e-ISSN: 2582-5208
International Research Journal of Modernization in Engineering Technology and Science
(Peer-Reviewed, Open Access, Fully Refereed International Journal)
Volume:04/Issue:07/July-2022 Impact Factor- 6.752 www.irjmets.com

ARDUINO BASED AUTOMATIC ENGINE LOCKING SYSTEM FOR DRUNKEN DRIVER

Mounika Reddy *1, Radha Krishna*2, Ch. Sarita*3

*1,2,Student, Electronics And Communication Engineering, ACE Engineering College, Hyderabad, Telangana, India.

*3Assistant Professor, Department of Electronics And Communication Engineering, ACE Engineering College, Hyderabad, Telangana, India.

ABSTRACT

This project presents the design and implementation of an Alcohol Detection with Engine Locking for cars using the Ultrasonic Sensor and Arduino UNO as the MCU (Master Control Unit). The system will continuously monitor level of alcohol concentration in alcohol detection sensor and thus turn off the engine of vehicle if the alcohol concentration is above threshold level. The model will also send the message of whereabouts of the vehicle through SIM900A.

The project provides an efficient solution to control accidents due to drunk driving.

Keywords: Arduino UNO, MQ-3 Sensor, Ultrasonic sensor, Buzzer, LED, SIM900A, DC Motor etc.

I. INTRODUCTION

The current scenario shows that the most of the road accidents are occurring due to drunk-driving. The drivers who drink alcohol are not in a stable condition and so, rash driving occurs on highway which can be risky to the lives of the people on road, the driver inclusive. The enormity of the dangerous driving transcends boundary. The laws in India are currently prohibiting drivers to drink and drive so that the fine can stop them to drink and drive. Whatsoever, effective observation of inebriated drivers could be a challenge to the policemen and road safety officers, the rationale for this stems from the natural inability of citizenry to be present additionally as state among identical house and time. This restricted ability of enforcement agents undermines each manual effort geared toward edge drink-driving. There is therefore the need for an alcohol detection system that can function without the restriction of space and time. The Indian Ministry of Statistics reported thousands of road accidents in 2016. Though the report declared speed violation is the foremost reason for these accidents, it will safely be inferred that almost all of the cases are because of driver's unstable condition caused by drivers becoming drunk before they drive.

The investigation done by the Planet Health Organization in 2008 shows that concerning 50%-60% of traffic accidents square measure associated with drink-driving.

Moreover, WHO information on road traffic deaths disclosed 1.25 million traffic deaths were recorded globally in 2013 with the low- and middle-income countries having higher fatality rates per a 100K population (24.1% and 18.4% respectively), information collected showed that several of economic vehicles drivers in Bharat admitted to drinking alcohol throughout operating days. This shows that almost all drivers, particularly business and serious duty trucks drivers interact in drink driving, which may result in accident. Bharat sets a legal limit of 30mg/100mL blood alcohol concentration (BAC), any level higher than that's same to be ineligible. The BAC depicts the amount of alcohol in an exceedingly sure volume of blood. It's measured as either grams of alcohol per metric capacity unit of blood or milliliters of blood, (mg/ml, utilized in a lot of of Europe). For BAC level from 0.4 to 0.6, drivers feel dazed/confused or otherwise disoriented, and it's typically not safe for a driver to drive a vehicle beneath such condition. Also, BAC level for 0.7 to 0.8 makes a driver's mental, physical and sensory functions to be severely impaired. At this stage, a driver is inactive and incapable of driving. BAC level of 0.2 to 0.3 continues to be not safe however the motive force still. So, there is need of such system which can reduce the number of road accidents caused due to drunk driving.

II. METHODOLOGY

- The Alcohol Detection with Engine Locking system helps to reduce accidents which are occurring due to drunk driving. MQ-3 sensor detects the presence of alcohol in the surroundings.

e-ISSN: 2582-5208
International Research Journal of Modernization in Engineering Technology and Science
(Peer-Reviewed, Open Access, Fully Refereed International Journal)
Volume:04/Issue:07/July-2022 Impact Factor- 6.752 www.irjmets.com

- The sensor provides output on the basis of the concentration of the alcohol, if the alcohol concentration is higher the conductivity of MQ-3 sensor increases which in turn gives the reading to ARDUINO. If the reading is greater than the threshold level, ARDUINO will stop the DC motor.
- The red LED will also blink if the distance is less than the safe distance to give indication to other vehicles that the vehicle in front of them is unsafe.

III. MODELING AND ANALYSIS

- If the reading is greater than the threshold level, ARDUINO will stop the DC motor. The red LED will also blink if the distance is less than the safe distance to give indication to other vehicles that the vehicle in front of them is unsafe. Now, with the help of SIM900A the message will be sent to the civil forces that the particular vehicle is unsafe and can be a threat to other people.

BLOCK DIAGRAMS

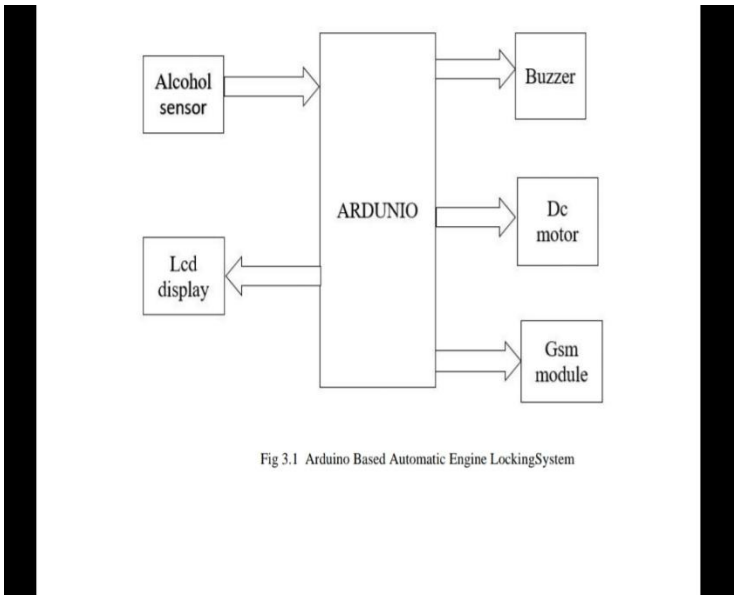


Fig 3.1 Arduino Based Automatic Engine LockingSystem

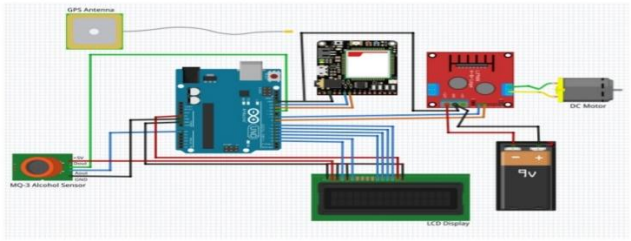
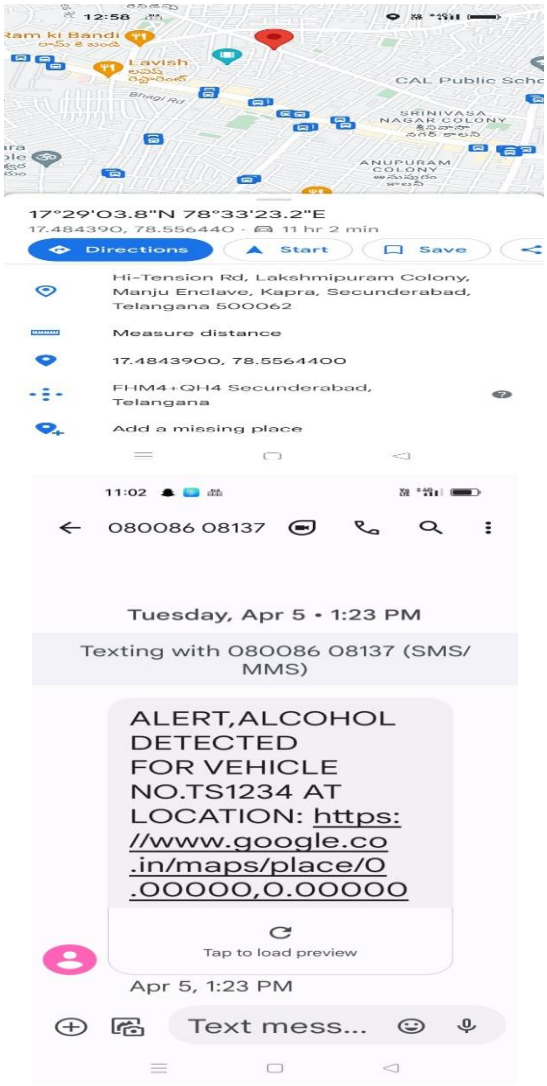


Fig 9.1 Schematic Diagram

IV. RESULTS AND DISCUSSION

- If alcoholic person tries command on vehicle the alcoholic sensor determines the existing of alcohol and shut down the vehicle engine and sound alarm by which the nearby people will exchange the seat.
- Peoples are aware of situation by the help of "LCD screen" present in the vehicles and hence take required action.
- We can avoided any kind of loss of life by using this system. All equipment are totally tested and connected as required thereby giving us the much needed result as shown in the image below

e-ISSN: 2582-5208
International Research Journal of Modernization in Engineering Technology and Science
(Peer-Reviewed, Open Access, Fully Refereed International Journal)
Volume:04/Issue:07/July-2022 Impact Factor- 6.752 www.irjmets.com



V. CONCLUSION

We have given an incredibly capable way to deal and to develop a smart system for vehicles to diminish number of disasters caused in light of alcoholic driving. As the creating insight among people is that vehicle security is dynamically critical. Future degree of this structure is to control the setbacks caused due to alcohol use. This system improves the security of individual and in this manner giving the convincing progression in the vehicle business regarding decrease setbacks caused in light of driving.

ACKNOWLEDGEMENTS

We take this opportunity to thank one and all who have helped in making this project possible. We are thankful to **JNTUH** for giving us this opportunity to work on a project as a part of our curriculum.

We the students **of the ECE department of ACE Engineering College** would like to convey our heart full thanks to **Dr. B. L. RAJU, Principal** of the college for the wonderful guidance and encouragement given to us to move ahead in the execution of this project.

We are highly grateful to the great personality in the field of electronics, none other than **DR.P. SATISH KUMAR, Head of the Department of Electronics and Communication Engineering** of ACE for guiding and taking care of our career in this field, We are thankful to Sir.

We are happy for being guided by **Mrs. CH. SARITA,** Professor for her able guidance given to us to complete our technical project work successfully.

We wish to express our deep sense of gratitude to our **Project coordinator Mr. B. Giri Raju,** Professor for giving us an opportunity to present the technical project work.

Above all, we are very much thankful to the management of **ACE Engineering College** which was established by the high-profiled intellectuals for the cause of Technical Education in the modern era. We wish that ACE sooner should become a deemed university and produce uncountable young engineers and present them to the modern technical world.

VI. REFERENCES

[1] L. A. Navarro, M. A. Diño, E. Joson, R. Anacan and R. D. Cruz, "Design of Alcohol Detection System for Car Users thru Iris Recognition Pattern Using Wavelet Transform," 2016 7th International Conference on Intelligent Systems, Modelling and Simulation (ISMS), Bangkok, 2016, pp. 15-19.

[2] Cahalan,D., I. Cisin, and Crossley, American Drinking Practices: A National Study of Driving Behaviour and Attitudes. 1969, Rutgers University Press: New Brunswick, NJ.

[3] MUGILA.G, MUTHULAKSHMI.M, SANTHIYA.K, Prof.DHIVYA.P- SMART HELMET SYSTEM USING ALCOHOL DETECTION FOR VEHICLE PROTECTION[International Journal of Innovative Research in Science Engineering and Technology (IJIRTSE) ISSN: 2395-5619, Volume – 2, Issue – 7. July 2016].

[4] Dhivya M and Kathiravan S, Dept. of ECE, Kalaignar Karunanidhi Institute of Technology- Driver Authentication and Accident Avoidance System for Vehicles[Smart Computing Review, vol. 5, no. 1, February 2015].

[5] Babor , AUDIT: The alcohol use disorders identification Test: Guidelines for use in primary health care. 1992, Geneva, Switzerland: World Health Organization. [6] Lee, Assessing the Feasibility of Vehicle-Based Sensors To Detect Alcohol Impairment. 2010, National Highway Traffic Safety Administration: Washington, DC. [7] http://www.arduino.cc/

[6] A. ISuge, H.Takigawa, H.Osuga, H.Soma, K.Morisaki, Accident Vehicle Automatic Detection System By Image Processing Technology , ©IEEE 1994 Vehiclee Navigation & ISC.