective of our project is to provide a reliable system which will provide driver safety. We have added GSM module to send messages to Emergency services and also to the contacts registered in sim card. In our project we have not included GPS module as it will be already available in the vehicle itself, so incorporating our device with GPS gives the exact location of the vehicle.

Though our project is itself mature enough but still betterment is always an open door. In this case also we can add some features to this proposed system to make it more reliable, by making use of the advanced technology like Artificial Intelligence, Machine Learning and Data science which will play an important role in near future.

VII. REFERENCES

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