RoboVR

SRB UNDERWATER SWIMMING

About the game:

In underwater swimming, the robot needs to be under the top surface of the water and at the same time, it should not touch the bed of the water body.

In Olympic of Robots, the participants need to build a robot that can swim under the water.

Components and its Specifications:

Sr. No.	Components	Specifications
1.	Chassis	Aluminum Sheet (5mm thick)
2.	DC Motors (x2)	60 rpm
3.	Battery	5A, 12V
4.	Remote	With 2 DPDT switches
5.	Wires	8m-10m

Robot Details:

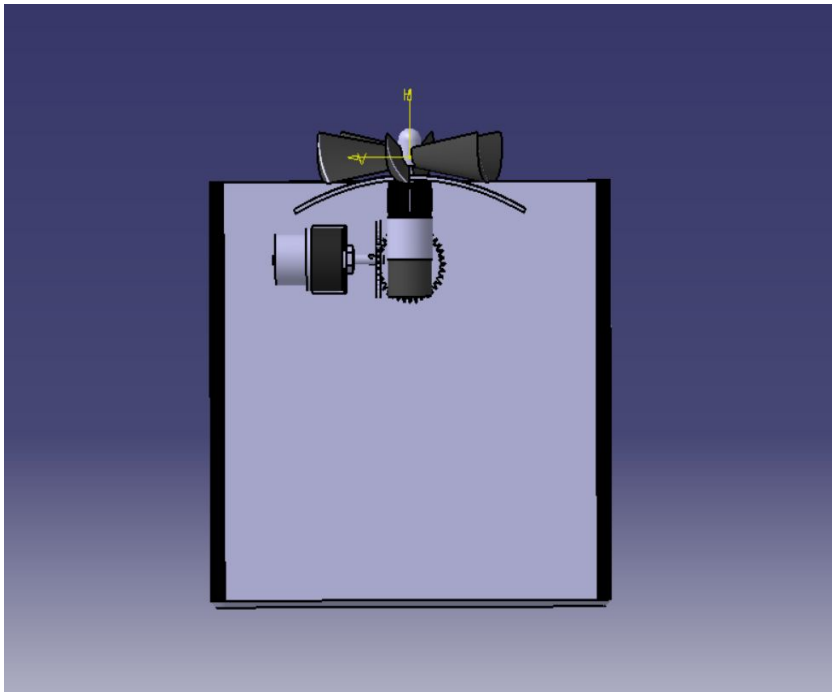
Robot Dimensions: 12” x 12” x 12”

Robot Weight: 2kg

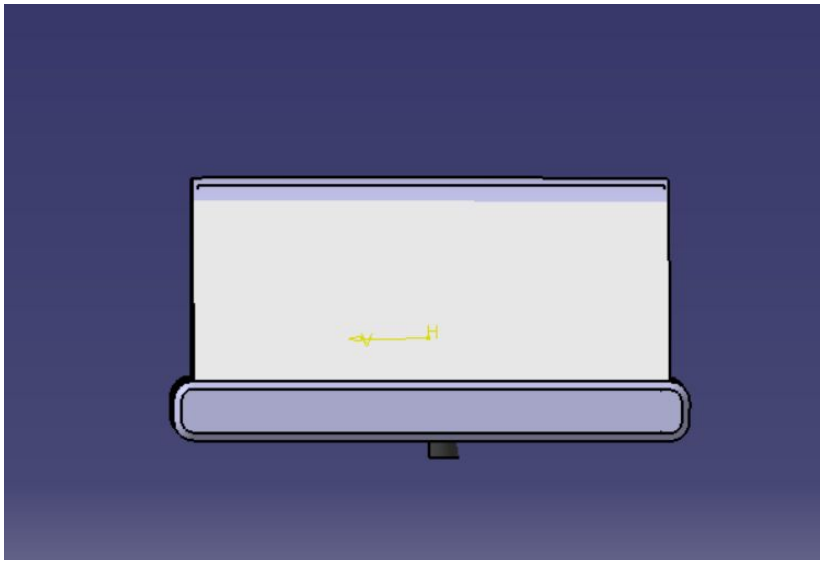
Robot Control: Wired

Mechanical Design:

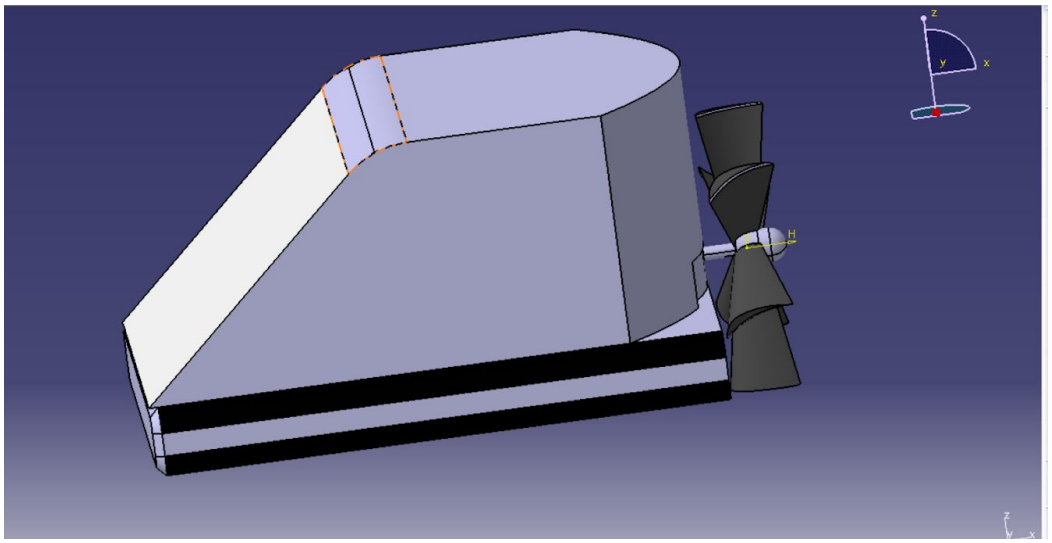
Top View



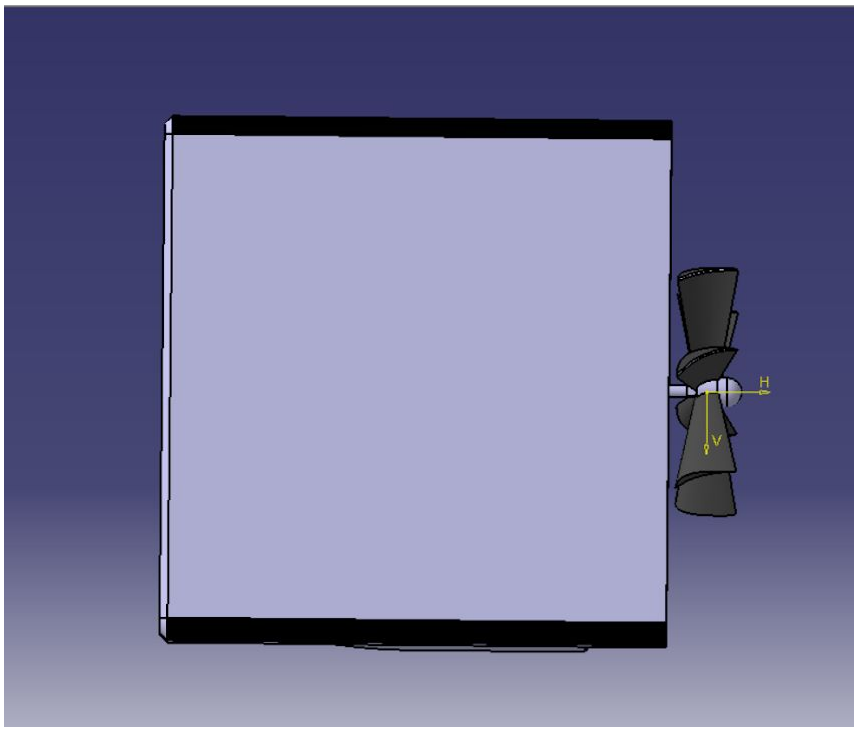
Front View



Isometric View



Bottom View

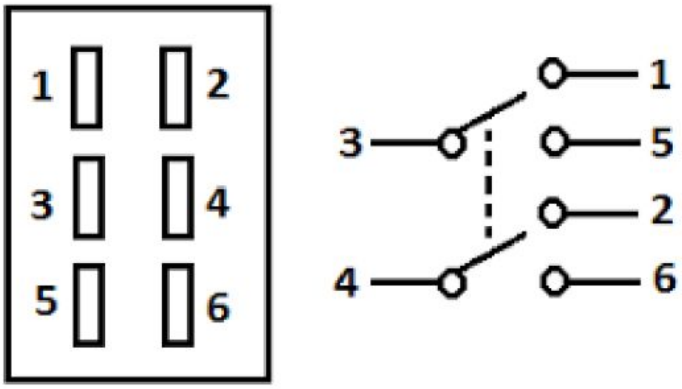


Remote Details:

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:

Motor 1 (covered in the diagram) is responsible for rotating the propeller in the horizontal direction which will decide which way will the robot move under the water surface.

Motor 2 operates the propeller which will make the robot swim forward.

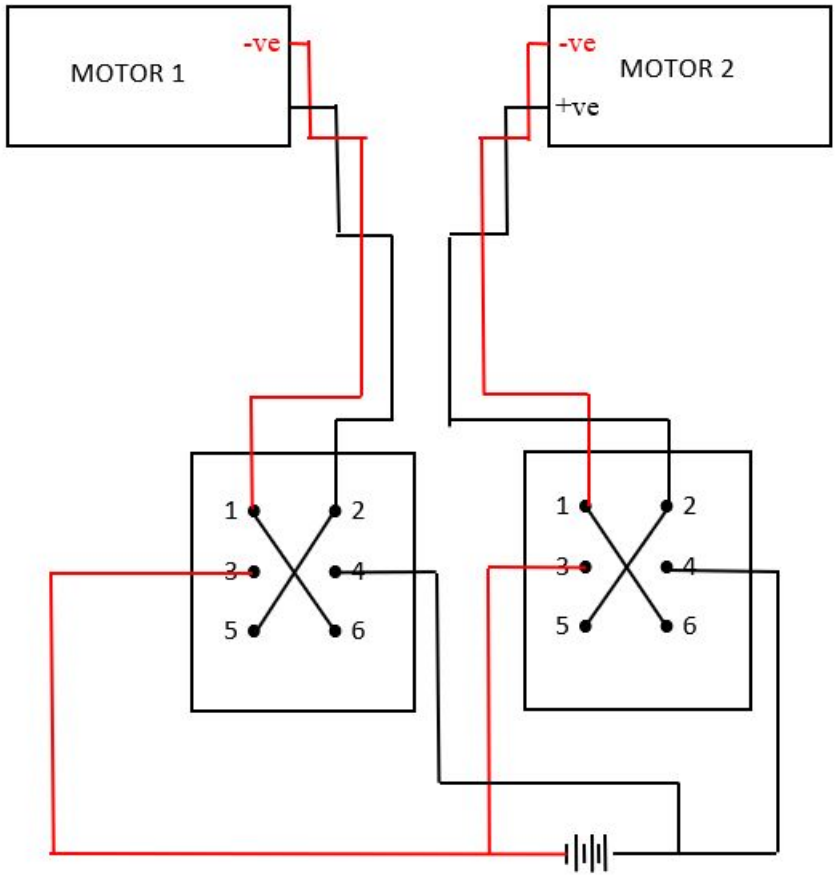
At the bottom of the robot, a rectangular surface is kept which needs to be filled with air to provide the buoyant force to keep the robot from touching the water bed.

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

Connections:



Motor 1 is used to move the robot in the left and right direction.

Motor 2 is used to rate the propeller and move the robot forward.