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Survey on: Cab Management System

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Abstract: This system enhances driving safety by providing early detection of both drunk driving and accidents. Drunk driving is a major reason for road accidents around the world. Many people still drive after alcohol consumption endangers the lives of both the drinker and others. To solve this problem, the system alcohol detection sensors are used to assess driver sobriety. Detection of alcohol triggers a notification. A vehicle tracking system using GPS and GSM modules immediately informs the owner of the vehicle's location. A car's immobilizer system either prevents the vehicle from starting or safely brings it to a halt. Apart from alcohol detection, the system can also detect accidents. Leveraging sensors, GPS, GSM, and IoT technology, the system enables to find out if a crash has happened. Upon triggering, the device immediately sends a message with its location coordinates and status of the vehicle. This facilitates rapid assistance and life preservation. The main goal of the project is to promote safe driving and reduce accidents by using technology to monitor drivers and respond quickly to emergencies.

Keywords **–Alcohol sensor, Accident prevention, GSM module, GPS tracking.**

I.INTRODUCTION

In recent years, there has been a notable increase in the number of road accidents. A key factor contributing to this trend is the rapid rise in vehicle usage driven by job and daily transportation demands. Many of these accidents result from speeding and insufficient safety precautions. To mitigate such incidents, cab transportation systems play a crucial role in contemporary urban mobility, with passenger safety being a primary concern. Drunk driving remains a continual threat to road safety. In response, the implementation of alcohol detection devices and mechanical safety measures has been thoroughly investigated in both academic and industry contexts. This survey examines the application of MQ-3 sensors for measuring alcohol levels in drivers and the use of limit switches to help avoid accidents, particularly when incorporated into an advanced cab management system.

II.LITERATURE SURVEY

Paper1: Alcohol Detection Using MQ-3 Sensor: The MQ-3 gas sensor is designed to detect ethanol vapors present in the driver's breath. When integrated into the dashboard near the driver’s seat, it analyzes exhaled air for traces of alcohol. The sensor’s internal resistance changes based on alcohol concentration, producing a corresponding analog signal. In an experiment conducted by Sharma et al. [1], an Arduino microcontroller was paired with the MQ-3 to read analog values from the sensor and compare them to a calibrated threshold.

Paper2: A real-world prototype was developed where the MQ-3 sensor was connected to both a microcontroller and a GSM module. If intoxication was detected, the system would prevent the vehicle from starting and simultaneously notify the control center through SMS[2].

Paper3: Despite its advantages, the MQ-3 sensor can yield false positives in the presence of substances such as hand sanitizers or aerosol sprays. “The MQ-3’s high sensitivity, while useful, can sometimes lead to inaccurate readings in environments rich in alcohol-based vapors unrelated to drinking” [3].

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IV.CONCLUSION

Utilizing MQ-3 sensors for detecting alcohol in combination with limit switches for accident prevention offers a solid and cost2 effective method to improve cab safety. When these elements are incorporated into a centralized cab management system, they can automate safety assessments, track driver conduct, and quickly react to emergencies. While this technology has its drawbacks, its straightforwardness, low cost, and flexibility make it particularly suitable for commercial cab fleets, particularly in developing areas.

V.REFERENCES

[1] A. Sharma, R. Tiwari, and S. Gupta, “Arduino-Based Alcohol Sensing and Ignition Control System,” International Journal of Engineering Research & Technology (IJERT), vol. 7, no. 4, pp. 202–205, 2018.

[2] P. Mehta and M. Borkar, “Smart Cab Monitoring System with Alcohol Detection and GPS Tracking,” International Research Journal of Engineering and Technology (IRJET), vol. 6, no. 5, pp. 1469–1472, 2019.

[3] D. Roy and T. Ghosh, “Challenges in Ethanol Detection for Vehicle Safety,” Journal of Applied Sensor Technologies, vol. 4, no. 2, pp. 88–94, 2020.