Voice Controlled Robotic Vehicle

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21CSE305P – SERBOT: Project Based Learning in Robotics
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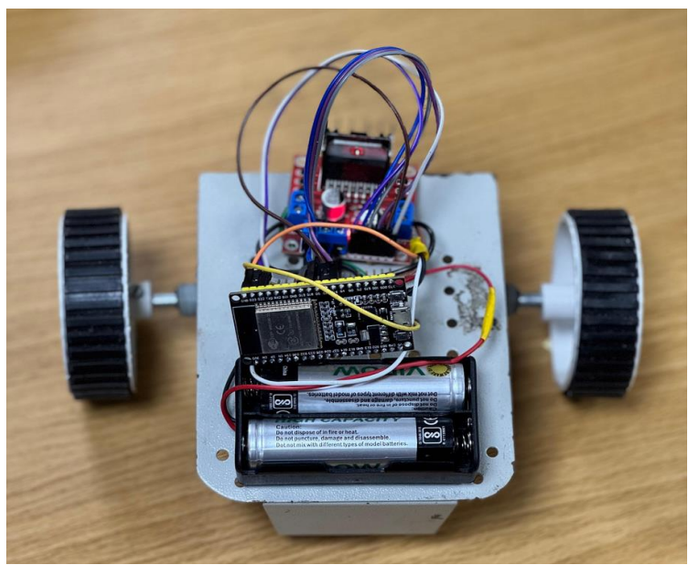
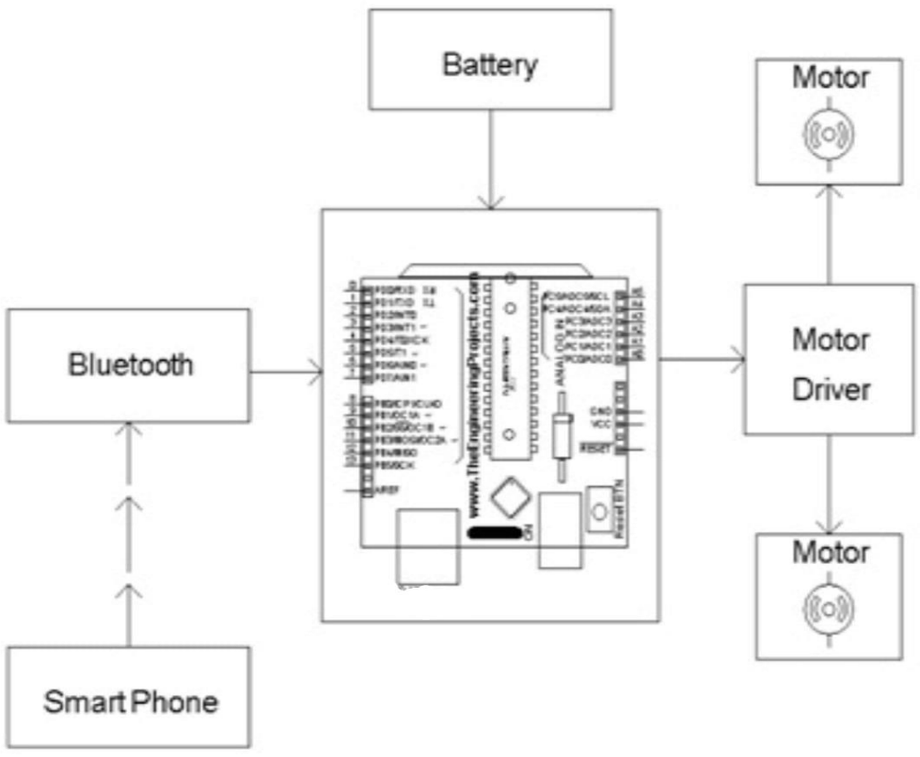
OBJECTIVE

- The project aims to control a robotic vehicle remotely using user voice commands.
- The system consists of a transmitter block and a receiver block, each using an ESP32 and a battery as a power source.
- A Bluetooth transmitter module is connected to the transmitter unit via an encoder device.
- A voice-recognition module and push-button switches are interfaced with the ESP32 to input commands.
- Commands are sent from voice or push-button inputs to the receiver to control the robot's movements: forward, backward, left, or right.
- A Bluetooth receiver module is connected to the receiver unit via a decoder device.
- Two motors are connected to the ESP32 through a motor driver IC, allowing the robotic vehicle to move in various directions.
- The robot's movement is controlled by voice or push-button inputs, with the transmitter sending commands to the receiver, which then controls the robot's direction.
- A laser beam is mounted on the robot, controlled by the ESP32 based on signals from the transmitter.

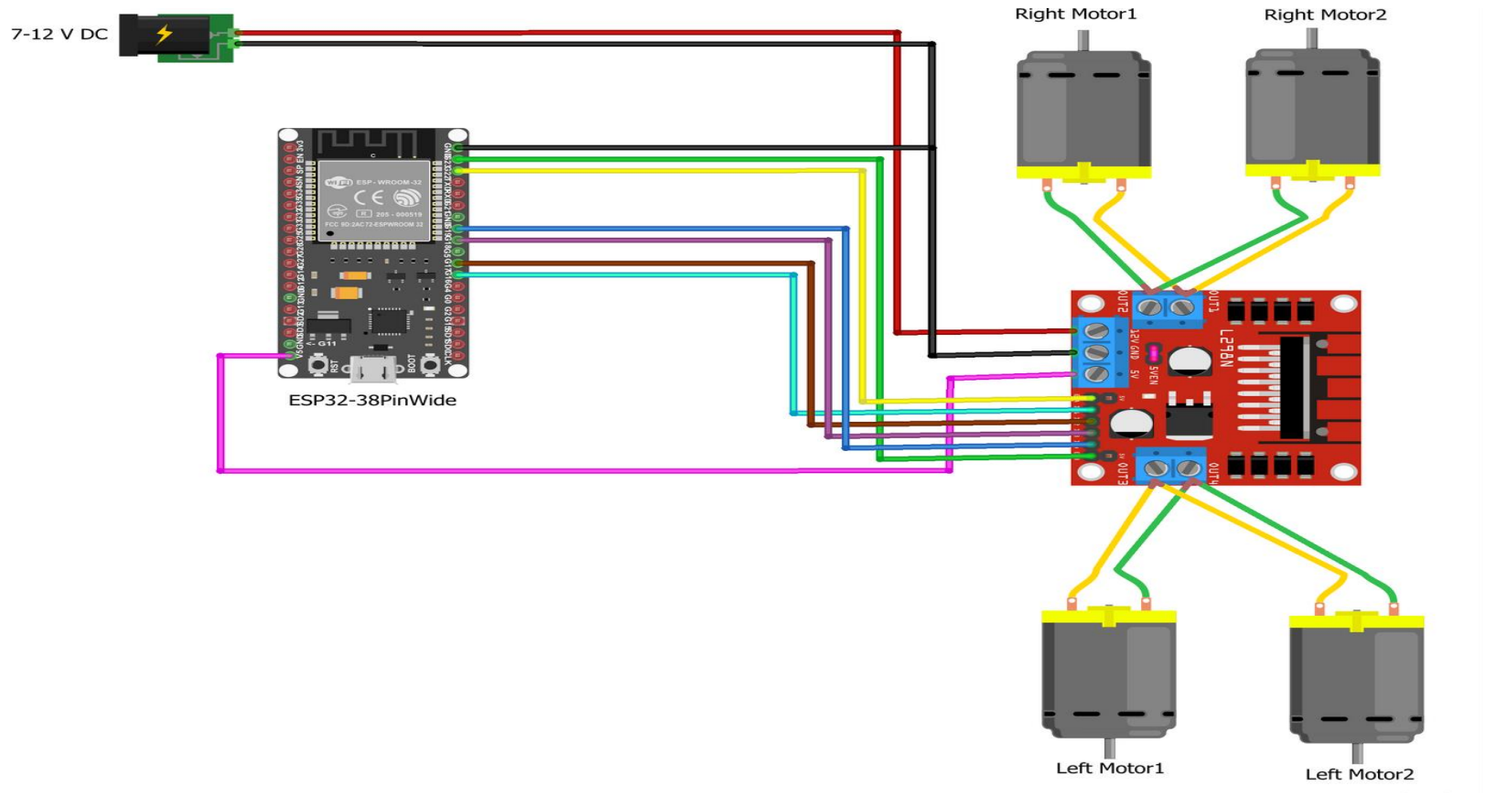


Total Expenditure:2,500 (INR)

ARCHITECTURE DIAGRAM



CIRCUIT DIAGRAM



COMPONENTS REQUIRED

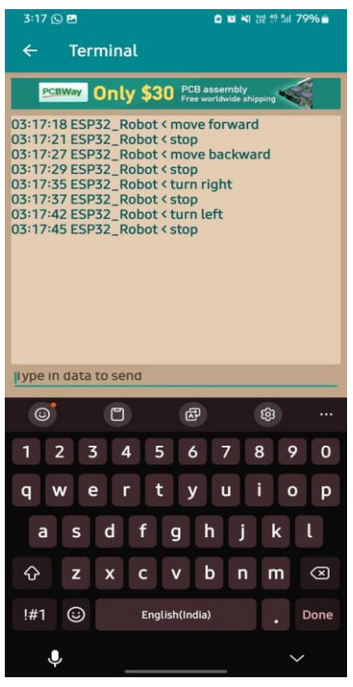
Hardware

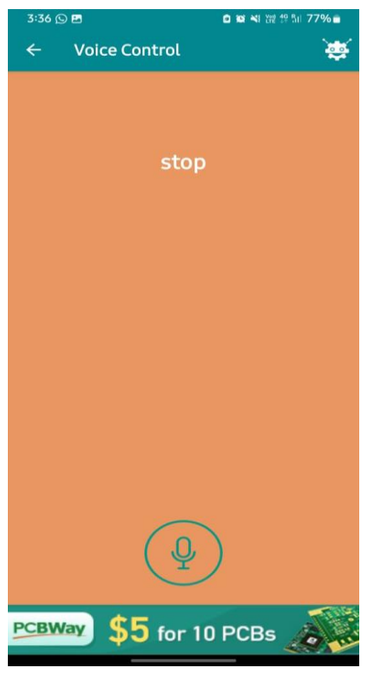
- ESP32
- L298N MOTOR DRIVER
- BATTERY
- DC GEAR MOTOR
- RUBBER WHEEL AND CHASSIE
- BATTERY HOLDER

Software

- Arduino BlueControl

UI Interface





CONCLUSION

- The voice-controlled robotic vehicle demonstrates the effective integration of voice recognition and Bluetooth communication for remote control. Through this project, we successfully implemented a system that allows users to operate the robot using simple voice commands, making it accessible and user-friendly.
- This project highlights the potential of using ESP32 and Bluetooth technology for real-time robotic control, showing that voice-controlled systems can be applied in various fields, from assistive technology to automation. The outcomes validate the design's reliability and provide a foundation for further enhancements, such as adding additional functionalities or expanding its application areas.