Vehicle to Vehicle Using IOT

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Abstract

With the advancement of era, machines can now have interaction intelligently through the integration of advanced sensors. The fast growth within the wide variety of smart gadgets in step with character highlights the widespread potential of IoT throughout industries. In the automotive discipline, IoT has enabled the improvement of clever motors. This paper discusses the integration between smartphones, sensor shields, and ESP32 development forums to create a WiFi-based vehicle conversation system geared toward improving automotive safety.

Modern automobiles are reworking into sensor-wealthy platforms, capable of collecting and transmitting data about their environment, other automobiles, and drivers. This communication helps safer navigation, higher environmental monitoring, and efficient traffic management. The emerging "Vehicle Grid" resembles the Internet of Things (IoT), forming an "Internet of Vehicles" (IoV) that not handiest uses Vehicle-to-Infrastructure (V2I) conversation but additionally peer-to-peer Vehicle-to-Vehicle (V2V) interaction to decorate navigation and safety. This paper opinions numerous packages of V2V and V2I communique in automobiles.

Keywords: Advanced Sensors, Developing Technologies

I. Introduction

Integrating smart learning into daily environments like homes, workplaces, vehicles, and public spaces fosters a highly organized and user-friendly ecosystem. Smart transportation systems (ITS) are a critical part of this evolution, aiming to ensure safer, more efficient travel experiences. These systems utilize traffic information, hazard detection, alternate route suggestions, and more to enhance road safety and travel enjoyment.

Traditional traffic management relies on infrastructure-based systems, where fixed cameras and sensors collect and transmit data to centralized systems. However, this model is costly and suffers from slow data transmission—critical flaws in dynamic traffic environments. Regular maintenance and upgrades add to the costs. Therefore, large-scale deployment demands significant investments in communication and sensor infrastructures.

II. PROBLEM STATEMENT

Traffic congestion is a major issue affecting individuals today, leading to numerous accidents and fatalities annually. Among the many causes, the disregard for traffic regulations is one of the most significant contributors to this growing problem.

III. SYSTEM HARDWARE

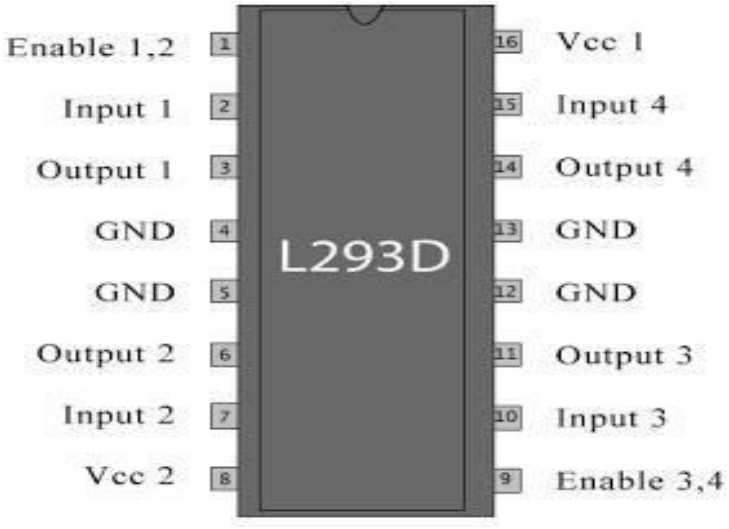
ESP32

- *Technical Specification*

- Features a single or dual-core 32-bit LX6 microprocessor.
- Operates at clock speeds up to 240 MHz.
- The version used in this project includes 30 pins (15 on each side).

L293 MOTOR DRIVER

The L293D motor driver is a dual H-Bridge device capable of controlling two motors simultaneously. It allows DC motors to rotate in both clockwise and counter-clockwise directions with ease.



CONCLUSION

Vehicle-to-vehicle communication protocols and security systems are still under development. Currently, these systems allow drivers to send and receive critical alerts. In the near future, the combination of machine learning and artificial intelligence could lead to fully autonomous vehicles equipped with advanced communication systems, eliminating the need for human drivers. This progress will address driver distractions and data security concerns, ultimately saving lives, reducing accidents, minimizing traffic congestion, and lowering carbon emissions in urban areas.

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