

## Deconstruction 1: Linear Actuator

Introduction / what you did.

- My intention for this project is to explore the working parts of a linear actuator. Final outcome should be a working prototype of a linear actuator. I would like to understand what kind of software and code is needed to activate it. Additionally I intend to learn how to manipulate the code in order to change the speed of movement.

### How/ Process

- I began by learning and gathering general information about linear actuators
- I chose the maker magazine tutorial on "How to build a linear actuator with a glue stick"

Link to tutorial:

<http://makezine.com/projects/linear-actuator/>

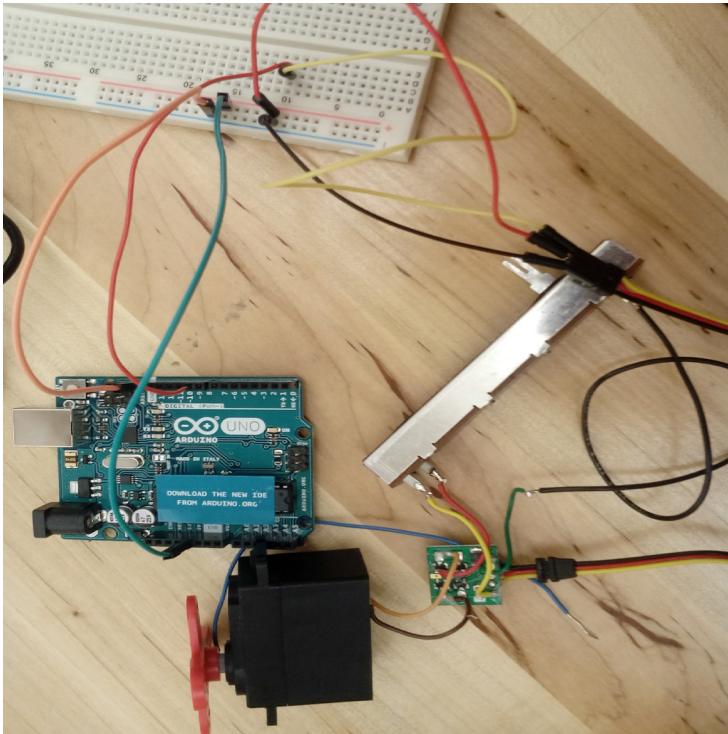
- The biggest challenge I encountered was soldering the slide potentiometer to the servo. The tutorial required that the original servomotor be opened and adjusted to rotate 360 degrees, and only required that a physical stopper be cutoff. Additionally I had to desolder the leads from the servo's PCB board and solder new wires connected to the slide potentiometer.
- I also had to download the servo sketch from the Arduino library, which I didn't know I had to do until Michael helped me. This step was not written in the tutorial and I did not have prior knowledge of it even being part of the library.
- I also encountered problems when I cut through the plastic glue stick. The slot used to allow the to move up and down generated plastic build up, which "clogged" the interior part of the cylinder and prevented the linear motion. In order to solve this problem I sanded off most of the plastic build up until the cylinder was significantly smaller. I eventually had to stop sanding because the glue stick started to fall apart, and I was faced with having to build or 3D print

my own version so it can freely move.

#### What I learned:

Completing this project helped me to learn about the many applications for linear actuators. I also learned about libraries or pieces of code that are available in Arduino as samples. I really enjoyed learning about linear actuators because they are used in robotic parts and assembly lines, which are relevant to the manufacturing section of industrial design. Also I incorporated a wireless controlled linear actuator to my final thesis project because I needed a mechanical part that lowered and lifted a camera in a precise manner. I am very happy to have learned the main functional parts of a mechanical product that is widely used in many industries; it is certainly a great tool to know as an industrial designer.

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Linear Actuator actuator parts

potentiometer soldered to servo motor  
PCB board

