RC Solar Water Body Cleaner

Although water is an irreplaceable resource for the survival of human species, the contamination of water bodies resulting from daily human activities has led to a depletion in the available sources of potable water.

Although, finding more reliable and sustainable methods of waste water treatment and garbage disposal is instrumental in combating water pollution in the long run, cleaning up water bodies is a far more pressing issue.

The major issues with cleaning Lakes and Pools are

- Finding/hiring motorized boats each time for cleaning
- Not being able to clean regularly due to manual process
- Higher salary and motor boat costs involved of cleaning

Using two powerful electric motors for propulsion, this RC Lake cleaner has been designed to skim and clean the surface of open water bodies such as lakes, ponds, rivers, canals etc.

This system consists of a wire mesh that collects garbage floating on the surface of water bodies as it sails through. Along with helping clean up water bodies, this boat is equipped with Turbidity sensors that help to map and detect the level of pollution in a water body.

This boat is completely rudderless and steers itself by varying the thrust on either of its motors. Thereby, improving reliability by reducing the number of moving parts.

The six solar panels mounted on its top help to increase the life of its battery and enable it to run for longer hours.

RC Solar Lake Pool Cleaner offers following benefits

- Remote control operation makes it a single person job.
- Skims the surface of water bodies and uses a wire mesh to collect garbage.
- Turbidity sensor help in detecting the level of pollution.
- Solar Panels helps to increase the battery life and increase operational hours.
- Rudderless operation ensures simplicity and makes the system easy to repair.
- Wireless Live Stream Camera For Android Display.
- 24v strobe light improves visibility in fog and low-light conditions.

The RC cleaner cleaner utilizes 2x High torque motors, RC Controller, Solar Panels, 1 Sensor, wireless camera, collector mesh and an At-mega micro controller to achieve this task.

The dual drive rudderless motor system is used to provide drive to the RC boat using dual propulsion system. This allows for an easy rudderless movement control.

The collector mesh is enclosed inside the RC boat frame to capture surface garbage floating on water. This allows the cleaner to swallow all the garbage coming in its path and take it ahead. Any sea creatures caught along with the garbage may easily swim out of the mesh through front opening if caught, thus it doesn't harm any sea life.

The RC controller is used to send movement controls to the cleaner's controller unit via RF

signals. These signals are received and decoded by the controller unit and then processed by micro controller to operate drive motors. The cleaner uses a sensors turbidity to sense and turbidity level of water pollution which are constantly stored in the memory card for later reference.

The top mounted solar panels are used to draw solar power and constantly charge the battery as the cleaner operates. Even if the cleaner shuts down in the middle of the lake. Half an hour of sunlight can again make the robot operational again. Also a top mounted strobe light is used to find the cleaner in darkness or misty conditions. This allows for a remotely operated long range lake pool cleaner drone.

Components:

- At mega Micro controller
- 2 x High Torque Motors
- 2 x Propellers
- Solar Panels
- Turbidity Sensor
- RC transmitter
- RC Receiver Circuit
- Motor Drivers
- Strobe Light
- PCB Board
- Electronics Components
- cleaner Frame
- Supporting Frame
- Mounts and Joints
- Screws and Bolts

Applications:

- Helpful in monitoring water pollution and cleaning water bodies.

Advantages:

- Remote control operation makes it a single person job.
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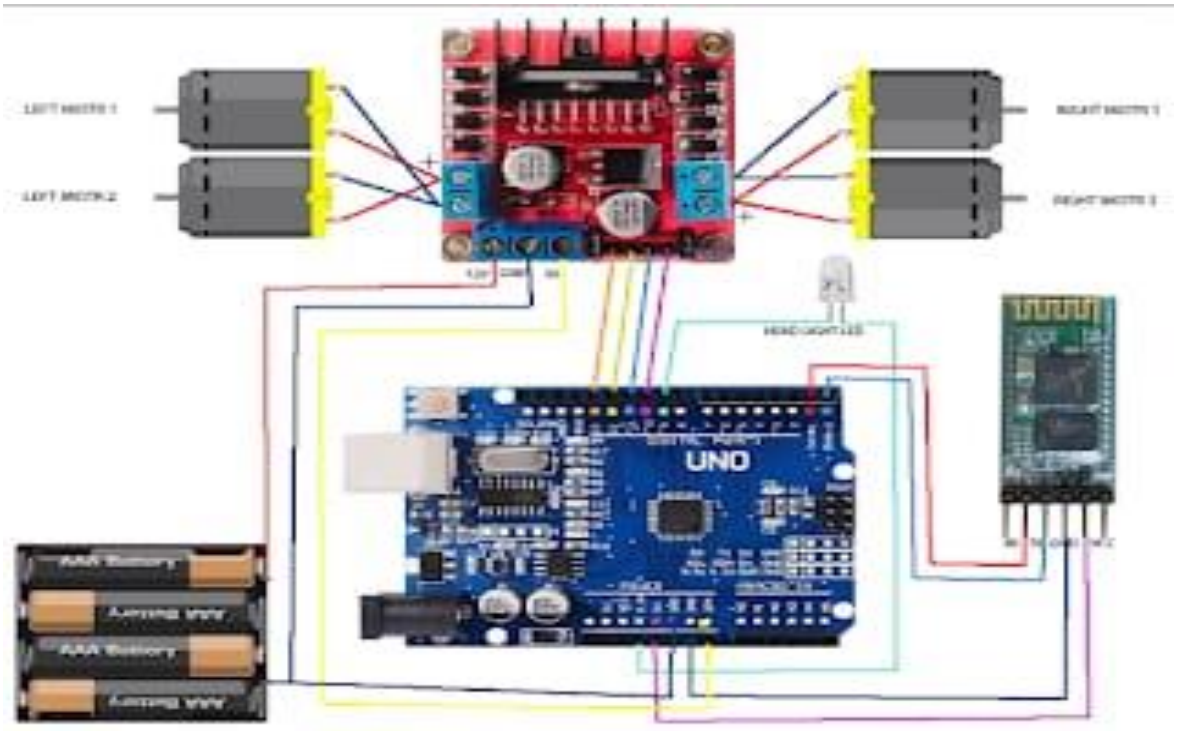
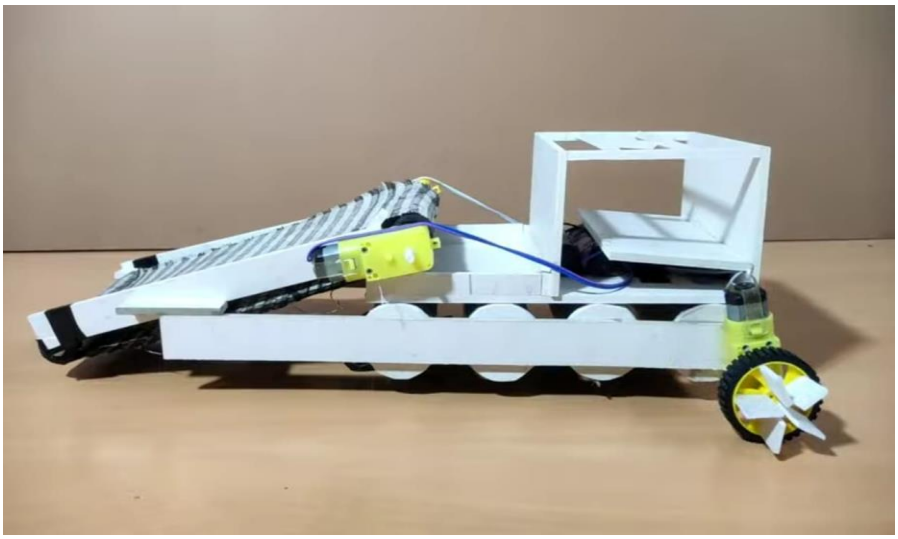
Block Diagram:

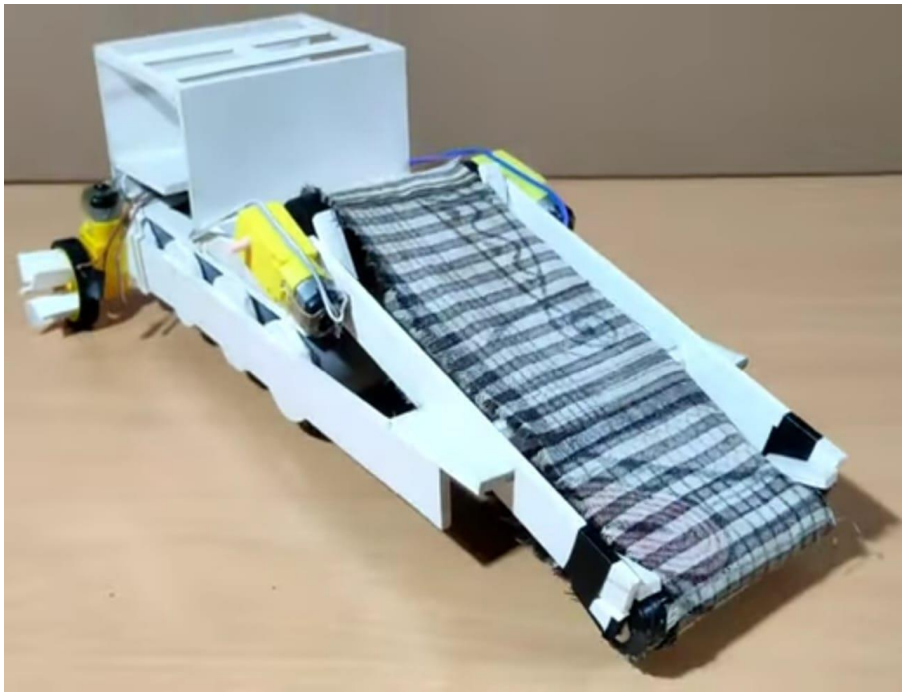


Arduino code

```
char  t;
void setup() {
pinMode(13,OUTPUT);   //left motors forward
pinMode(12,OUTPUT);   //left motors reverse
pinMode(11,OUTPUT);   //right motors forward
pinMode(10,OUTPUT);   //right motors reverse
pinMode(9,OUTPUT);   //Led
Serial.begin(9600);
}
void loop() {
if(Serial.available()){
  t = Serial.read();
  Serial.println(t);
}
if(t == 'F'){            //move forward(all motors rotate in forward direction)
  digitalWrite(13,HIGH);
  digitalWrite(11,HIGH);
}
else if(t == 'B'){      //move reverse (all motors rotate in reverse direction)
  digitalWrite(12,HIGH);
  digitalWrite(10,HIGH);
}
else if(t == 'L'){      //turn right (left side motors rotate in forward direction, right side motors doesn't rotate)
  digitalWrite(11,HIGH);
}
 else if(t == 'R'){      //turn left (right side motors rotate in forward direction, left side motors doesn't rotate)
  digitalWrite(13,HIGH);
}
else if(t == 'W'){    //turn led on or off)
  digitalWrite(9,HIGH);
}
else if(t == 'w'){
  digitalWrite(9,LOW);
}
 else if(t == 'S'){      //STOP (all motors stop)
  digitalWrite(13,LOW);
  digitalWrite(12,LOW);
  digitalWrite(11,LOW);
  digitalWrite(10,LOW);
}
delay(100);
}
```

RC SOLAR WATER BODIES CLEANER





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