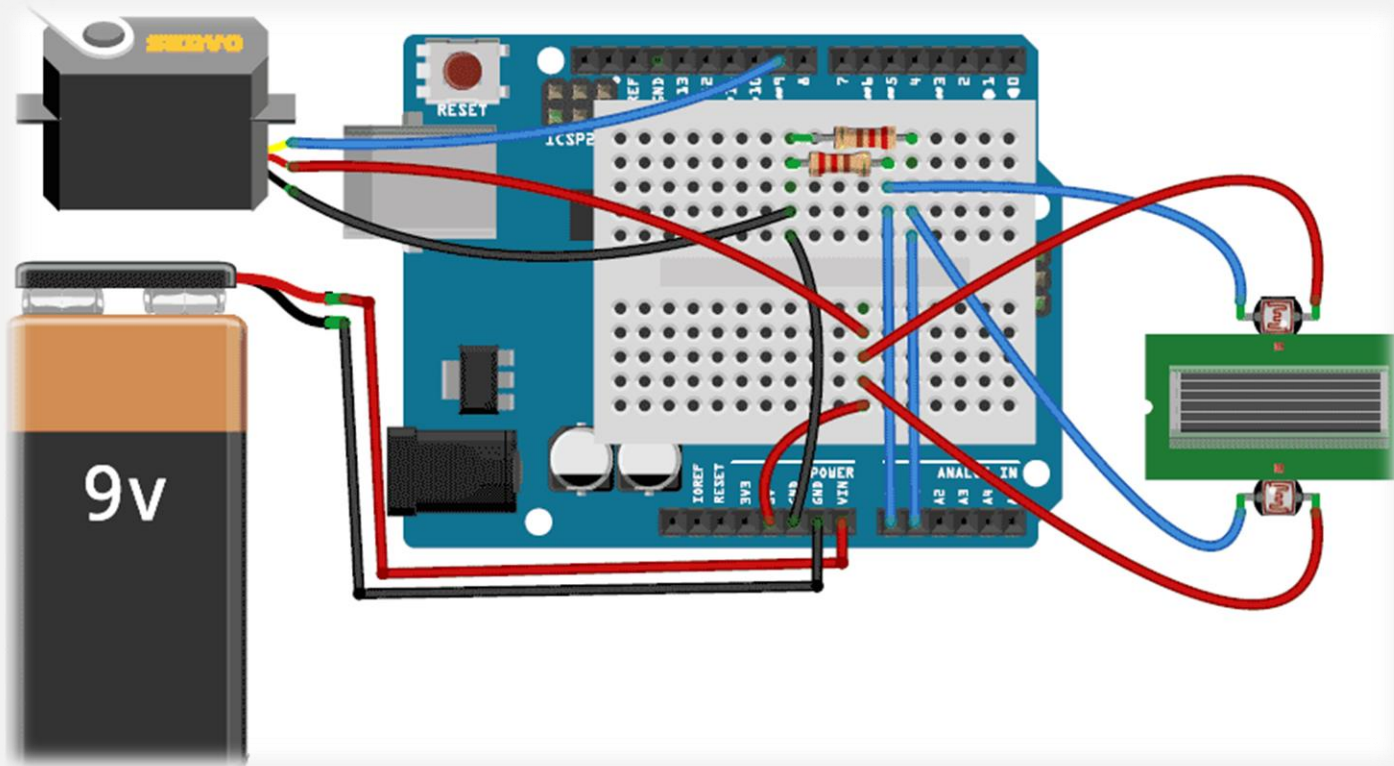# Arduino Solar Tracker with Servo Motor

About Solar Tracker

A Solar tracker is a device used for orienting a solar panel towards the sun by using the solar or light sensors connected with the servo motor and others elements.

Need of Solar Tracker

❑ Increase Solar Panel Output

❑ Max.efficency of the panel

❑ Maximize Power per unit Area

❑ Able to grab the energy through out the day

Tracker Working Procedures

Tracking Solar Panel using Arduino, in which we will use two LDRs (Light dependent resistor) to sense the light and a servo motor to automatically rotate the solar panel in the direction of the sun light.

Advantage of this project is that Solar panel will always follow the sun light will always face towards the sun to get charge all the time and can provide the supply the maximum power.

Tracker Creating Components

Solar Panel

Resister
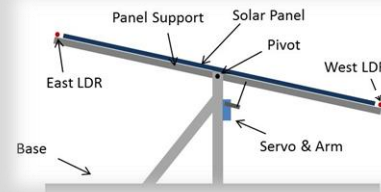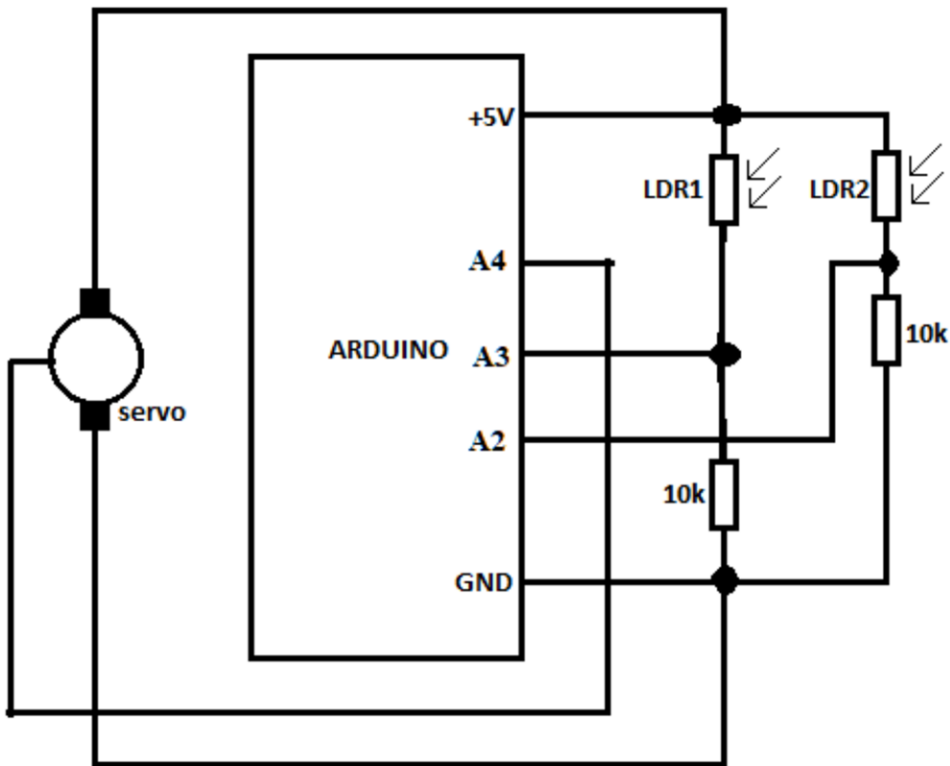
LDR Sensors

Arduino Nano

Servo Motor

Panel & Wires

Tracker Circuit Diagram

The electrical part is the board, one servo, 2 LDRs and 2.2K resistors added with Arduino.
The 2 LDRs (light dependent resistors) must be positioned the same way as the ones at a slightly different angle and servo acts weird try to connect a capacitor between the +5V and GND.

Tracker Arduino Code

```
lr.attach(A4);
for(int i=0;i<=90;i++) {
        lr.write(i);
        delay(15);
}
```

Rotate panel approximately 180 degrees (90° in each direction) and is controlled using the included Arduino's Servo Library code

Full Arduino Code

Take read from two LDR Sensors and
Adjust the solar panel based on these values

```
int x1= analogRead(ldrL);
int x2= analogRead(ldrR);
if(cur<2) cur++;
else if(cur>178) cur--;
if((x1-x2)<-20) lr.write(--cur);
else if((x1-x2)>20) lr.write(++cur);
```

Working Process

The two LDR's are placed at the two sides of solar panel and the **Servo Motor** is used to rotate the solar panel.
The servo will move the solar panel towards the LDR whose resistance will be low, mean towards the LDR on which light is falling, that way it will keep following the light.

If there is same amount of light falling on both the LDR, then servo will not rotate.

The servo will try to move the solar panel in the position where both LDR's will have the same resistance means where same amount of light will fall on both the resistors and if resistance of one of the LDR will change then it rotates towards lower resistance LDR

Why Our Tracker Better

➢ Solar trackers generate more electricity than their stationary counterparts due to an increased direct exposure to solar rays.

➢ Local weather, degree of latitude, and electrical requirements are all important considerations that can influence the type of solar tracker that's best for you.

➢ Solar trackers generate more electricity in roughly the same amount of space needed for fixed tilt systems, making them ideal optimizing land usage.

Any Questions ?