

Jon Barlow

PY681 Proposal

Title:

Solar Tracker

Abstract:

This project will use an Arduino micro-controller to track the position of the sun. Using 4 light-dependent resistors (LDRs a.k.a photo-resistors) as inputs, the Arduino will control two servos to point the tracker in the direction of the sun. By comparing LDRs on a horizontal axis, we can infer which direction the horizontal servo should rotate. By comparing LDRs on a vertical axis, we can infer which direction the vertical servo should rotate. Combining these two measurements allows the tracker to (ideally) point anywhere in the sky.

Essential Concepts:

- Constructing “tracker arm”, driven by two servos, which holds the LDRs. Should be built in a manner that allows four measurements in unique areas of sky.
- Reading in analog values for each LDR
- Programming Arduino to calculate optimal servo rotation
- Executing servo rotation

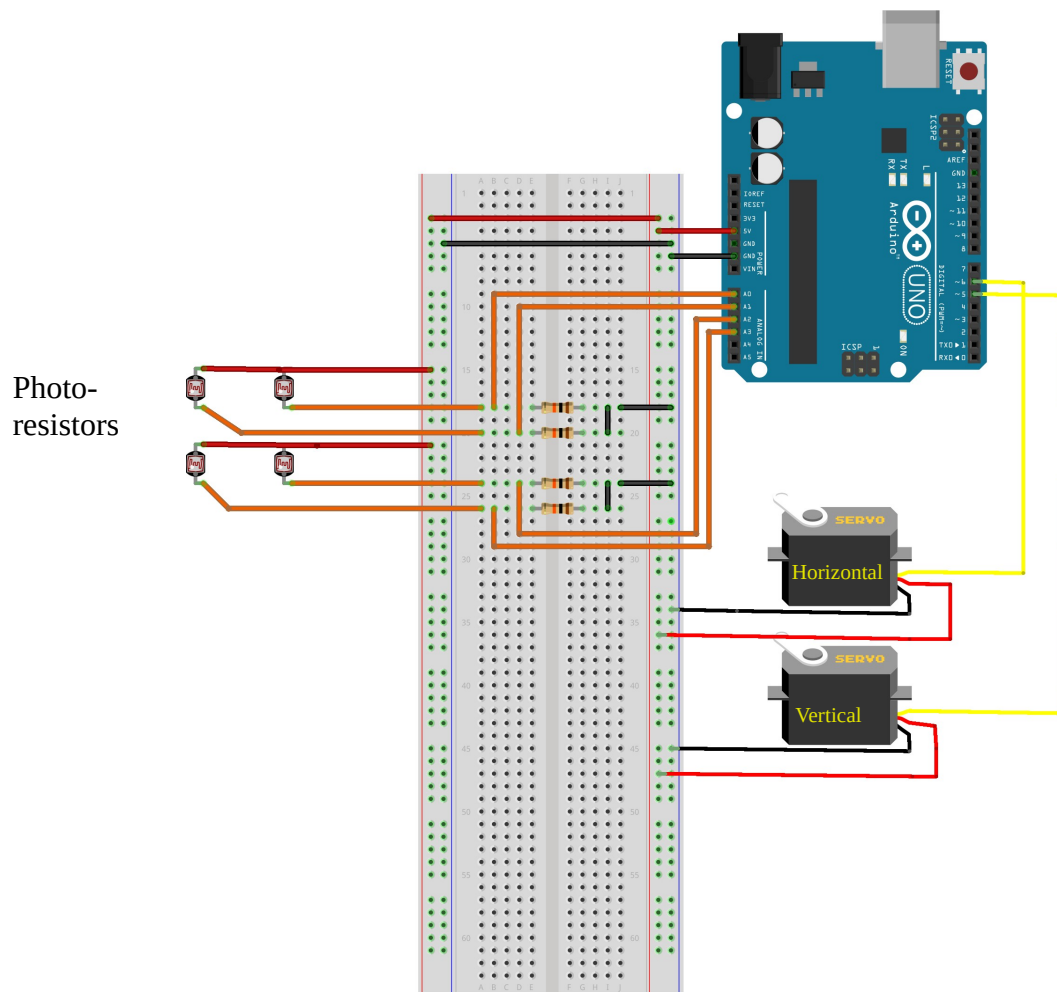
Optional Concepts:

- Potentiometer input for sensitivity of rotations
- Use solar panel for entirely portable set-up

Parts List:

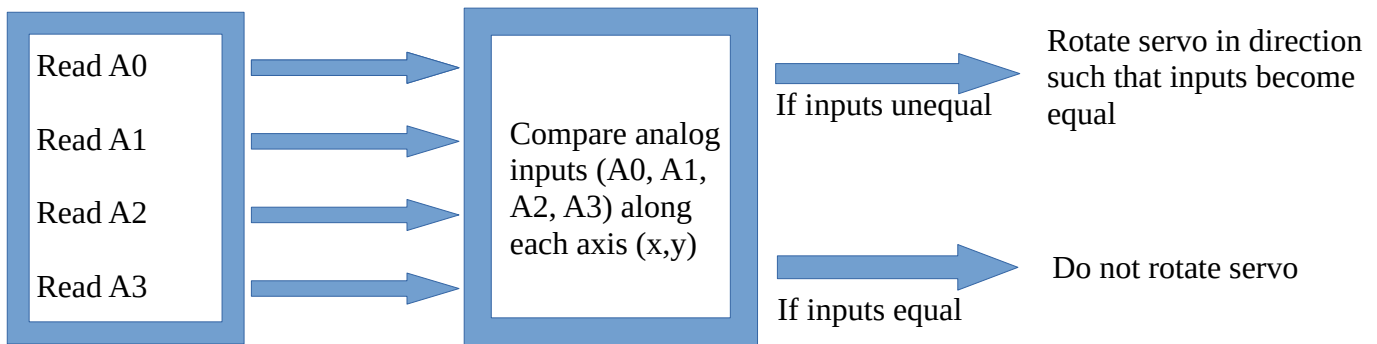
- Arduino Uno
- 4x Light Dependent Resistors (Photo-resistors)
- 2x Servo motors
- 4x 10k Resistors

Electronics Schematic:



Software Block Diagrams:

Higher Level Diagram:



Lower Level Diagram:

