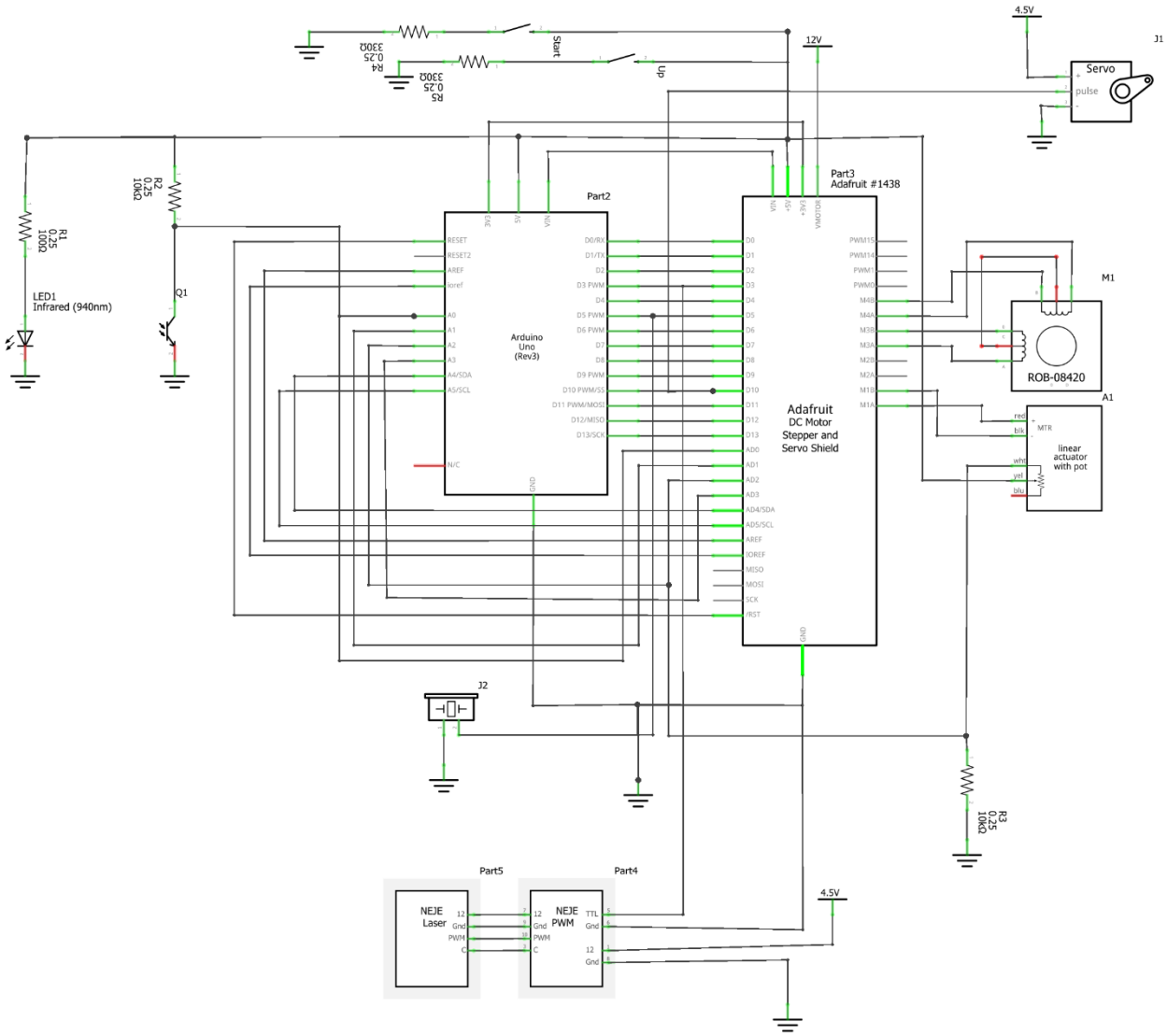
Low-Cost version using lower accuracy motors

Robotic system schematic



Parts List

Description	Quantity
1010 80/20 extruded aluminum	20ft
Slotted inside corner bracket with dual support	16
2 hole joining strip	4
2 hole 1” Pipe clamps	2
3” optical post	1
¼ 20 screws	Assorted
NEMA 23 stepper motor (https://www.pololu.com/product/1472)	1
IR LED/Transistor holder	1
Beaker holder (3d printed)	6
Turntable (CNC milled)	1
IR bracket (laser cut)	1
Slide holder (3d printed)	1
FA-PO-35-12-6 Feedback linear rod actuator (from Figelli Automation)	2
Linear actuator to servo bracket (3d printed)	1
22 AWG wire	Assorted
Robot motor platform (cut from HDPE)	1
1/2" Shaft Collar (from robotshop.com)	1
32T Gearmotor Pinion Gear (0.250") (from Actobotics)	1
84T Aluminum Hub Gear (0.5") (from Actobotics)	1
Turntable shaft coupler (CNC milled)	1
Flat Bearing Mount (1/2") (from Actobotics)	1
80/20 T-nut	Assorted
M5 screws	Assorted
Arduino Uno microcontroller	1
Adafruit motor shield, V2.3	1
Momentary SPST buttons	2
Piezo buzzer	1
IR phototransistor	1
IR LED	1
330-ohm resistor	2
100-ohm resistor	1
10k-ohm resistor	2

Extruded Aluminum (8020) lengths:

8020 piece 13”	2
8020 piece 24”	2
8020 piece 11”	2
8020 piece 3”	4
8020 piece 14”	4