

VOICE CONTROL CAR



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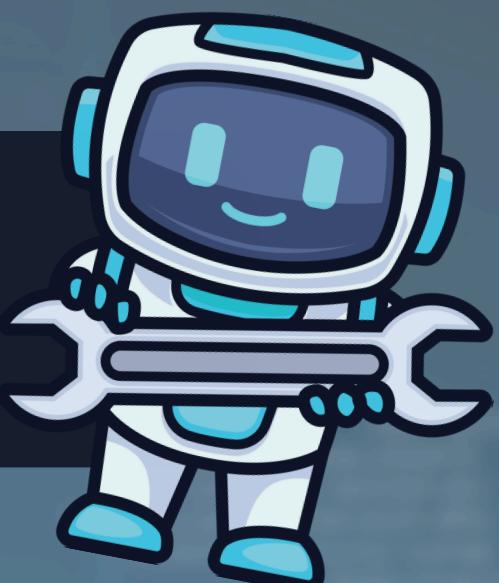
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COMPONENTS

1. Arduino Uno
2. Motor Driver Sheild
3. Wheels (4x)
4. TT Gear Motor (4x)
5. Servo Motor
6. Ultrasonic Sensor
7. 18650 Li-on Battery
8. 18650 Battery Holder
9. Male Female Jumper Wire
10. Gear Motor Chasis
11. DC Power Switch
12. HC-05 Bluetooth Module
13. IR Speed Sensor

COST BREAKDOWN



OBJECTIVES

1. By incorporating voice commands, the system allows users to control the car without needing to use a remote continuously, offering hands-free functionality.

2. The system includes obstacle detection and avoidance, allowing the car to navigate safely without user intervention, reducing the risk of collisions.



3. The combination of voice control and obstacle avoidance makes the system more accessible to users with mobility restrictions and enhances its efficiency in various environments

4. With the use of servo motors, the system ensures smooth and precise movement, improving maneuverability and control over the car's direction and speed.



FUNCTIONALITY BREAKDOWN

Voice Command Recognition

- Implement HC-05 Bluetooth module with software libraries for voice recognition.
- Program predefined commands for car movement (forward, backward, left, right).

Motor Control and Movement

- Utilize Arduino Uno and Motor Driver Shield for motor control.
- Translate voice commands into specific motor movements.

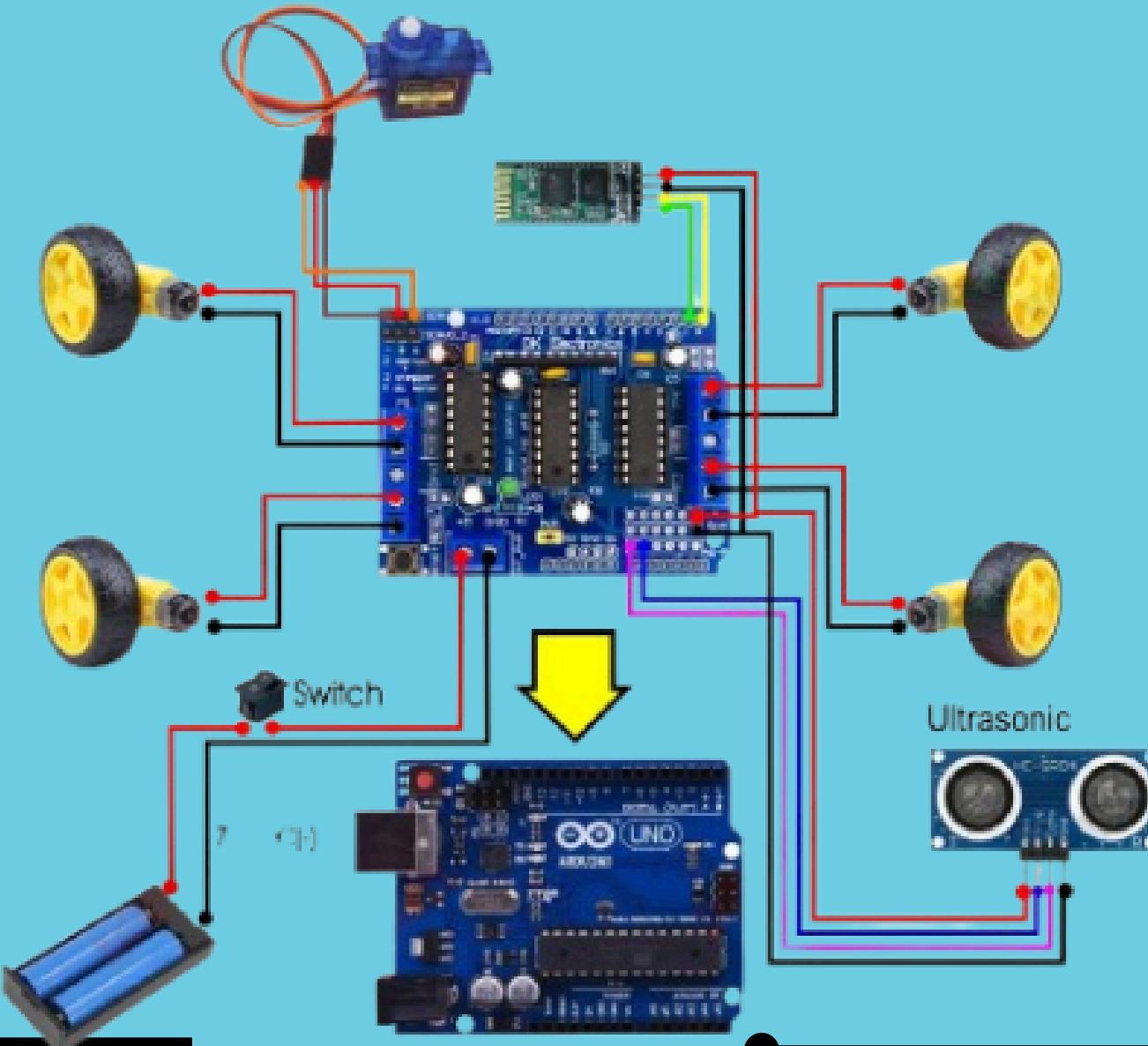
Obstacle Avoidance

- Integrate ultrasonic sensor to detect obstacles.
- Develop algorithms for autonomous obstacle avoidance.

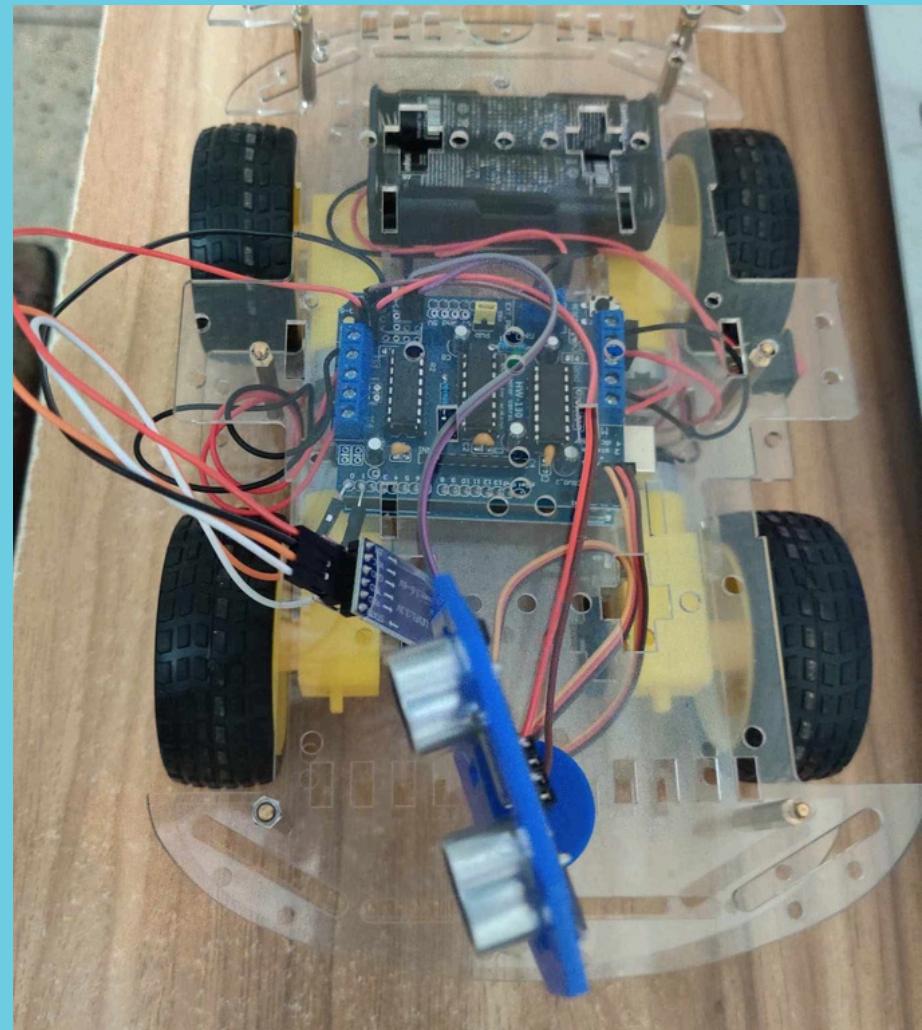
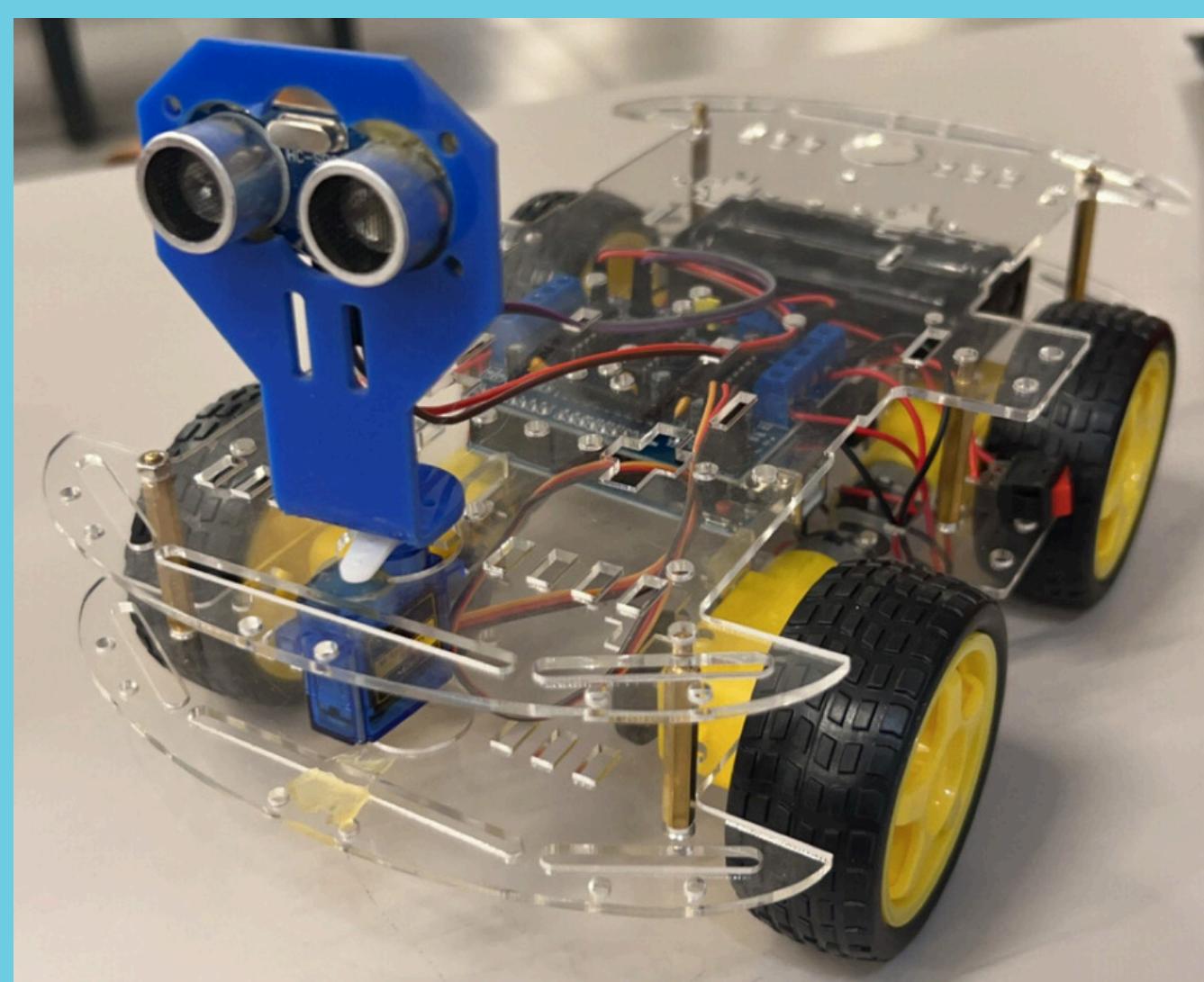
Top Speed Calculation

- Implement functionality to measure and record top speed.
- Calculate top speed for each trajectory executed.

SCHEMATIC DIAGRAM



HARDWARE DESIGN





CHALLENGES



- 
- Voice Recognition Accuracy** with the fine-tuned system for reliable recognition in dynamic environments and accents.
 - Motor Control Precision** helps to Calibrate for smooth and accurate motor responses to voice commands.
 - Obstacle Avoidance Algorithm:** Design precise algorithms for obstacle detection and avoidance.
 - Noise interference**
connectivity issues
Bluetooth connectivity issues



**THANK
YOU**

