RoboVR

SRB SUMO WRESTLING

About the game:

In this game, two robots compete to push the opponent out of the arena. The specifications and components to build the robot are mentioned below.

Components and its Specifications:

Sr. No.	Components	Specifications
1.	Johnson motor x4 / (or)Planetary motor x2	438 rpm*
2.	Android Mobile	With a Bluetooth Control application
3.	LIPO Battery	11.1 v , 2000mAh *
4.	Chassis	Aluminum Sheet (5mm thick)
5.	Wheels	2x Rubber Belts
6.	Clamp	Aluminum Sheet (2mm thick)
7.	Pulleys	Plastic Pulleys
8.	Bluetooth HC05	v2.0+EDR
9.	Arduino UNO	ATmega328P
10.	Jumper wires	M-M, M-F
11.	L298N motor driver	2A

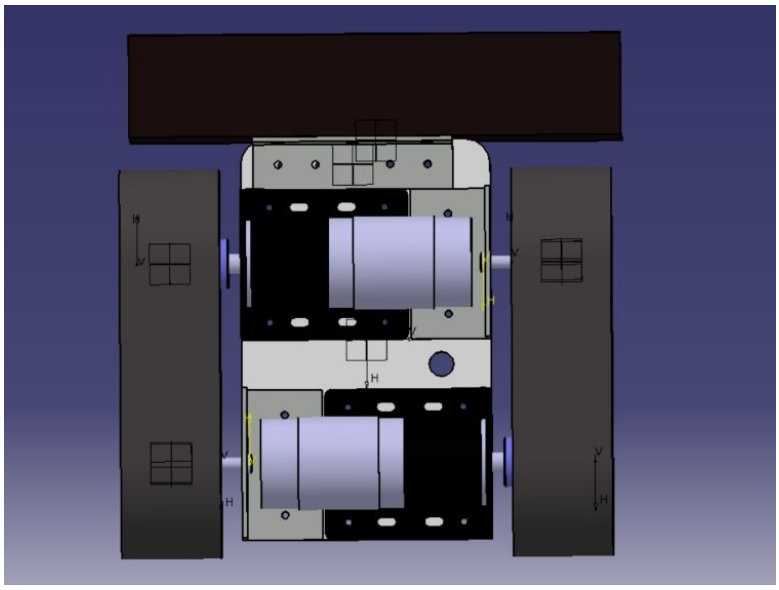
Note: ‘ * ’ mark indicates the value or component can vary according to the need

Robot Details:

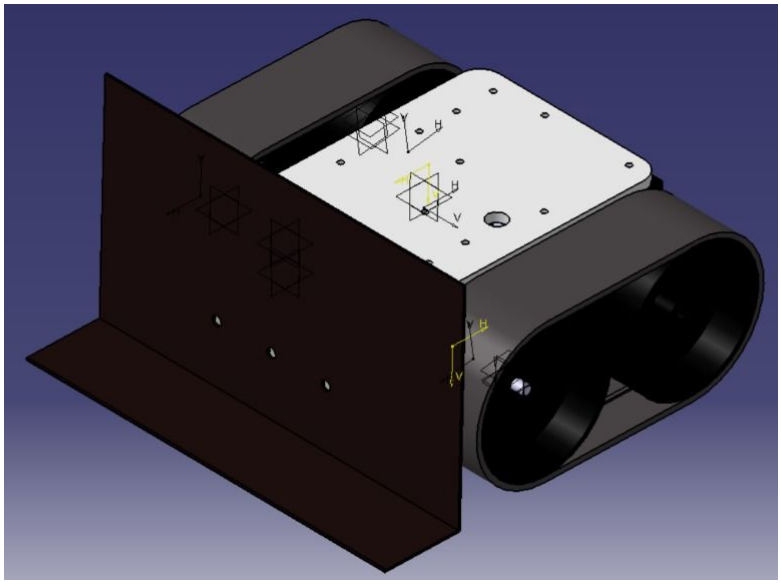
Robot Dimensions: 8” x 8” x 8”
Robot Weight: 4kg
Robot Control: Wireless
Robot Drive: Belt Drive

Mechanical Design:

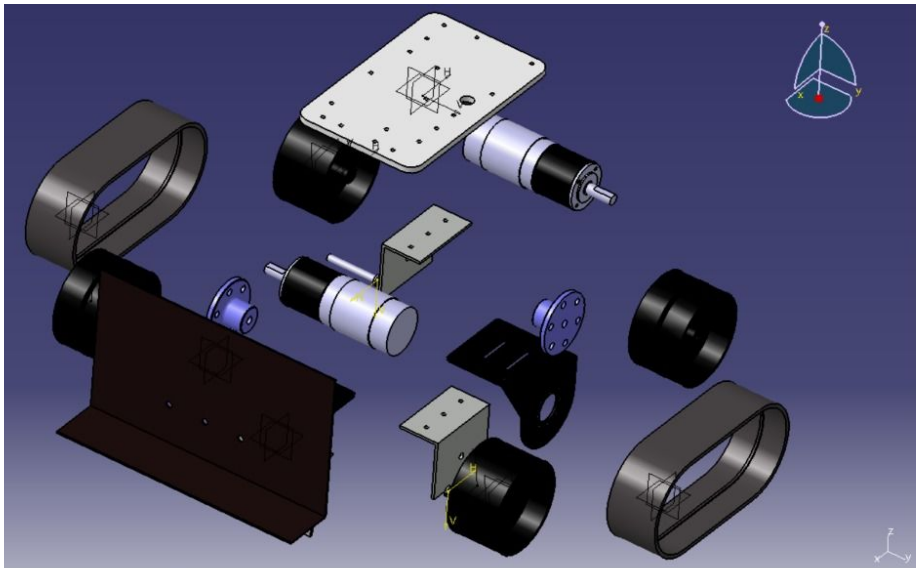
Bottom View



Isometric View



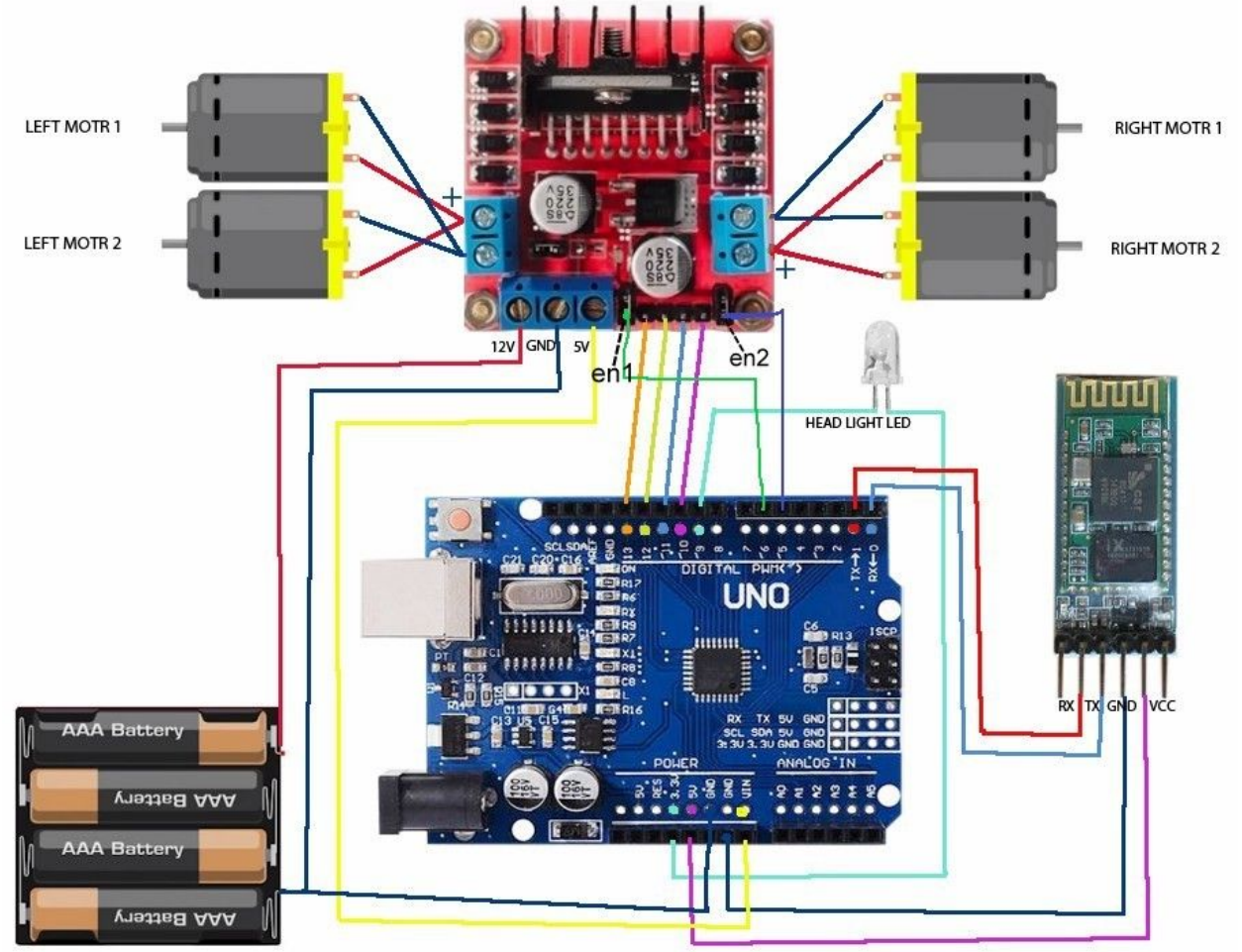
Split View



Working:

The robot is controlled with a remote operated from a mobile phone. For connections, Arduino UNO is used as a microcontroller and Bluetooth module HC05 is mounted on the Arduino for wireless operating. Motor Driver is used to amplifying current. A metal clamp is mounted in front of the bot to push the opponent easily out of the arena. In the below circuit design 4 motors are shown. Refer to the below diagram for connections. Arduino code for Bluetooth operating is also provided below. You can download an application for the remote control system on a mobile phone.

Connections:



Note: Do not connect jumpers at pins 'en1' & 'en2'

Arduino Code:

```
#include<SoftwareSerial.h>

#define IN1 8
#define IN2 9
#define IN3 10
#define IN4 11
//#define EN1 6
//#define EN2 5

SoftwareSerial mySerial(0, 1); // RX, TX

String data;
int btVal;

void setup()
{
  //Serial.begin(115200);
  pinMode(IN1, OUTPUT);
  pinMode(IN2, OUTPUT);
  pinMode(IN3, OUTPUT);
  pinMode(IN4, OUTPUT);
  //pinMode(EN1, OUTPUT);
  //pinMode(EN2, OUTPUT);
  digitalWrite(IN1, LOW);
  digitalWrite(IN2, LOW);
  digitalWrite(IN3, LOW);
  digitalWrite(IN4, LOW);
  //analogWrite(EN1,255);
  //analogWrite(EN2,255);
  mySerial.begin(9600);
}

void loop()
{
 while (mySerial.available())
 {
  {
      data = mySerial.readStringUntil('\n');
      //Serial.print(str);
  }

    btVal = (data.toInt());
    //Serial.print("BlueTooth Value ");
```

```
   //Serial.println(btVal);

  switch (btVal)
  {
     case 1:
       //Serial.println("Forward");
       forward();
       break;

     case 2:
      //Serial.println("Reverse");
       reverse();
       break;

     case 3:
      //Serial.println("Left");
       left();
       break;

     case 4:
       //Serial.println("Right");
       right();
       break;

     case 5:
       //Serial.println("Stop");
       stoprobot();
       break;

  }

 }

   if (mySerial.available() < 0)
    {
     //Serial.println("No Bluetooth Data ");
    }

}

void forward()
{
  digitalWrite(IN1, HIGH);
  digitalWrite(IN2, LOW);
  digitalWrite(IN3, HIGH);
  digitalWrite(IN4, LOW);
}
```

```
void reverse()
{
  digitalWrite(IN1, LOW);
  digitalWrite(IN2, HIGH);
  digitalWrite(IN3, LOW);
  digitalWrite(IN4, HIGH);
}

void left()
{
  digitalWrite(IN1, LOW);
  digitalWrite(IN2, LOW);
  digitalWrite(IN3, HIGH);
  digitalWrite(IN4, LOW);
}

void right()
{
  digitalWrite(IN1, HIGH);
  digitalWrite(IN2, LOW);
  digitalWrite(IN3, LOW);
  digitalWrite(IN4, LOW);
}

void stoprobot()
{
  digitalWrite(IN1, LOW);
  digitalWrite(IN2, LOW);
  digitalWrite(IN3, LOW);
  digitalWrite(IN4, LOW);
}
```