

Voice + Manual Controlled IoT Robotic Vehicle

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Abstract: *Robotic vehicles are increasingly used in industries, security systems, and hazardous environments where human presence can be risky. Traditional robotic systems often operate either manually or automatically, which limits their flexibility and efficiency. This project presents a Voice + Manual Controlled IoT Robotic Vehicle that uses the ESP32 microcontroller as the main controller and the L298N Motor Driver Module to control DC motors. The system allows the robotic vehicle to be controlled through a mobile application using voice commands and manual buttons via Bluetooth or Wi-Fi communication. Additionally, an ultrasonic sensor is used to detect obstacles in real time and automatically change the direction of the robot to avoid collisions. The ESP32 processes sensor data and user commands and controls the movement of the vehicle accordingly. This system improves flexibility, reduces human effort, enhances safety in dangerous environments, and demonstrates an efficient and cost-effective IoT-based robotic control solution suitable for automation, surveillance, and educational applications.*

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