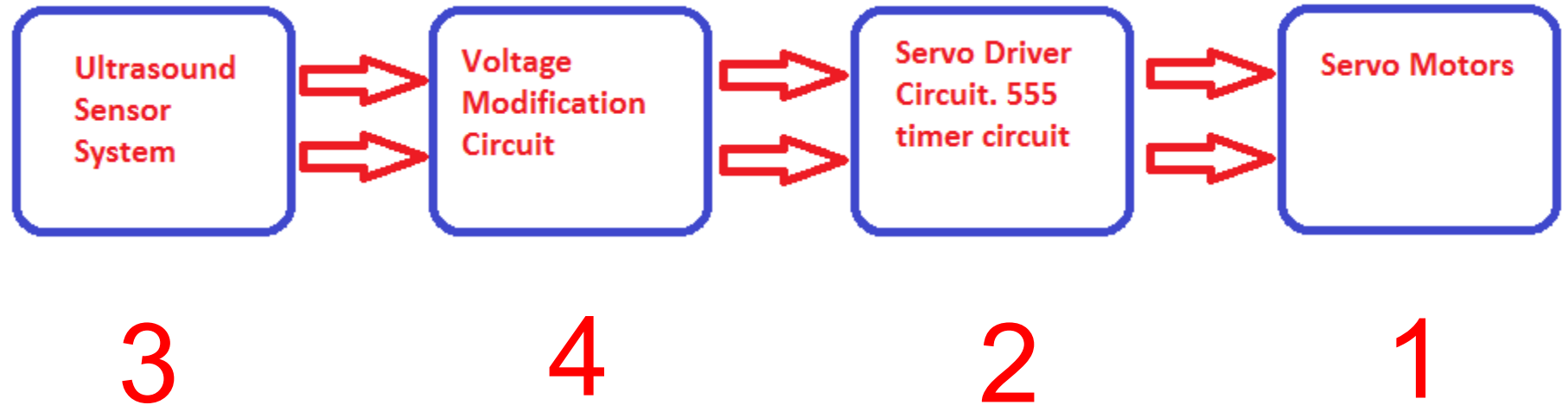# Motion Controlled Laser

Overview

-Control the x,y location of a laser pointer using an object some distance away.

-Track location of the object using ultrasound sensors.

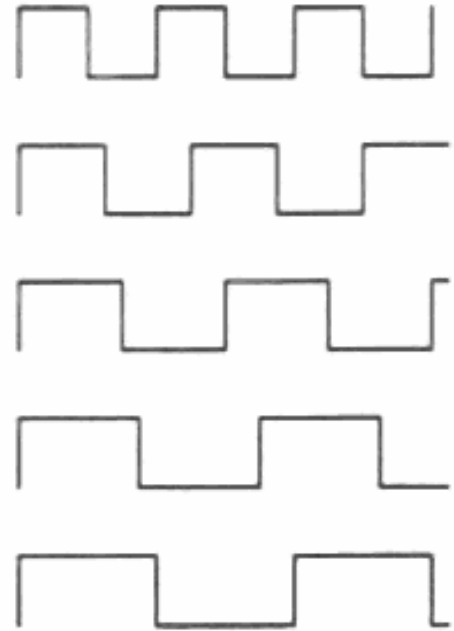# Block Diagram

Servo Motors

- Three leads: power, ground signal

- Servo angle is controlled by the pulse-width of the signal.

- Width:
  - 0.5ms completely clockwise
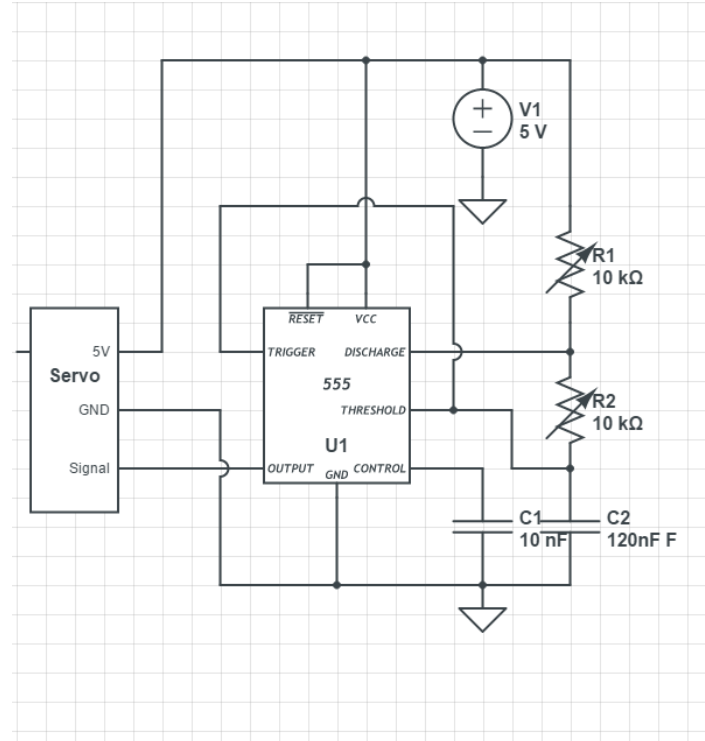 - 2ms completely counterclockwise

Servo Driver Circuit

-Use a 555 timer with variable threshold to create different square wave widths.

-Find a voltage range that will create [0.5ms,2ms] pulse widths.
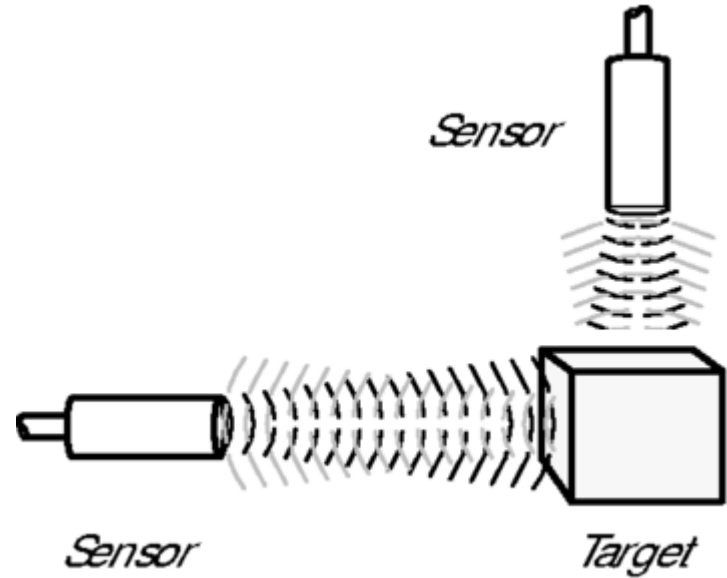
Servo Driver Circuit- 555 Astable

Ultrasound Sensors

-Device with two leads.

-Can transmit and/or receive a signal.

-Resonant frequency of 24 kHz.

Ultrasound Sensors

-Two ultrasounds will be used.
One for each axis.

-Each ultrasound will periodically transmit and then receive the data.

-Magnitude of output voltage is proportional to distance.

Sensor

Sensor

Target

Voltage Modification Circuit

-Modify the voltage output of the ultrasound to match the necessary range of the Servo Driver circuit.

-May involve shifting, multiplying or other functions.

Potential Problems

-Ultrasound testing diagonals.

-Creating the Voltage Modification Circuit.

-Timing for the two ultrasound sensors so they do not interfere with eachother.

Timeline

-Servo Driver Circuit- 4/14

-Ultrasound Sensors- 4/21

-Voltage Modification Circuit- 4/26

-Completed Project- 5/3