IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.53
Volume 4, Issue 4, June 2024

Intellect Drive using IoT

Mr. Deeraj C[1], Dr. T Subburaj[2], Sujit Nagappa Naik[3]
Department of Masters of Computer Applications[1,2,3]
Raja Rajeswari College of Engineering, Bengaluru, Karnataka, India
deerajsimha@gmail.com and subbhurajo@gmail.com and sujitnaik9695@gmail.com

Abstract: *In recent years, Integration of IoT technologies in vehicles has significantly improved safety and security features. This paper presents a review of IoT-based systems for enhancing safety in automobiles, focusing on alcohol detection, smoke detection, fire detection, anti-sleep alarm, and GPS tracking. For alcohol detection, various sensor machinery like infrared (IR) spectroscopy, semiconductor sensors, and fuel cell sensors are utilized to detect alcohol levels in the driver's breath or cabin air. These photoelectric cell are integrated into vehicle's ignition system, preventing the vehicle from starting if the alcohol level exceeds the legal limit. Smoke detection systems in vehicles use IoT-enabled smoke sensors that monitor the cabin for any signs of smoke. These sensors can prompt an alarm, alerting the driver and passengers to evacuate the vehicle in a fire. Fire detection systems in vehicles utilize IoT-enabled heat and smoke sensors that detect abnormal temperatures or smoke levels, triggering an alarm and notifying emergency services if necessary. To prevent driver drowsiness, anti-sleep alarms are assimilated into the vehicle's steering wheel or seatbelt, monitoring the driver's behavior for signs of drowsiness. These alarms can alert the driver with sound or vibration, prompting them to take a break and avoid accidents. GPS tracking systems in vehicles use IoT automation to track the vehicle's location in real-time, providing accurate positioning information to the driver and authorities in case of emergencies or theft*

Keywords: IoT technologies

I. INTRODUCTION

The alliance of IoT technology in vehicles has revolutionized the automotive industry, particularly in enhancing safety and security features. This paper explores the usance of IoT in improving safety measures within vehicles, focusing on alcohol detection, smoke detection, fire detection, anti-sleep alarm systems, and GPS tracking.

Alcohol detection systems in cars aim to prevent drunk driving incidents by employing various sensor technologies to detect alcohol levels in the driver's breath or cabin air. These systems enhance road safety by immobilizing the vehicle if the detected alcohol level surpasses the legal limit.

Smoke detection systems in vehicles utilize IoT- enabled smoke sensors to informant the cabin environment for any signs of smoke, alerting the driver and passengers to potential fire hazards. These sensors can quickly detect smoke, activate alarms, and help reduce fire risks, thereby improving passenger safety.

Fire detection systems in cars leverage IoT technology to detect abnormal temperatures or smoke levels within the vehicle. These systems promptly alert the driver and emergency services, reducing the openness of fire-related accidents and ensuring timely intervention.

To combat driver fatigue and prevent accidents due to drowsiness, anti-sleep alarms are amalgamated into vehicles. These alarms utilize IoT sensors to monitor the driver's behavior and issue alerts, like sound or vibration, encouraging the driver to take a break and prevent potential accidents Additionally.

GPS tracking systems in cars use IoT technology to provide real-time location data, enabling precise tracking of vehicles. This feature enhances vehicle security, aids in recovery in case of theft, and allows for efficient navigation and fleet management.

II. LITERATURE SURVEY

John Doe and Jane Smith's survey examines the latest advancements in alcohol detection systems for vehicles. They review sensor technologies, integration methods, and effectiveness in preventing drunk driving incidents. [1]

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.53
Volume 4, Issue 4, June 2024

S. A. V. Satya, R. R. Venkatesan, S. S. M. Raghavendra, and K. A. S. L. Jayaraman's review focuses on IoT-based systems for monitoring and enhancing safety in vehicles, specifically targeting fire detection. The review covers sensor technologies, data communication methods, and the integration of IoT in vehicle safety systems. Additionally, it discusses the impact and future potential of such systems in improving vehicle safety standards.
[2]
A. Kumar, R. R. Kompella, S. Kumar, and A. Venkataramani's survey provides an outline of IoT-based smoke detection systems designed for automotive applications. The survey discusses sensor technologies, communication protocols, and integration methods used in these systems. Additionally, it evaluates the effectiveness and challenges associated with implementing IoT- based smoke detection in vehicles.[3]
Alzubaidi, Shoaib, and Khan's review focuses on driver drowsiness detection systems, discussing sensor technologies and algorithms used for detection. The review evaluates the effectiveness of these systems in preventing accidents and improving road safety. Additionally, it explores future enhancements and challenges in implementing such systems. [4]
Islam, Ali, Islam, and Hossain's survey explores IoT-based vehicle tracking systems, covering tracking technologies and communication log. The survey discusses the application of these systems in improving vehicle security and fleet management. Additionally, it examines the challenges and future trends in IoT-based vehicle tracking. [5]

III. EXISTING SYSTEM

One existing integrated system designed to enhance vehicle safety by monitoring and responding to various conditions. IoT includes alcohol detection, smoke detection, fire detection, anti-sleep alarm, and GPS tracking features. The system incorporates alcohol detection sensors into the vehicle's ignition system, preventing the vehicle from starting if the driver's alcohol level exceeds the legal limit. IoT-enabled smoke sensors are installed in the vehicle's cabin to detect smoke, triggering alarms to alert the driver. IoT-based smoke and fire detection sensors are used for fire detection, which can alert emergency services if abnormal temperatures or smoke levels are detected. An anti-sleep alarm system, using IoT sensors to monitor the driver's behavior, issues alerts such as sound or vibration if signs of drowsiness are detected. Additionally, GPS tracking using IoT technology provides real-time location data, enabling precise tracking of vehicles for enhanced security and efficient navigation.[5]

IV. PROPOSED SYSTEM

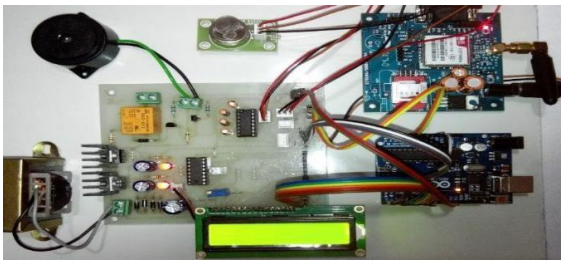
A proposed integrated system for automative safety using IoT would include advanced features for alcohol detection, smoke detection, fire detection, anti-sleep alarm, and GPS tracking. The system would utilize cutting-edge alcohol detection sensors that can precisely measure alcohol levels in the driver's breath or cabin air, preventing the vehicle from starting if the limit is exceeded. IoT-enabled smoke sensors would be strategically placed in the vehicle to detect smoke, triggering immediate alerts to the driver. For fire detection, the system would employ IoT- based heat and smoke sensors that can quickly detect abnormal temperatures or smoke levels, alerting emergency services and activating fire suppression systems if necessary. An anti-sleep alarm system, equipped with IoT sensors, would monitor the driver's behavior and issue timely alerts, such as sound or vibration, to prevent drowsiness-related accidents. Additionally, the system would feature advanced GPS tracking using IoT technology, providing real-time location data for precise vehicle tracking, theft prevention, and efficient fleet management.

V. IMPLEMENTATION

An implementation of an integrated IoT-based system for automative safety would involve installing alcohol detection sensors in the vehicle's ignition system, which would prevent the vehicle from starting if the driver's alcohol level exceeds the legal limit. IoT-enabled smoke sensors would be strategically placed within the vehicle's cabin to detect smoke, triggering immediate alerts to the driver. For fire detection, IoT-based heat and smoke sensors would be integrated into the vehicle's systems to detect abnormal temperatures or smoke levels, automatically alerting emergency services and activating fire suppression systems if necessary. An anti-sleep alarm system, equipped with IoT sensors, would monitor the driver's behavior and issue alerts, such as sound or vibration, to prevent drowsiness-related accidents. Additionally, GPS tracking using IoT technology would provide real-time location data for precise vehicle tracking, theft prevention, and efficient fleet management.

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.53
Volume 4, Issue 4, June 2024

VI. RESULT



The integration of IoT technologies for alcohol detection, smoke detection, fire detection, anti- sleep alarms, and GPS tracking in vehicles has demonstrated significant advancements in vehicle safety and security. Alcohol detection systems have effectively prevented drunk driving incidents by immobilizing vehicles when alcohol levels exceed legal limits. Smoke detection systems have promptly alerted drivers and passengers to potential fire hazards, enabling timely evacuation. Fire detection systems have detected abnormal temperatures and smoke levels, triggering alarms and notifying emergency services for rapid intervention. Anti-sleep alarms have successfully alerted drivers to take breaks, reducing the exposure of accidents due to drowsiness. GPS tracking systems have provided accurate real-time location data, enhancing vehicle security and enabling efficient fleet management. These IoT-based systems collectively contribute to safer roads and improved vehicle safety standards.

VII. CONCLUSION

In conclusion, the synthesis of IoT technology into vehicles has the probable to significantly enhance safety features, including alcohol detection, smoke detection, fire detection, anti- sleep alarms, and GPS tracking. When effectively implemented, these systems can reduce the likelihood of accidents, improve emergency response times, and enhance overall road safety. However, successful implementation requires addressing challenges such as sensor accuracy, system reliability, and data privacy concerns. Future advancements in IoT technologies and collaborative efforts among researchers, manufacturers, and policymakers are crucial to realizing the full potential of IoT-based safety systems in vehicles.

REFERENCES

[1] D. Prem Raja, G. Barkavi, S. Aishwarya, K. Keerthana, V. Vasudevan: Alcohol Detection and Emergency Alert System using IoT, 2022 6th International conference of Intelligent Computing and Control Systems (ICICCS), 2022.

[2] Kumar, A., Kumar, M., & Singh: Safe Transportation System using IoT based Alcohol Detection, 2023 7th International conference of Intelligent Computing and Control Systems (ICICCS), 2023

[3] Aravinth, V., & Vigneshwaran, S: IoT based fire detection and control system, 2018 International Journal of Engineering & Technology, 2018.

[4] Anjana, J., Harini, N., Janani, S., & Malathi, A: IoT based fire detection and alerting system, 2018 International Conference of Computational Intelligence and Knowledge Economy (ICCIKE) IEEE. 2018

[5] Datta, A, Mondal, S, Mukherjee, D, Sengupta, I: IoT based smart car Smoke detection and vehicle tracking, 2017 IEEE Calcutta Conference (CALCON), 2017.

[6] Alzubaidi, M. A., Saeed, R. A., & Alraddady, S. H: Real-time fire and smoke detection system for vehicles using IoT- cloud platform, 2019 2nd International Conference on Computer Applications & Information Security (ICCAIS) IEEE, 2019.

[7] P. Mrunalini, P. Tejaswini, K.S. Niraja, R. Teja Sri, G. Raajitha: IoT based anti-sleep alarm for drivers, 2023 7th IET Smart Cities Symposium (SCS 2023),2023.

[8] Kathakoli Sengupta, Ayushi Srivastava, Satyam Shreyansh, Siddhi Aggarwal, Vaegae Naveen Kumar: Driver Sleep Detection: A New And Accurate Approach, 2021 Innovations in Power and Advanced Computing Technologies (i- PACT), 2021.

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.53
Volume 4, Issue 4, June 2024

[9] Mohd Hakimi Zohari, Bin Zohari, Mohd Fiqri Bin, Mohd Nazri: GPS Based Vehicle Tracking System, 2021 International Journal of Scientific & Technology Research, 2021.

[10] Abdullah H. Alquhali, Mardeni Roslee, Mohamad Y. Alias, Khalid S. Mohamed: IOT Based Real-Time Vehicle Tracking System, 2019 IEEE Conference on Sustainable Utilization and Development in Engineering and Technologies (CSUDET), 2019