COA PROJECT

Dual Axis Solar Tracker Arduino Project Using LDR & Servo Motors

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ODD 21

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ABSTRACT OF THE PROJECT

INTRODUCTION:

In this project, we are going to use some Light Sensitive Sensors like (LDR) to track the sunlight and direct the solar panels towards the areas that Increase its efficiency.

HARDWARE SPECIFICATIONS:

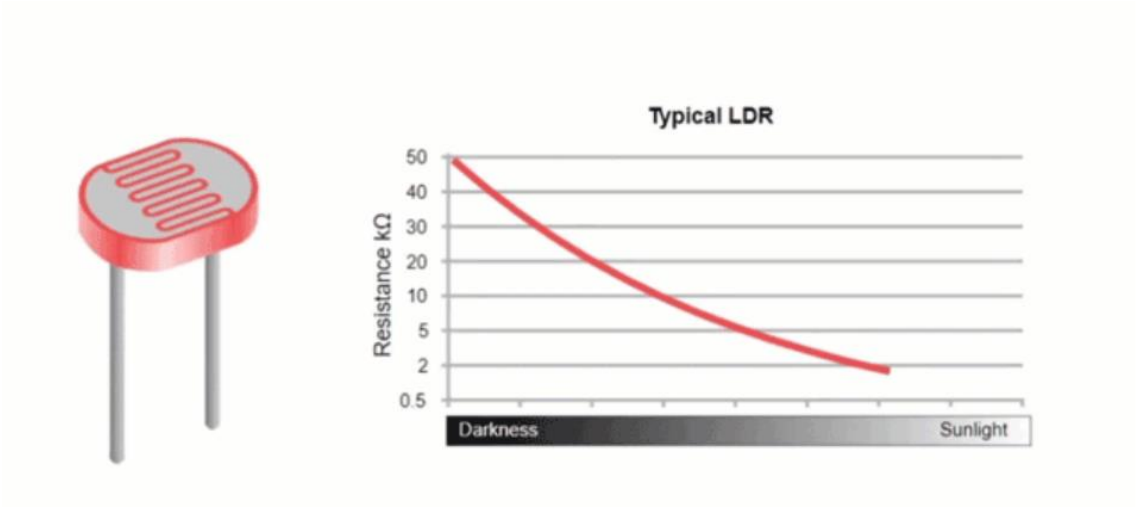
- Arduino Uno
- LDRs
- Servo Motor
- Resistors
- Cables and Connectors
- Breadboards
- Potentiometer

SOFTWARE SPECIFICATIONS:

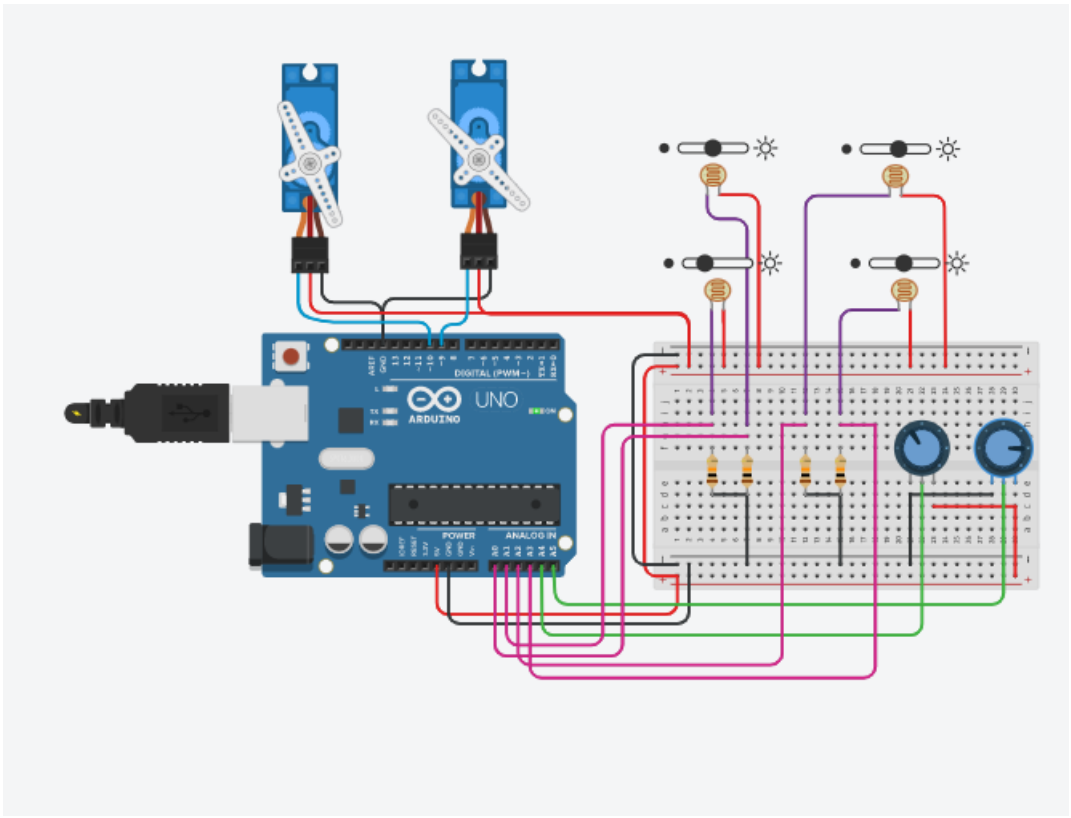
- Arduino Compiler
- Programming Language: C
- Tinkercad

WORKING PRINCIPLE OF LDR SENSOR

Here, LDR Works as a light detector. It is also known as a photoresistor. Actually, it is a light Sensitive device. As shown in the graph, the resistance decreases as light falls on it. In this project, we are using 4 LDRs to detect the Sunlight. And when they send Signal to the Arduino, It will guide two Servo Motors to better place the solar panel to maximize its efficiency.



BLOCK DIAGRAM:



CODE:

```
#include <Servo.h>


Servo horizontal; // horizontal servo
int servoh = 180;
int servohLimitHigh = 175;
int servohLimitLow = 5;
// 65 degrees MAX

Servo vertical; // vertical servo
int servov = 45;
int servovLimitHigh = 60;
int servovLimitLow = 1;

// LDR pin connections
// name = analogpin;
int ldrlt = A0; //LDR top left - BOTTOM LEFT <--- BDG
int ldrrt = A3; //LDR top rigt - BOTTOM RIGHT
int ldrld = A1; //LDR down left - TOP LEFT
int ldrrd = A3; //ldr down rigt - TOP RIGHT

void setup(){
horizontal.attach(9);
vertical.attach(10);
horizontal.write(180);
vertical.write(45);
delay(2500);
}
void loop() {
int lt = analogRead(ldrlt); // top left
int rt = analogRead(ldrrt); // top right
int ld = analogRead(ldrld); // down left
int rd = analogRead(ldrrd); // down right
int dtime = 10; int tol = 90; // dtime=diffirence time, tol=toleransi
int avt = (lt + rt) / 2; // average value top
int avd = (ld + rd) / 2; // average value down
int avl = (lt + ld) / 2; // average value left
int avr = (rt + rd) / 2; // average value right
int dvert = avt - avd; // check the diffirence of up and down
int dhoriz = avl - avr;// check the diffirence og left and rigt

if (-1*tol > dvert || dvert > tol)
```

```
 {
 if (avt > avd)
 {
 servov = ++servov;
 if (servov > servovLimitHigh)
 {servov = servovLimitHigh;}
 }
 else if (avt < avd)
 {servov= --servov;
 if (servov < servovLimitLow)
 { servov = servovLimitLow;}
 }
 vertical.write(servov);
 }
if (-1*tol > dhoriz || dhoriz > tol) // check if the diffirence is in the tolerance else change
horizontal angle
 {
 if (avl > avr)
 {
 servoh = --servoh;
 if (servoh < servohLimitLow)
 {
 servoh = servohLimitLow;
 }
 }
 else if (avl < avr)
 {
 servoh = ++servoh;
 if (servoh > servohLimitHigh)
 {
 servoh = servohLimitHigh;
 }
 }
 else if (avl = avr)
 {
 delay(5000);
 }
 horizontal.write(servoh);
 }

 delay(dtime);

}
```

CONCLUSION:

Finally, we have completed Interfacing Dual Axis Solar Tracker Arduino Project Using LDR & Servo Motors. Now, we can use this Project to track the solar panel and increase its efficiency by 40%.