

e-ISSN:2582 - 7219



INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY RESEARCH IN SCIENCE, ENGINEERING AND TECHNOLOGY

Volume 6, Issue 1, January 2023



INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA

Impact Factor: 7.54



6381 907 438



6381 907 438



ijmrset@gmail.com



www.ijmrset.com



A Review on - Accident Prevention Using RFID and MQ3 Sensor

Dr.Chittineni Aruna ¹,D.Neha ²,B.Bhargavi ³, G.Madhu Veena ⁴, G.Lavanya Guptha ⁵

Head-Administration, Dept. of CSE, KKR & KSR Institute of Technology and Sciences, Guntur, A.P., India¹

B. Tech Final Year, Dept. of CSE, KKR & KSR Institute of Technology and Sciences, Guntur, A.P., India^{2,3,4,5}

ABSTRACT— Drunk driving accidents have increased day by day and has become a big issue. On an average nearly 29% of road accidents are caused due to drunk driving. Our project is accident prevention system. Using this we can prevent the occurrence of road accidents by automatically decreasing the speed of vehicle using IOT technology. This project consists of two modules. In the first module if a person consumes alcohol and driving vehicle at high-speed, this type of conditions may lead to accidents in most of the cases. So, using alcohol detection sensors and Arduino Uno can make vehicles to slow down, which can prevent some of the accidents or it can reduce the impact of accident on that person when they were driving slowly. In the second module if a person drives at high speed in special zone areas i.e., accident prone areas then it leads to accidents. So, to prevent accidents at these special zone areas we are implementing RFID technology which helps vehicles to slow down automatically.

KEYWORDS: RFID, MQ-3, ARDUINO UNO, DC -MOTOR.

I.INTRODUCTION

Road safety has become a major public health concern. Over 1, 37,000 people were died in road accidents in 2013. In India itself about eighty thousand people are killed in road crashes every year which is thirteen percent of the total fatality all over the world. Man behind the wheel plays an important role in most of the crashes. In most of the cases crashes occurs either due to carelessness. In the modern day, with the increase in the number of vehicles on roads, traffic accidents have grown significantly in number. One of the primary causes of traffic accidents is drunk driving or driving under influence (DUI). This is particularly an important issue for developing countries, such as India, where 53.4% of unnatural deaths in the year 2014 were due to traffic accidents, with drunk driving being the primary cause. Road fatalities are a major concern in the developed world. Recent studies show that a third of the number of fatal or serious accidents are associated with excessive or inappropriate speed, as well as changes in the roadway (like the presence of road-work or unexpected obstacles). Reduction of the number of accidents and mitigation of their consequences are a big concern for traffic authorities, the automotive industry and transport research groups. The old-fashioned method used by officers to detect alcohol in the driver is by using Breathalyzer. Even though it has proved its function, however this method is not efficient. Nevertheless, it is impossible to do road block all the time and check driver of each car using Breathalyzer. Breathalyzer is a device to check alcohol presence in the driver's breath by making them blow into it. This method is not as practical as it can cause congestion and traffic during peak days. In addition, there are chance of the driver to bribe officers just to avoid being summoned. If escape this road block, and continue to drive in a drunken state, they are risking every other road user. The proposed system uses MQ-2 sensors to detect the presence of alcohol in the driver's breath. MQ-2 is designed to test for combustible gases such as LPG. It can be tested for alcohol too, but MQ-3 sensor is specially made to test for alcohol vapor in which it has a more accurate reading and higher sensitivity than MQ-2. Other than that, one of the proposed system there are using the mobile phone which has an accelerometer and an orientation sensor whereby the mobile phone computes accelerations based on sensor readings and compares it with typical drunk driving patterns extracted from real driving tests through acceleration of vehicles related to lane position maintenance problems such as weaving, drifting, swerving, turning abruptly or with a wide radius and speed control problems like accelerating or decelerating suddenly, braking erratically and stopping abruptly. The loophole in this system is that if kids' play with this phone or it gets damaged due to fall as it is portable, then the system fails. The solution for this is we are using the RFID technology and MQ-3 sensor. The MQ-3 sensor automatically detects the alcohol level of the person. If the person consumes the alcohol the vehicle will automatically slow down with the help of pulse width modulation mechanism. The RFID technology is used in the special zone areas like schools, hospitals etc. In that special zone areas, the vehicle will slow down by using the RFID reader and RFID tag.



II. LITERATURE SURVEY

The research papers help us to find the existing models and guide us to develop a new thesis by overcoming the problems which have been found out

Alpana Gopi, [1] in 2016 he had clearly explained that, In the case of road accidents RFID can be used to track the vehicle there by the authority get information about vehicle and its owner. It was also used in the project of RFID smart parking system.

Litty Rajan, [2] in 2016 he had clearly explained that, RFID technology integrated with SND for vehicle tracking put forward. It was also used in the project of RFID Mobile charging System.

Gupta proposed, [3] "Alcohol Detection with Vehicle Controlling." A liquor finder and a GPS is used for this. And whereas GSM is associated with Arduino. The liquor inside the body of a person crosses the limit the Arduino will stop the vehicle and GPS sends the location of the drunker person to their family/police.

Sai Harsha proposed, [4] "Mobile Based Drunk Driving Detection." This is based on the mobile where mobile should be inside the vehicle. A program will be given to the mobile so that the mobile will read the sensors and whenever it detects that there is consumption of alcohol it contacts police/family.

Albin Thomas et al proposed, [5] "Smartphone and Sensor Based Drunk Driving Prevention System." Smartphone is used for this method. The smartphone detects the alcohol sensor inside the person driving and a program is installed for smartphone where it detects the alcohol and controls the driving at the same time it makes sure that the vehicle is stopped and alerts the police/family.

Savania et al proposed, [6] "Alcohol Detection and Accident Prevention of Vehicle." In this an alcohol sensor is placed in the vehicle to detect the alcohol. If the alcohol gases are detected then for every 5 minutes a message is sent to their relatives. In this an arm7 microcontroller is used and it is connected to GSM and GPS. The GPS is used to track the location of the vehicle and message will be sent using GSM module.

Sarkar et al proposed, [7] "A Real Time Embedded System Application for Driver Drowsiness and Alcoholic Intoxication Detection." This system uses embedded system. This system consists of 5-megapixel camera with embedded system board raspberry. Raspberry pi is interfaced with another Arduino board which is used for some tasks like alarm notifications and ignition lock. It performs these tasks if and only if it receives a message from raspberry pi about the presence of alcohol.

Dai et al proposed, [8] "Mobile phone based drunk driving detection." This system requires a mobile phone. It should be installed in the vehicle with orientation. A program should be installed in that phone it compares the sensor readings with the real time driving test cases. If there is any presence of drunk driving then automatically the phone will alert the driver or sends the alert message to the police/family.

Goswami et al proposed, [9] "Alcohol Detection with Vehicle Controlling." DUI is the system we used for detecting the alcohol present in the vehicle where the DUI works when there is presence of alcohol the vehicle stops and sends the alert message to the police /family.

III. REVIEW FINDINGS

1. In the alcohol detection vehicle controlling, major problem is if any person other than the driver has consumed alcohol and if system detects it then also it will not allow the car to start (even if the driver is not drunk).
2. A mobile phone based drunk and drive detection; the system requires a mobile. The mobile phone is not available all the time. Without mobile phone this project does not give accurate result.
3. A Real Time Embedded System Application for Driver Drowsiness, this system checks only the drowsiness of the driver to reduce accidents but when the driver consumed alcohol most of the accidents were happening.
4. Alcohol Detection and Accident Prevention of Vehicle, the major drawback is they are cutting-off the supply.
5. Alcohol Sensing Alert with Engine Locking system they are detecting if the person consumed alcohol or not. So, if a driver is drunk and tries to drive the vehicle the system detects alcohol presence in his/her breath and locks the engine so that the vehicle fails to start.



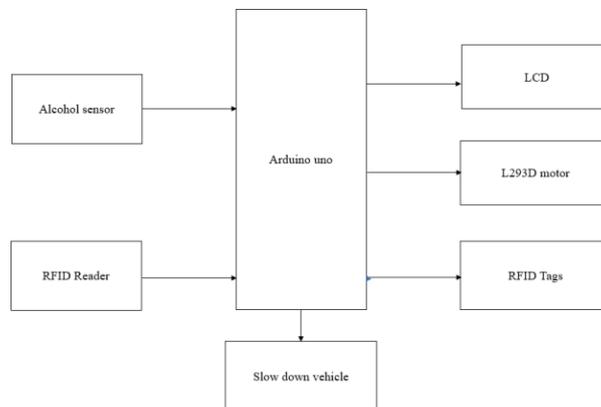
- In all proposed systems they are using alcohol sensor and mobile based systems. There are no special technologies to reduce the accidents in special zone areas. We are using RFID technology to reduce the accidents in special zone areas.

IV. PROPOSED WORK WITH METHODOLOGY

Accident Prevention is our proposed system which can be used for prevention of accidents. Arduino Uno is used which is an open-source microcontroller and is easily operable. The system senses the presence of alcohol consumed by the driver using the MQ-3 sensors. To overcome accidents near special zone areas and to avoid drunk & drive cases we came up with a solution that slows down the vehicle automatically. To prevent accidents due to consumption of alcohol we are placing MQ3 sensor that detects whether a person consume alcohol or not. If a person consumes alcohol, then using Arduino Uno can make vehicle to slow down. To prevent the accidents at special zone areas we place RFID (radio frequency identification) tags in direction signboards and RFID reader in vehicle. So that if a person enters these areas, then RFID reader and tag get communicate and with the help of RFID reader which acts as a microcontroller can make the vehicle to slow down.

In the proposed system when a person consuming alcohol and driving vehicle at high speed then using MQ3 sensor which detects alcohol and using Arduino Uno which acts as a micro controller can prevent accidents. Working of this is i.e., alcohol detection sensor is placed at the handle part of two wheelers vehicle and for the four wheelers at the steering part of vehicle. Arduino Uno is connected to the brake system that makes the vehicle to slow down.

If a person goes in a speed at special zone areas, then using RFID technology, we can make the vehicle to slow down. In this technology there will be RFID tags, RFID readers is used. RFID tags are placed at sign boards on roads. RFID reader is placed in vehicle. So, if a person enters these special zone areas, then RFID reader and tag get communicates and makes the vehicle to slow down. These are the methodologies used to prevent accidents.



V. COMPARISON WITH EXISTING SYSTEM

In the existed system the Breathalyzer requires the driver to blow into the device and indicates the blood alcohol level. A person can be punished if alcohol exceeding 30 milligrams per 100 milliliter of blood and is detected in the breath analyzer test. It is time taking process as well as some fine will be imposed by police officers that fine will be paid by the people and then they move from that area.

In our project we are going to use alcohol sensors in the vehicles. So, the person who is driving the vehicles will be detected that they consumed alcohol or not. The drivers need not fear about the test taken by the police. If they consume alcohol the sensor will sense it and automatically the speed of the vehicle is reduced and the speed of the vehicle in limited range. So, the accidents rates is reduced and injuries of accidents is reduced. The lives of the people are saved.

In some special zone areas like hospitals, schools, accident zone areas, zebra crossing lines most of the people are not slow downing their vehicles these may cause accidents due to heavy speed so to control the speed in the special zone areas we are using RFID tags in the boards and the readers are used in the vehicles where the readers in the vehicles



and the tags in hoardings communicates each other and the speed of the vehicles is reduced automatically up to certain range after that range the speed is handled who is driving the vehicles

VI. CONCLUSION

Drink & drive is a leading cause of road accidents. Detecting drunk driving requires stopping vehicles and manually scanning drivers by using breath analyzers. Well, here we propose a system that allows to detect drunk driving in the vehicle itself. In our system, it will detect the alcohol content to reduce drunk driving thereby satisfying the criteria of a safety system. If the driver has consumed more amount of alcohol than minimum level, the system will ensure a safety measure by turning the DC motor down. To prevent accidents at special zone areas we are using RFID technology using this technology vehicle get slow down. By using this technology, we can reduce most of the accidents that are happening because of drunk and drive.

REFERENCES

1. <https://scroll.in/article/908022/more-than-2000-people-were-booked-for-drink-driving-in-india-s-big-cities-on-new-years-eve>
2. T. Venkat, Narayana Rao; & Karthik Reddy Yellu 2017. "Preventing Drunken Driving Accidents using IoT." Available at www.ijcset.net.| Vol.8.
3. National Police Agency (Japan)," Fatal traffic accidents in 2007," January 2008, p. 30.
4. Thum Chia Chieh; Mustafa, M.M.; Hussain, A.; Zahedi, E.; Majlis, B.Y., "Driver fatigue detection using steering grip force," Research and Development, 2003.
5. Bhuta; Desai; & Keni. 2015. Alcohol Detection and Vehicle Controlling. IJ E T A. Vol.2 Issue 2.
6. Leena Thomas, "Automatic speed control of vehicles using RFID", International journal of engineering and innovative technology, 3, 11, (2014), 188-120.
7. K.N.V. Satyanarayana, "Mobile app & Iot based smart weather station" International Journal of Electronics, Communication & Instrumentation Engineering Research and Development, 7, 4, (2017), 1-8.
8. Vinod Rao, Saketh Kumar, "Smart Zone Based Vehicle Speed Control Using RF and Obstacle Detection and Accident Prevention", International Journal of Emerging Technology and Advanced Engineering, 4, 3, (2014), 756- 777.
9. Altaf SV, Abhinay S, Ansari E, Kaunain Md, Anwer R. Alcohol Detection and Motor Locking System. International Journal of Advanced Research in Electrical, Electronics and Instrumentation Engineering. 2017; 6(2): 989-993.
10. Jiangpeng Dai, Jin Teng, Xiaole Bai, Zhaohui Shen, Dong Xuan, "Mobile Phone Based Drunk Driving Detection", in IEEE 4th International ICST Conference on Pervasive Computing Technologies, 2010.
11. Rahul Mandalkar, Rahul Pandore, Manoj Shinde, Valmik Godse, "Alcohol Detection and Accident Avoidance Using Locking with Tracking", in International Journal of Advance Research in Computer Science and Management Studies, Vol. 3, Issue 9, September 2015.
12. Kenichi Takahashi, Kana Hiramatsu, Mami Tetsuishi, "Experiments on Detection of Drinking from Face Images Using Neural Networks", in IEEE 2015 2nd International conference on Soft Computing and Machine Intelligence.
13. Prof. Dr.D.G.Jha, Swapnil buva Alcohol Detection in Real-Time To Prevent Drunk Driving IOSR Journal of Computer Engineering.



INNO SPACE
SJIF Scientific Journal Impact Factor
Impact Factor
7.54

ISSN

INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA



INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY RESEARCH IN SCIENCE, ENGINEERING AND TECHNOLOGY

| Mobile No: +91-6381907438 | Whatsapp: +91-6381907438 | ijmrset@gmail.com |

www.ijmrset.com