RoboVR

SRB FENCING

About the game:

Fencing is a sport in which the players hold a sword and points are given when we touch the opponent using the sword.

In Olympic of Robots, the robots have to play the game in a similar way and the points will be provided only if the upper part of the opponent is touched.

Components and its Specifications:

Sr. No.	Components	Specifications
1.	Chassis	Aluminum Sheet (5mm thick)
2.	DC Motor(x3)	60 rpm
3.	DC motor(x4)	300 rpm
4.	Wheels(x4)	Off-road type
5.	Battery	5A, 12V
6.	Remote	With 4 DPDT switches
7.	Wires	8m-10m

Robot Details:

Robot Dimensions: 12” x 12” x 12”

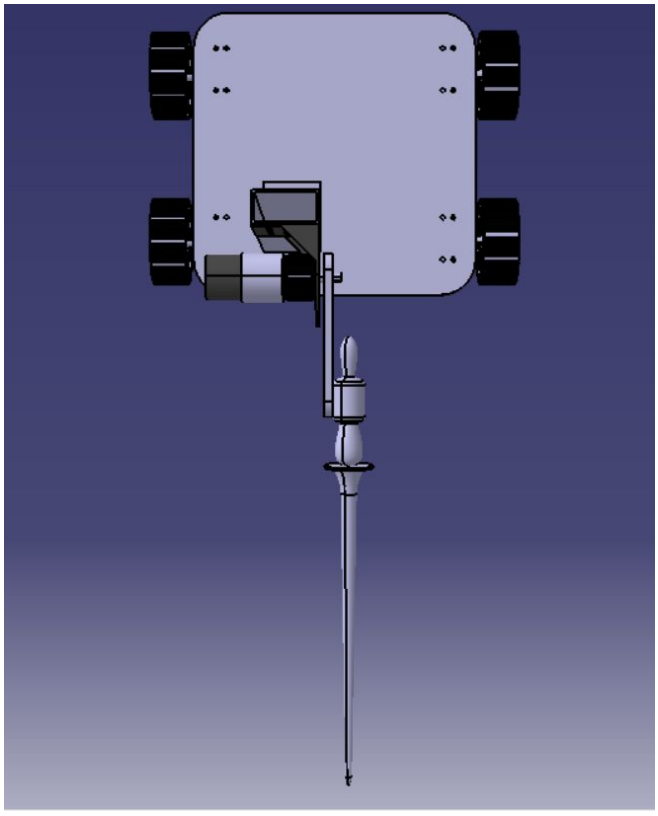
Robot Weight: 2kg

Robot Control: Wired

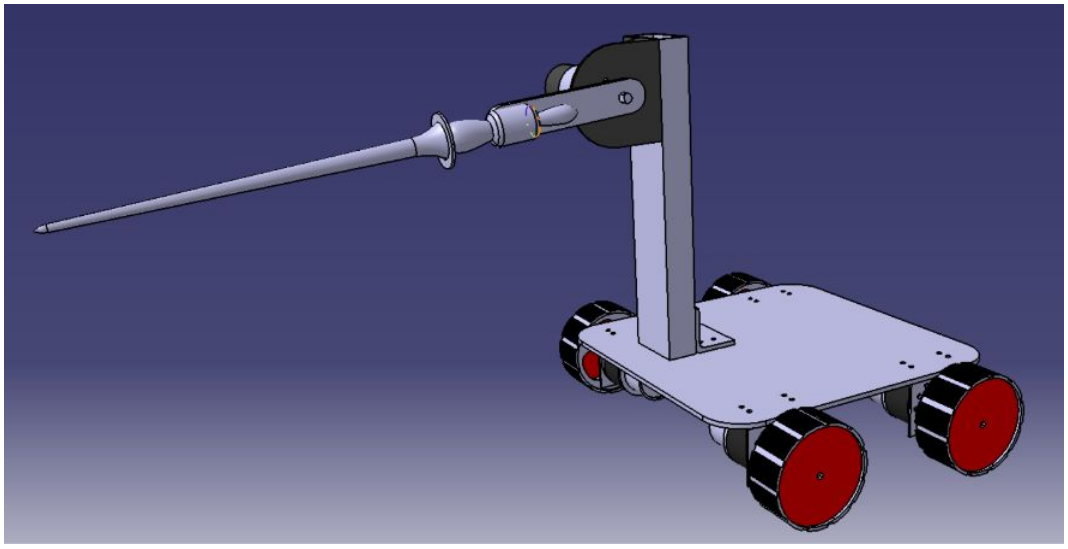
Robot Drive: 4 Wheel Drive

Mechanical Design:

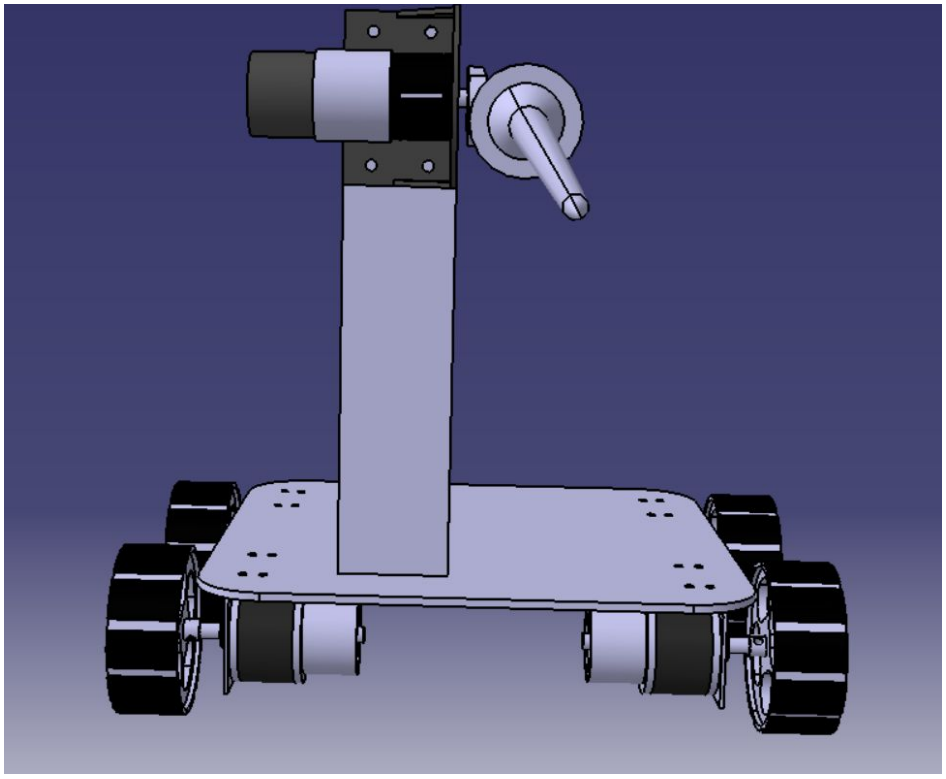
Top View



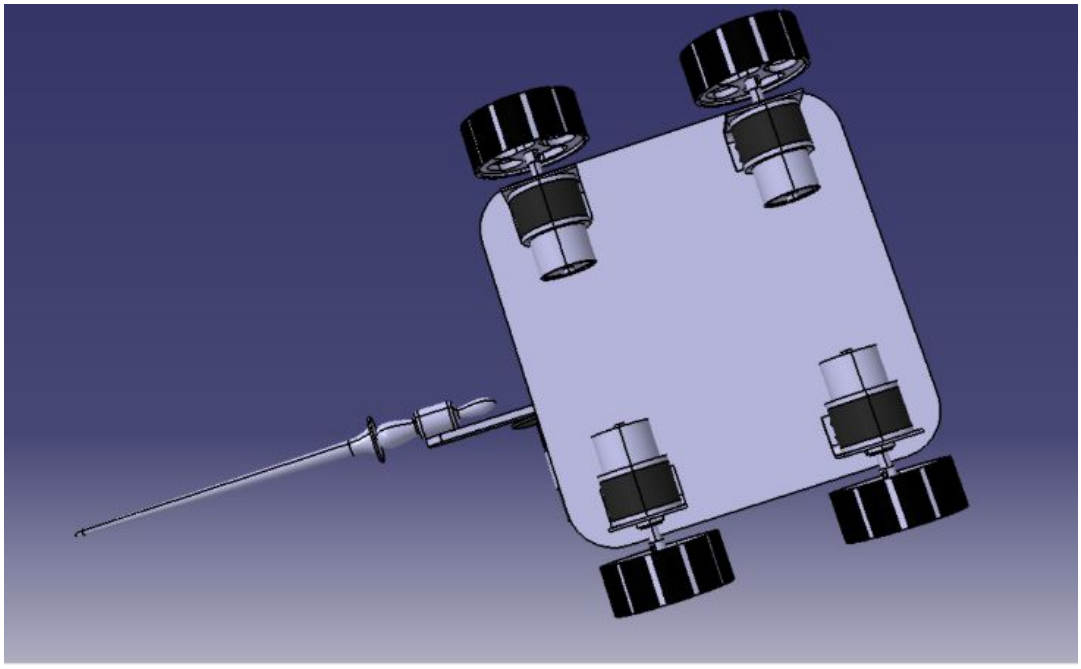
Side View



Front View



Bottom View

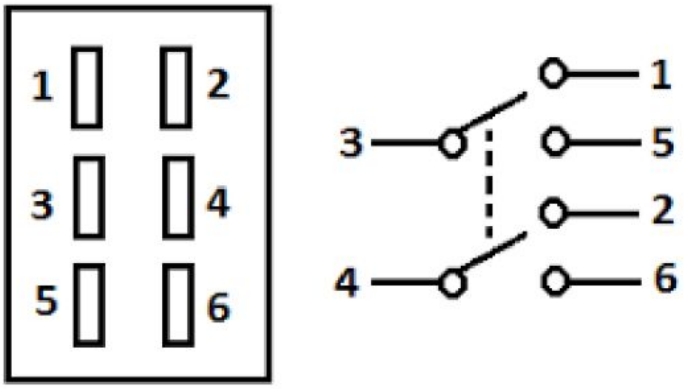


Remote Details:

A similar remote is needed to be built for this robot in which 3 DPDT switches are to be attached instead of 2 as shown in the above figure.

A Double Pole Double Throw (DPDT) switch is an electromechanical switch that has 2 inputs and 4 outputs and each input has 2 corresponding outputs that it can connect to.

Given below is the diagram of a DPDT switch.



Working:

The robot moves on 4 wheels with the help of the DPDT switches remote. To gain the points, we have to at least get a touch of the opponent robot's upper part. That can be done using the motor of 60 rpm.

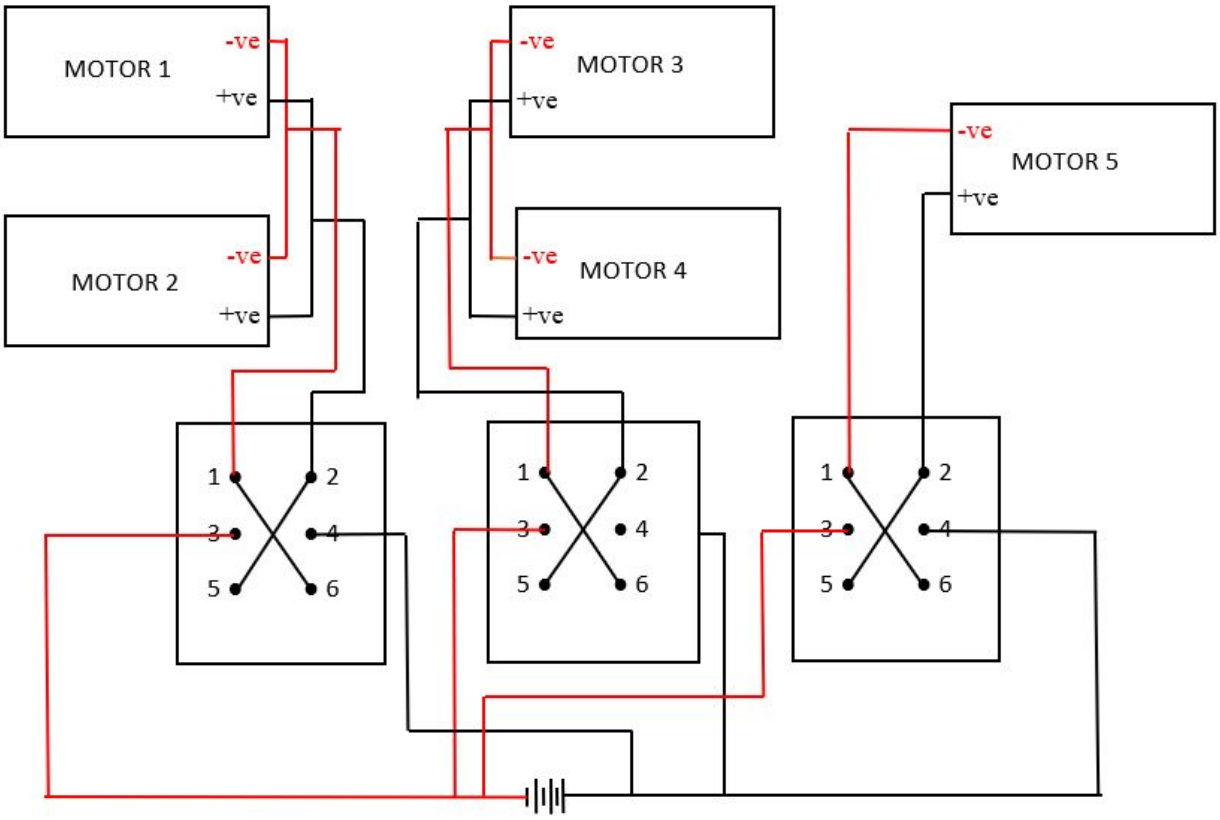
The 60 rpm motor is used for the vertical movement of the sword and hit the opponent with the sword and gain points.

The movement of the robot with respect to the switch operation are given below in the table.

Movement of the Bot :

Motion	Switch s1	Switch s2
Forward	Forward	Forward
Backward	Backward	Backward
Left	n/c	Backward
Right	Backward	n/c

Connections:



Motors 1 and 2 are used to control the 2 left wheels of the robot and the Motors 3 and 4 are used to control the 2 right wheels of the robot. Motor 5 is used to rotate the arm holding the fence in a vertical direction.