RoboVR

SRB HOCKEY

About the game:

Hockey is a game which is very similar to football except that you have to touch the ball with a hockey stick instead of your foot.

In the Olympics of Robots, this game will be played between 2 players having one robot each. The robot has to use its hockey stick and dribble past the opponent's robot to score a goal into the opponent's net.

Components and its Specifications:

Sr. No.	Components	Specifications
1.	Chassis	Aluminum Sheet (5mm thick)
2.	DC Motor(x1)	60 rpm
3.	Johnson Motors (x4)	300 rpm
4.	Wheels(x4)	Off-road type
5.	Battery	5A, 12V
6.	Remote	With 3 DPDT switches
7.	Wires	8m-10m

Robot Details:

Robot Dimensions: 11" x 13" x 7"

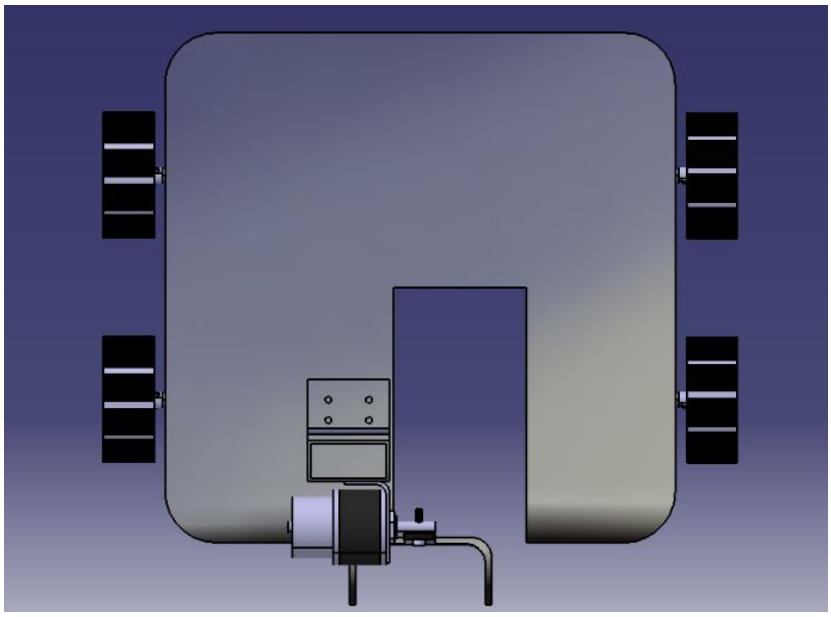
Robot Weight: 2kg

Robot Control: Wired

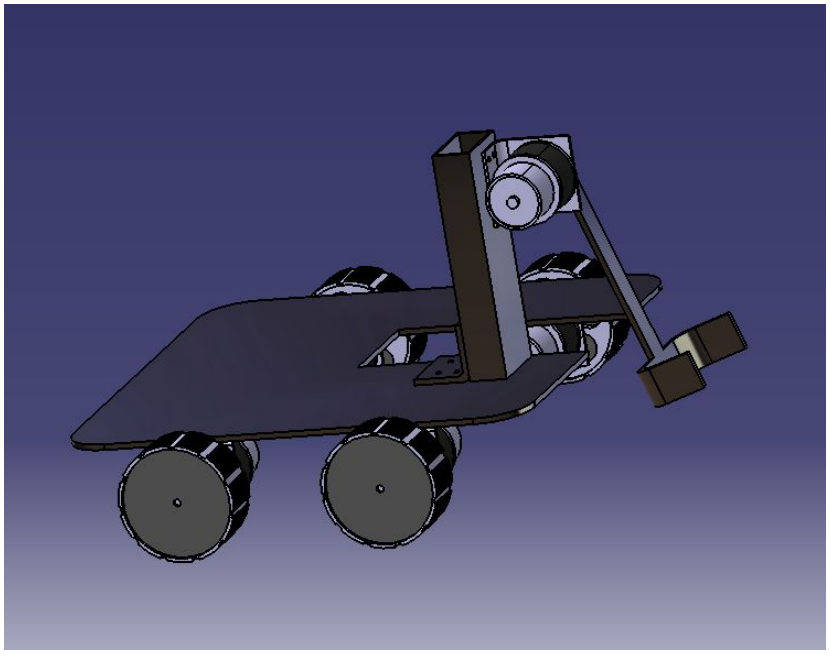
Robot Drive: 4 Wheel Drive

Mechanical Design:

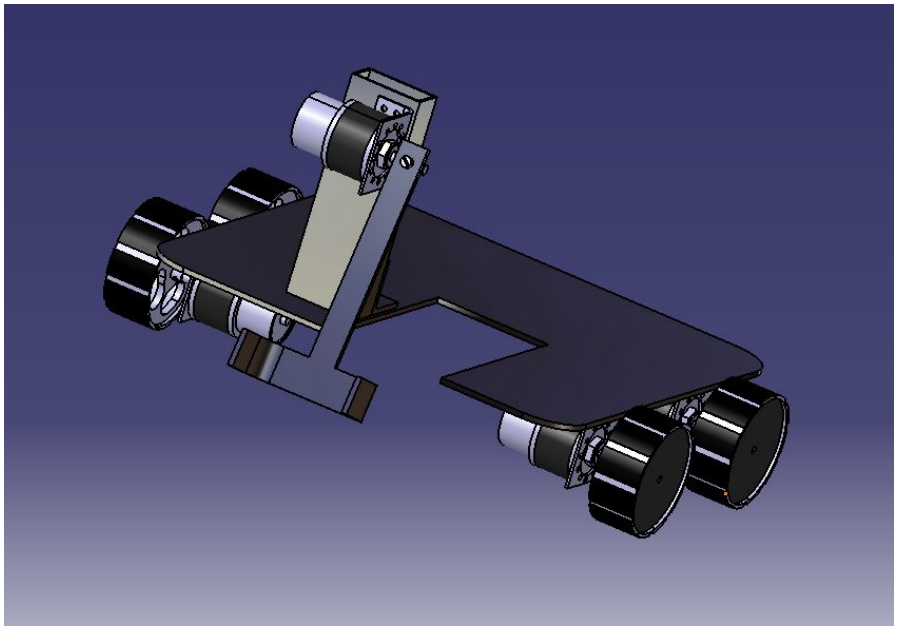
Top View



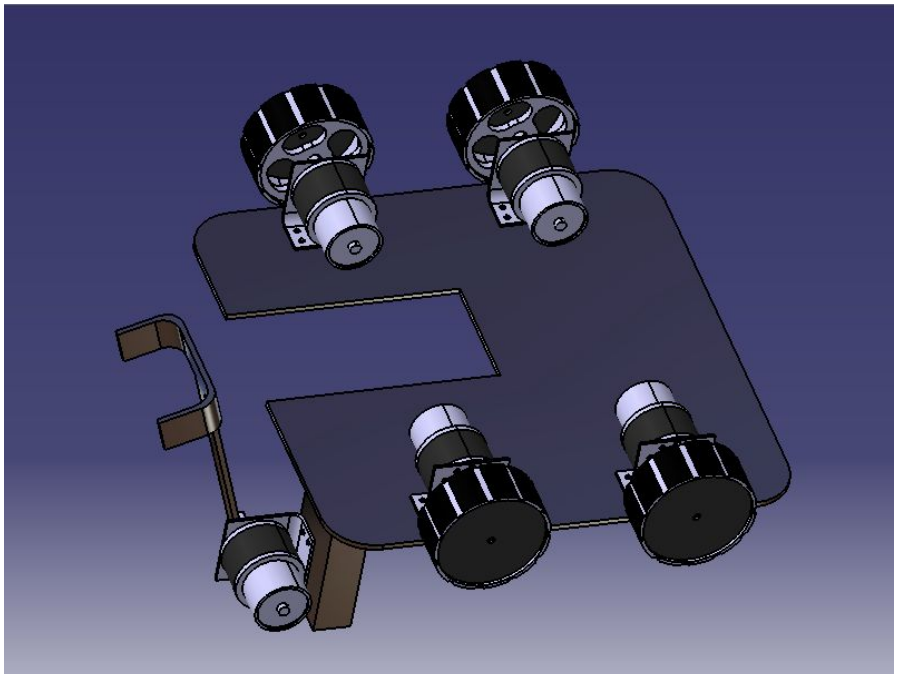
Side View



Front View



Bottom View

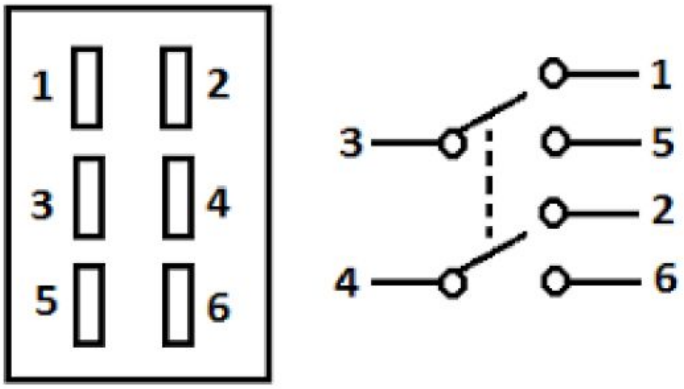


Remote Details:

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. The robot is equipped with a 6” hockey stick connected to it by a DC motor of 60 rpm. To hit the hockey ball, you need to press the switch which will move the hockey stick forward. You can either dribble the ball with your hockey stick to the opponent’s goal box and shoot it into the goal or you can even shoot the ball from far by providing a back-lift to the hockey stick. The power with which you want to hit the ball will depend on the back-lift of the hockey stick.

As soon as you get hold of the ball in your hockey stick, use the movements of the wheels of the robot to dribble past your opponent and shoot it into the goal.

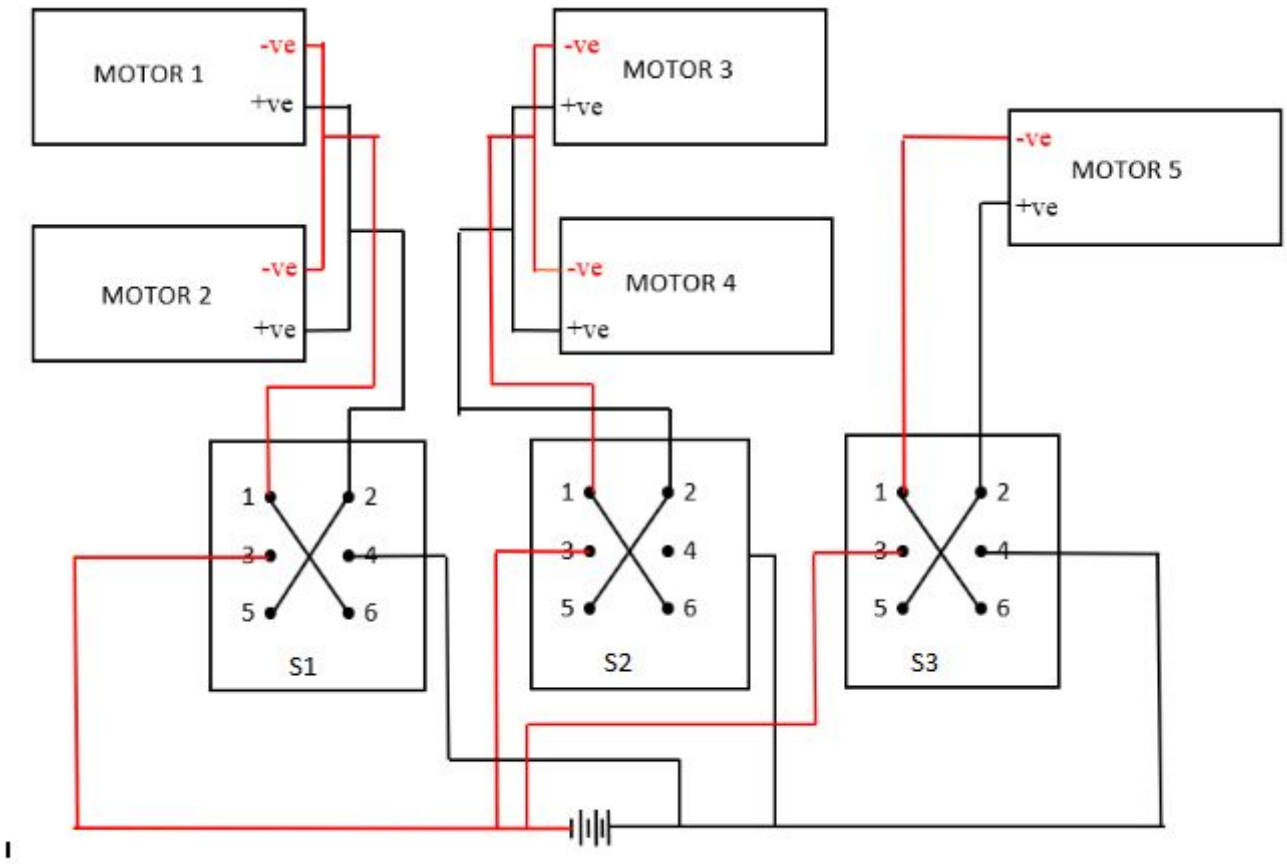
The movement of the robot with respect to the switch operation are given below in the table.

Movement of the Bot :

Motion	Switch s1	Switch s2
Forward	Forward	Forward
Backward	Backward	Backward
Left	n/c	Backward
Right	Backward	n/c
360° Right	Forward	Backward
360° Left	Backward	Forward

Movement of Stick	Switch S3
Up	Forward
Down	Backward

Connections:



Motors 1 and 2 are used to control the 2 left wheels of the robot. Motors 3 and 4 are used to control the 2 right wheels of the robot. Motor 5 is used to rotate the hockey stick and dribble against the opponent's robot and to hit the ball.