

Alcohol detection by physical parameters and speed control

[Health & Medicine](#), [Alcoholism](#)



Alcohol is mainly formed by sugar fermentation in food. Individual's information processing skills will be impaired because consumption of alcohol leads to slowing down of functionality of the brain. Both Peripheral and Central nervous system of a person will be badly effected due intake of alcohol. Alcohol also negatively effects the functioning of hypothalamus in brain because of which important functions of the body such as heart rate, temperature of the body and blood pressure etc. Other effects of alcohol consumption also include memory loss, poor judgment, lack of concentration, blurred vision etc. In today's world there happens to occur lot of road accidents due to drunken and rash driving. Drunken driving is already a serious problem, which is likely to be added as one of the most noteworthy problems in the near prospect. Checking whether the driver has consumed alcohol or not is quite important in order to provide proper work and road safety. Several studies are made on both physiological and psychological states of the driver. With the increase in the technology in today's world lead to the development of new devices. The American Automobile Association Foundation for Traffic Safety (AAA FTS) has classified the various stages of inattention of the driver while driving which are:

1. attentive;
2. distracted;
3. looked but did not see;
4. sleepy;
5. unknown.

Driving is a complex activity that requires multi-level skills. Most of our driving skill will be improved by experience. Many people lost and even losing their lives because of this distracted, drunken and rash driving due to lack of proper system.

The National Highway Traffic Safety Administration (NHTSA) conducted a survey over 12 months with 241 drivers. As per that report around 25% of the total road accidents are mainly due to inattention of the driver. From the 78% of the total accidents that came up 65% can be avoided if the driver had properly paid his attention towards the road.

From the official reports of Beijing, the traffic accidents are mainly due to drivers, vehicle, road and weather and out of which accidents caused due to driver is the major factor, as this is the reason for 95% of the road accidents. Hence it is quite very important to detect the abnormal driving by considering various factors and improve the traffic safety. In general, we can divide the factors related to behaviour of driving into two groups. Firstly, variables determining physiological behavior of the driver which may include heart rate, age, gender etc. and different environmental factors like traffic and weather conditions in that area. Secondly, different vehicle related factors such as speed, throttle plate position etc. along with driver related information such as intake of alcohol, drowsiness, recklessness etc.

India is having world's second largest population with 1.3 billion. In average around 20 million people every year are injured by the traffic accidents. It is a known fact that most of the people use private transport instead of public transport (mainly in India). Out of 48%, only 18% people use public transport

and the remaining 30% use their own transport that is private vehicles. According to a survey conducted in India by Transport research wing, the percentage occurrence of accidents has been increased by 2.5% in one year. As per the report every day around 1374 deaths occur due to road accidents. Among those 1374 deaths, 54.1% are in between the age of 15-34 years. 52 billion US dollars is lost by India every year due to these road accidents. If proper care is taken regarding drunken drive, High beam of upfront vehicles, seat belt, drowsiness of the driver etc. then 65% of the total road accidents can be reduced in India. 70% of the total human loss on roads due to traffic accidents are mainly due to drunken driving and among this about 44% to 67% occur in small cities. Out of 56 accidents 14-15 deaths occur mainly because of not putting the seat beat on. This is as per the recent report of World Health Organization (WHO). The driver's behavior as mentioned above (such as alcohol consumption, drowsiness and recklessness) are the major cause of these fatal accidents on road which not only effect the co drivers but also effect pedestrians sometimes and may even cause severe loss of both public and private property along with loss of valuable lives. When the driver takes alcohol sudden accelerating and decelerating will be done with a delayed response which determines a poor control of speed of the vehicle. The second factor drowsiness is mainly caused due to sleepiness of the driver but without alcohol consumption at all. Even the driver with drowsiness will not be able to control the vehicle properly like the drunken driver as his case also involves sudden rise and fall of the speed of the vehicle. The third case where the driver is reckless but is awake may result in sudden increase in the speed of the vehicle crossing

speed limits and this may be because driver might be under some emotional stress. Apart from the above-mentioned factors one more reason for the occurrence of fatal accidents on road is mainly due to distraction of the driver. For example, when the driver is on the phone he will not be able to provide his complete attention to the road that may cause significant distraction and the response time of the driver is badly affected because of this. Checking if the driver has consumed alcohol or not can be done by indirectly by several ways as blood analysis, urine analysis, saliva analysis, hair analysis and breath analysis.

The main aim of this project is to detect whether driver has consumed alcohol or not by monitoring different parameters like heartbeat, tilt angle of the head, amount of oxygen content in blood and accordingly avoid false data and lock the speed of the vehicle if suspected by any reason that driver has consumed alcohol but not stop the ignition. The above step is provided so that once the confirmed that the driver has drunk the vehicle can be stopped safely without any accidents.

Malathi, R. Sujitha, M. R. Revathy described the process for both alcohol detection and seat belt control system. This paper mainly focuses on providing protection to the driver by checking if the driver had seat belt or not along with monitoring and checking if the driver had consumed alcohol. In this project the author mainly used Arduino micro controller and different sensors like alcohol sensor, IR sensor along with GSM, GPS systems. The alcohol sensor used here is MQ-3. This sensor mainly helps to detect if the driver has consumed alcohol or not through breath. IR sensor is used to

check whether the seat belt is properly locked or not. Initially when the driver enters the car alcohol sensor will be active and monitors the alcohol level around and if no alcohol traces are found then then now the IR sensor will check the seat belt locking position. If it is locked properly then when the key is inserted, then ignition of the car will be on and car will be started. If the seat belt is not properly locked, then ignition of the car will not be started even if the person had not consumed alcohol and key is inserted. Hence the output of this IR sensor is quite important because only after receiving the desired output from IR sensor then ignition will be started. If the alcohol sensor detects the alcohol level in driver breath, then the system will automatically lock the ignition of the car and buzzer will be on till drunk person leaves the driver seat. GSM modem is used to send the SMS alert to the registered mobiles if either the alcohol sensor senses any alcohol traces or even when the driver has not worn his seat belt. Along with the respective alert information in the SMS with the help of GPS module the location update will also be sent to the respective registered mobiles.

In this paper, a detailed study on the Abnormal driving detection based on normalized driving behavior analysis was done. The authors proposed AbnormIndex, which is the abnormality index used to detect and evaluate the abnormal driving behavior typically recklessness, fatigue, drunk, lack of attention due to usage of phone etc. were all simulated and then applied to AbnormIndex. Driving style similarities exists significantly even though a great extent of diversity exists in abnormal driving behaviors which thereby helps in correct evaluation quantitatively by using the proposed

AbnormIndex. The proposed system also helps in the development of an intelligent driving system in the future as the AbnormIndex uses the onboard ordinary data of all the cars instead of using sensors and will also be able to distinguish between the normal and abnormal driving under different abnormal behaviors. The drawback with this system is weather, steering etc. are not taken into consideration in the driving model. Hybrid safety and security system for vehicle, uses different sensors such as alcohol sensor, passive infrared sensor, MQ7 gas sensor. These methods are mainly used for alcohol detection, human level detection and pulse rate monitoring. In addition to these three-methods driver vigilance level is detected, and an alert message is sent. For the theft detection method theft is identified by use of the password matching method.

Alcohol sensor instructs the driver to blow air into the sensor unit and checks the alcohol content present in the driver breath. Heart rate sensor is used for measuring the pulse rate. If pulse level is high even in that case if driver drives the vehicle, then the system will apply brakes automatically and halt the vehicle. By use of MQ7 sensor when person is inside carbon-di-oxide level is determined and there is an automatic anti-locking system for window opening process. For eye blink sensor IR sensor is used to sense the signal. If Eye Blink range is less, then automatic intimation is given. Theft detection and security system are present in the hybrid model. Nair, the author of the paper mainly focused on drunk driving and drowsiness detection so that the accidents rate is reduced. In his project, he mainly used an Alcohol sensor, a web camera for detection of drowsiness by monitoring the eyes, yawn and

face of the driver. As soon as the driver starts the ignition he would be requested for providing breath sample which would be an input for alcohol sensor which measures the alcohol content on the blood. If the driver is drunk then the ignition will be off and if not drunk then web camera now captures the face, mouth and eyes of the driver. Eye capturing is done to detect drowsiness and mouth capturing is done to detect yawn. If driver is found to be drowsy then alarm will be on and seat will vibrate alerting the driver.