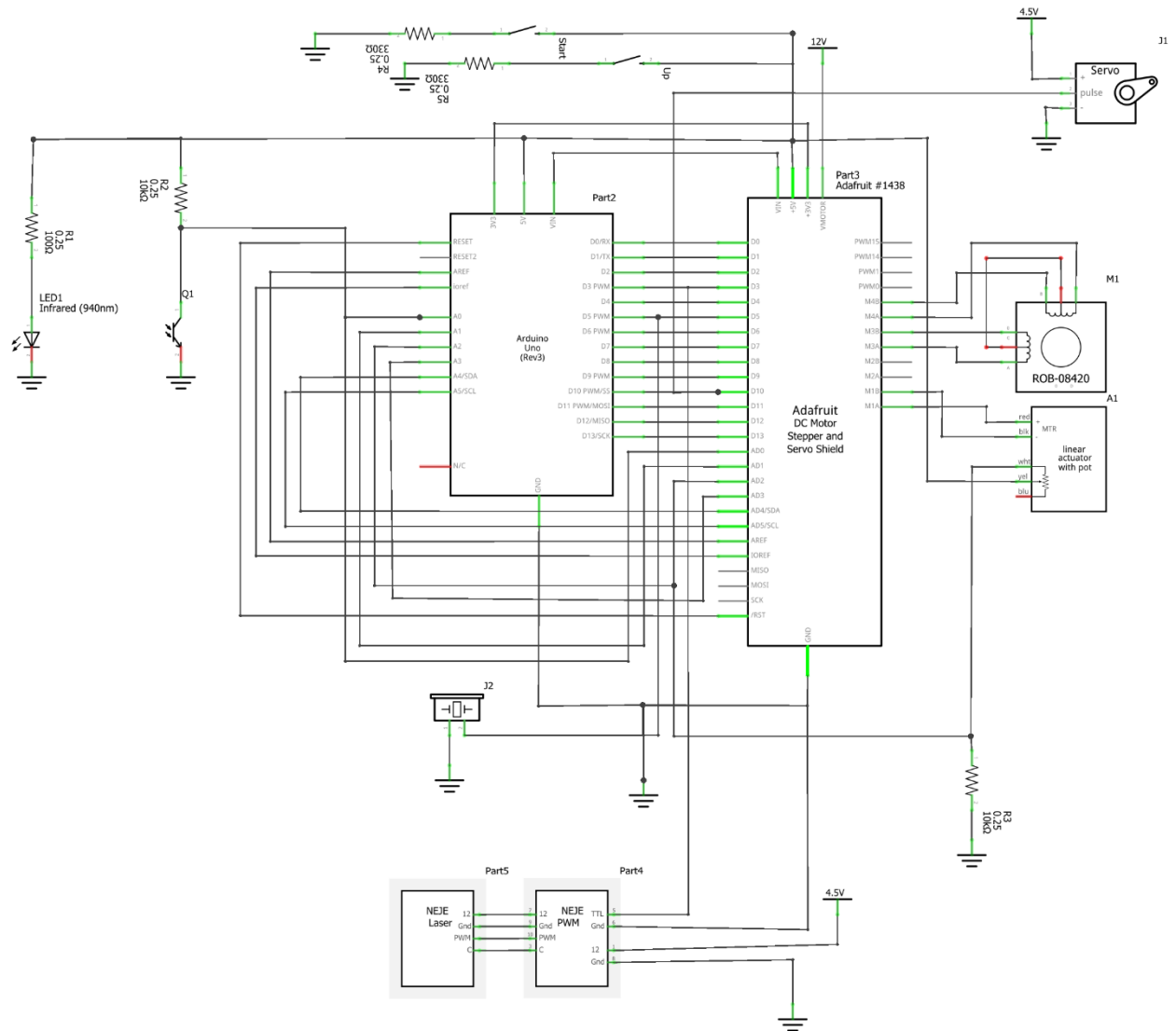


Supplementary Information for “Low-cost automated system for laser modified layer by layer assembly”

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) | 1 |
| 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 |