

LDR based Solar Tracker

Abstract:

In our project solar pannel will be powering the street lights. To make solar pannel more efficient we have to adjust it in such a way that it absorbs maximum intensity of light. For doing that we are adusting a LDRs on the edges of the pannel and according to the light falling on ldr our solar tracker will move along with the sun direction with the help of servomotor. In this way we can use the maximum intensity of sunlight fot the working of the system.

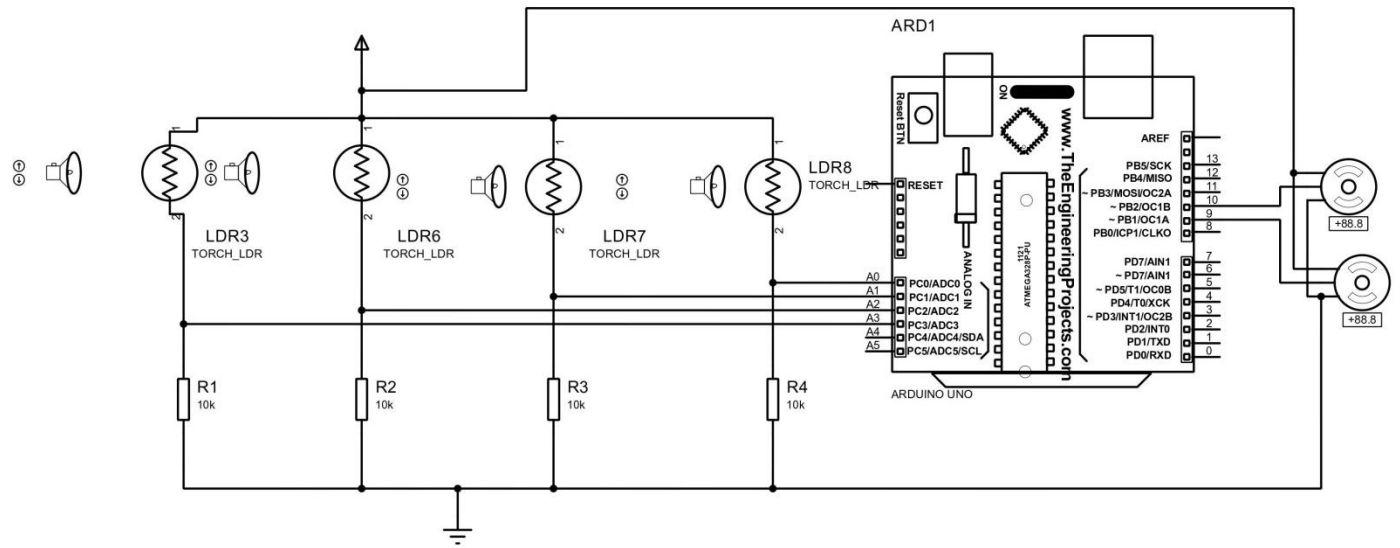
Components:

1. Solar Pannel (For Prototype we can use a cardboard similar shape of solar pannel)
2. Arduino UNO
3. Resistance(10K Ω)
4. LDR
5. Servo Motor
6. Battery(9v)

About Component:

- **LDR:** Ldr is light depended resistor when there is no light falling on ldr the resistor decreases so current flow through it. When the light falls on ldr the resistance in that sensor increase hence less current will flow through it.
- **Servo Motor:** A servomotor is a actuator whiche uses feedback for its rotation. Ac motor rotation and speed is depended on the frequency and a dc motor speed and rotation depends on its applied voltage.
- **Arduino UNO:**

Circuit Diagram:



Working:

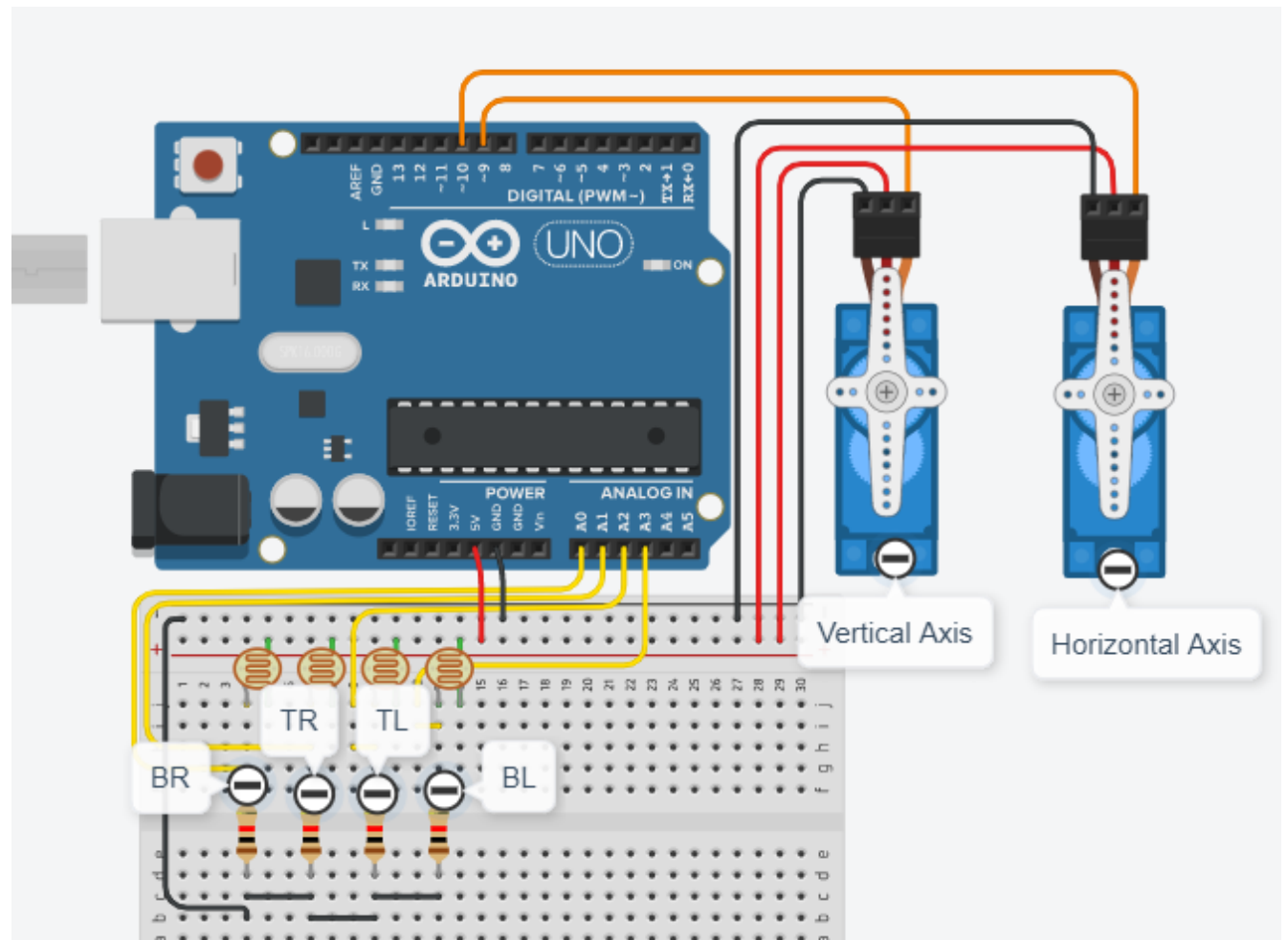


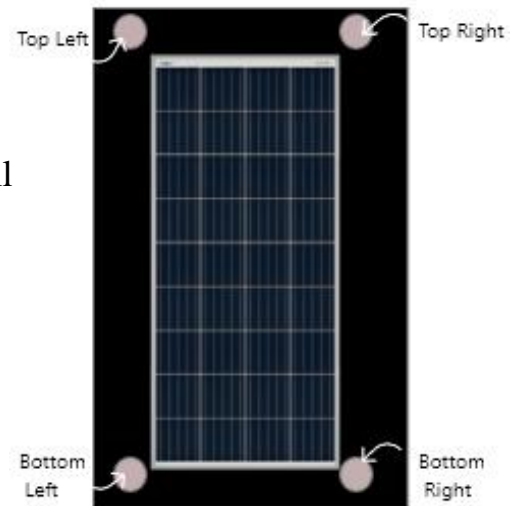
Fig 2.Implementation on Tinker Cad

Here our panel is placed on the servo motor for its rotation and LDR is sensing the light and accordingly the servo motor is rotating it in the direction of sunlight.

We used 4 LDRs at the corner of the solar panel. And it will compare the light falling on it.

First servo motor will have vertical rotation and move the panel in the East to West direction.

Second Servo motor, is responsible for horizontal rotation if the direction changes.



Logic for Program:

For vertical movement it will check the average of Top left, Top Right and Bottom Left and Bottom Right.

- If average of Top LDR is more than Bottom LDRs it will move the panel 0° (east)
- If average of top and bottom are same then the panel will move 90° (middle).
- If average of Bottom LDR is more than Top LDRs it will move the panel 180° (west).

For horizontal movement it will check the average of Right LDRs and Left LDRs.

- If the average of Right LDR is more than Left LDRs it will move the panel 0° (north)
- If average of Right and Left are same then the panel will move 90° (middle).
- If average of Left LDRs is more than Right LDRs it will move the panel 180° (south).

Applications:

1. Street Lights: Instead of any other power supply we can use the solar panel with high efficiency to power up the street lights.
2. Radar: We can make a radar system which is powered by solar panel.