PART: FINGER STARTER

ASSEMBLY

We are going to assemble a finger to a small servo for testing with an Arduino board. The servo I used on the pictures is a digital HK15298 (hobbyking.com code) but you can also use a cheap analog MG995 or even cheaper if you find and if the size specifications are the same.

The Arduino board used here is a Arduino Uno. It is best to add an external power supply because even if these servos are small they draw too much current which will or might reboot your board.
At the end of this assembly instruction, there is also a picture that illustrates how to simply connect your servo to the board.

REMEMBER: this connection set up can only power a single servo with low Amps drawing, if your board resets itself, or if the servo jitters, it means your servo is to high power consumption for the power pin. You will need an external power supply.

The pulling rods I use on in this assembly instruction is a fishing nylon, but it is not what works the best because it tends to stretch overtime. I recommend fishing braid 200LB for the InMoov. But for this test you can use anything you have at hand as long as it can pull and is thin enough to let the finger curl.
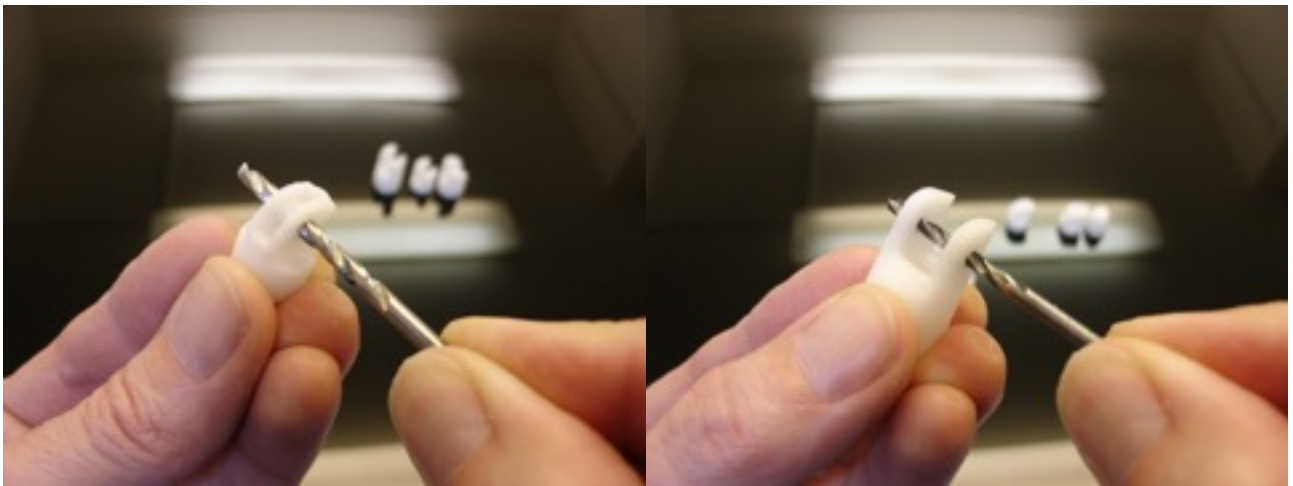
PART: FINGER STARTER
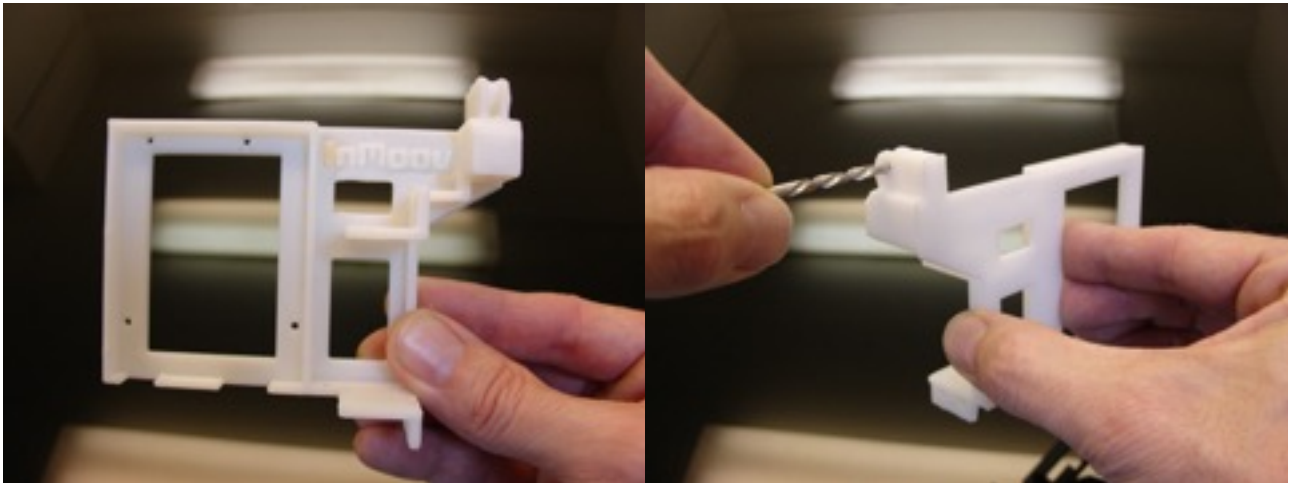
Now let see what we have printed and how we are going to do that.Redrill the sides hinges holes with a 3mm drill.

The inside hinges holes should be redrilled with a 3.5mm drill. So the inside hinges of the finger should also be done with a 3.5mm drill.

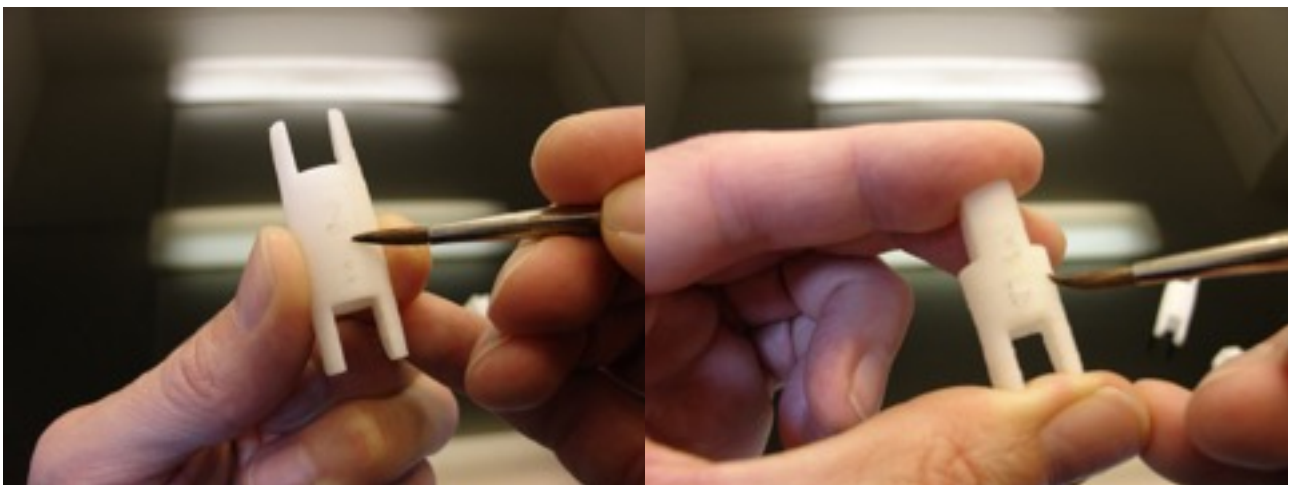Note the finger parts have numbers printed for a easier assembly.

PART: FINGER STARTER

Depending on the material you have used to print there is different ways to glue the parts together.

If you have PLA prints, a two components epoxy glue is really good but you can also use UHU glue. If you have printed in ABS, you can use epoxy, UHU glue but what works the best is acetone.

Applying few drops of acetone will link disolve the parts together like it was printed in one piece. So take part 1 and part 2 and glue them together.
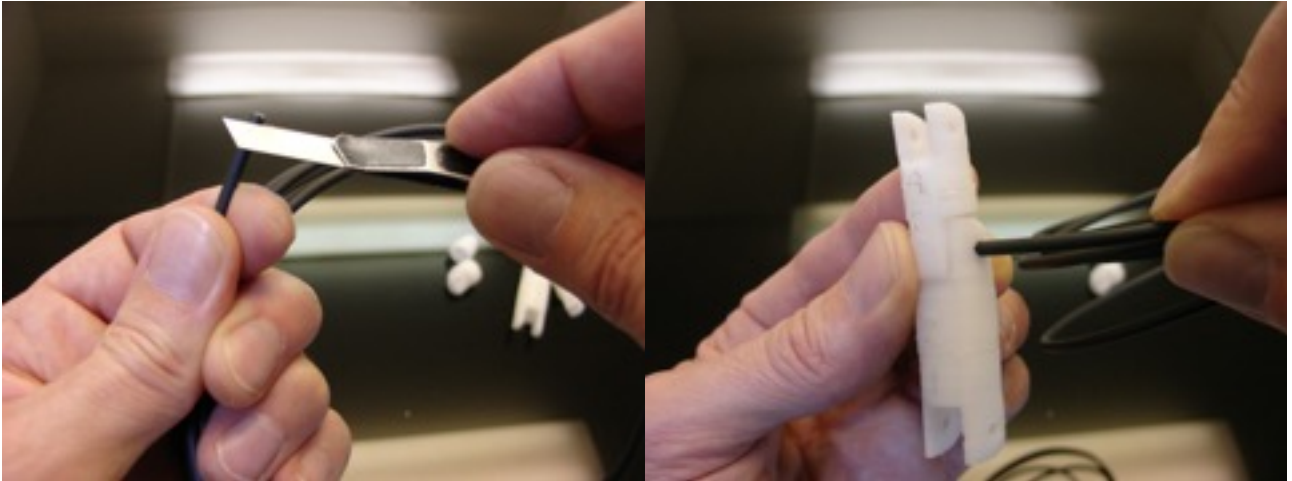
Now take part 3 and part 4, and glue them together.
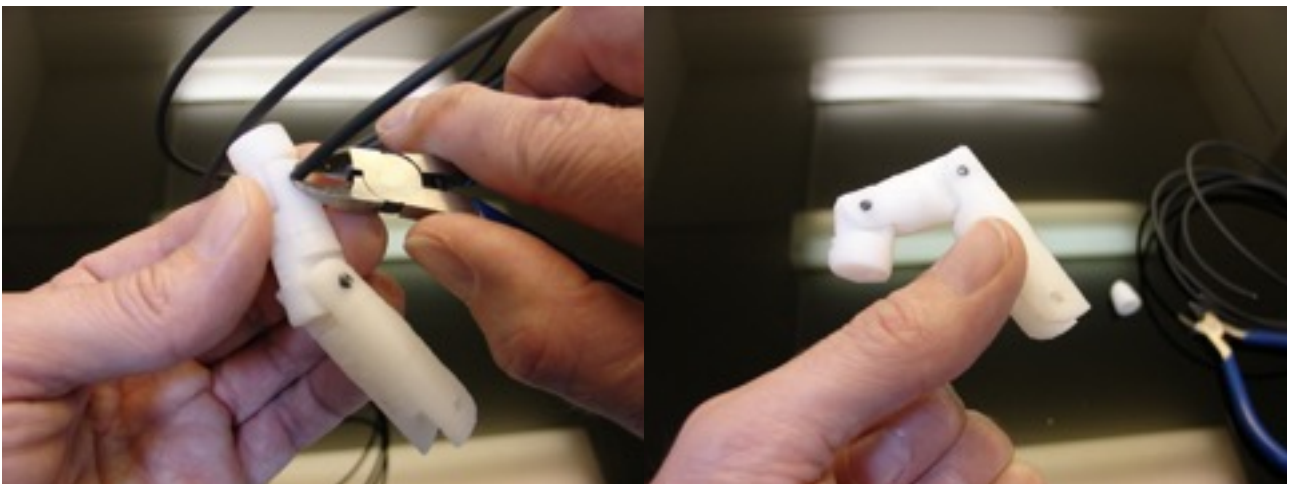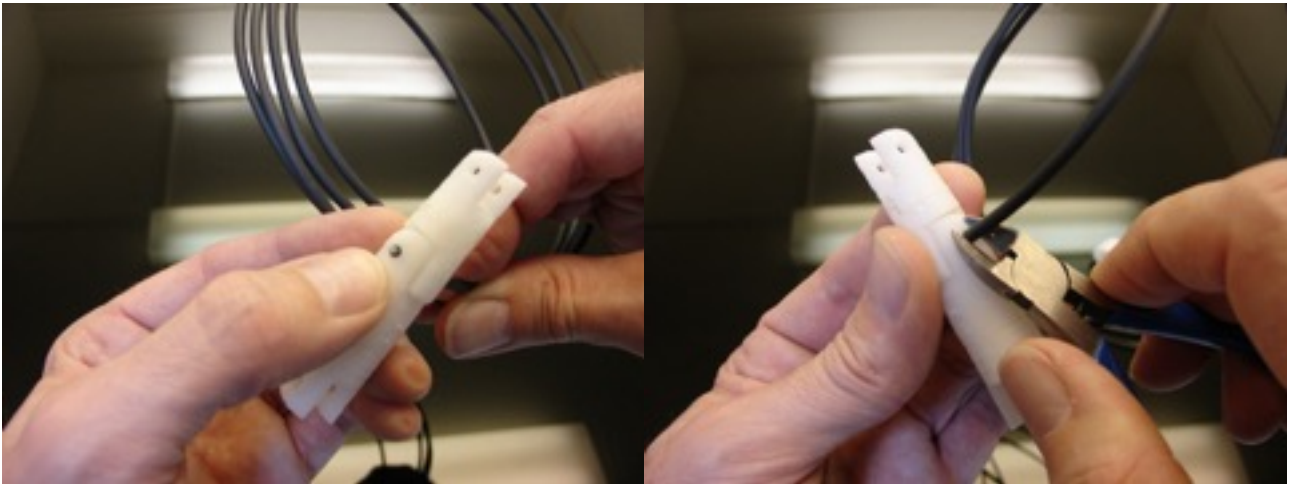Don't glue together part 5 and 6 yet.

PART: FINGER STARTER

Take a piece of your 3mm filament, if you don't have that you will need to get some screws of 3mm at your hardware shop. Get it trimmed with a cutter knife. Push it in the hole, assembling part 1/2 to 3/4
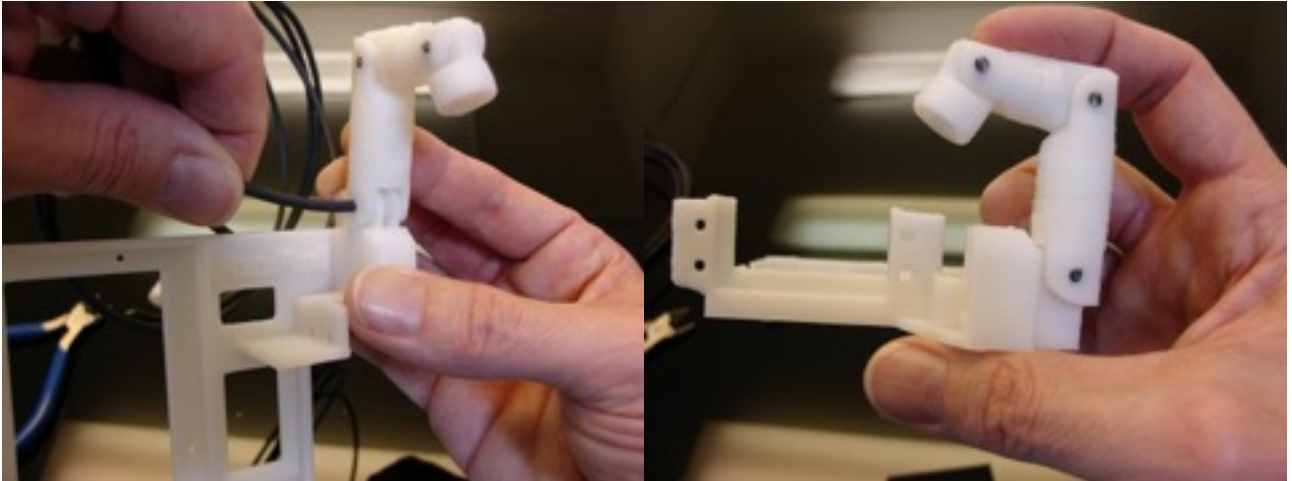

together.
Once it reaches the other side cut the filament with pliers. Do the same trick with parts 3/4 to 5
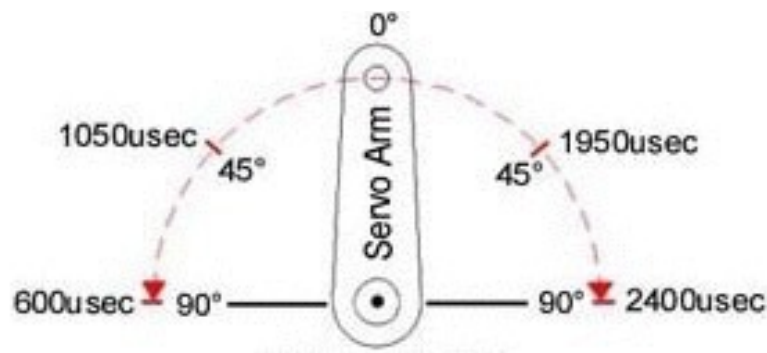Now we have a finger that should be able to move freely.

This project was started by Gael Langevin: www.inmoov.fr

PART: FINGER STARTER

You should have something looking like the pictures above. It should be able to freely fold to the angle of the second image.

Now lets hack the servo. We are going to find an arbitrary zero point on the servo. Turn by hand the actuator to the maximum left, note until where it goes. Do the same to the left and note until where it went. These two points are the extremes positions of your servo, in the middle of these two points decide where is the arbitrary zero point. You can find that with your Arduino board if you know how to do it, but this is a simple solution for now even though it isn't precise.
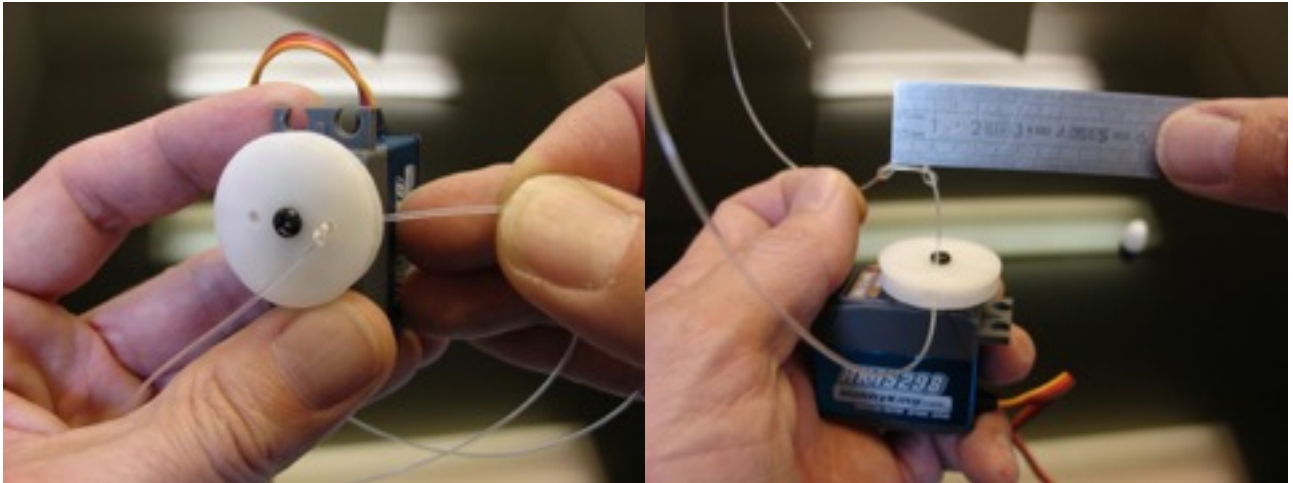

Mount, Screw the "RobRing" on your servo, the two little holes should be on your extreme points. Take a piece of rod of about 50cm long. Run your rod through one hole.
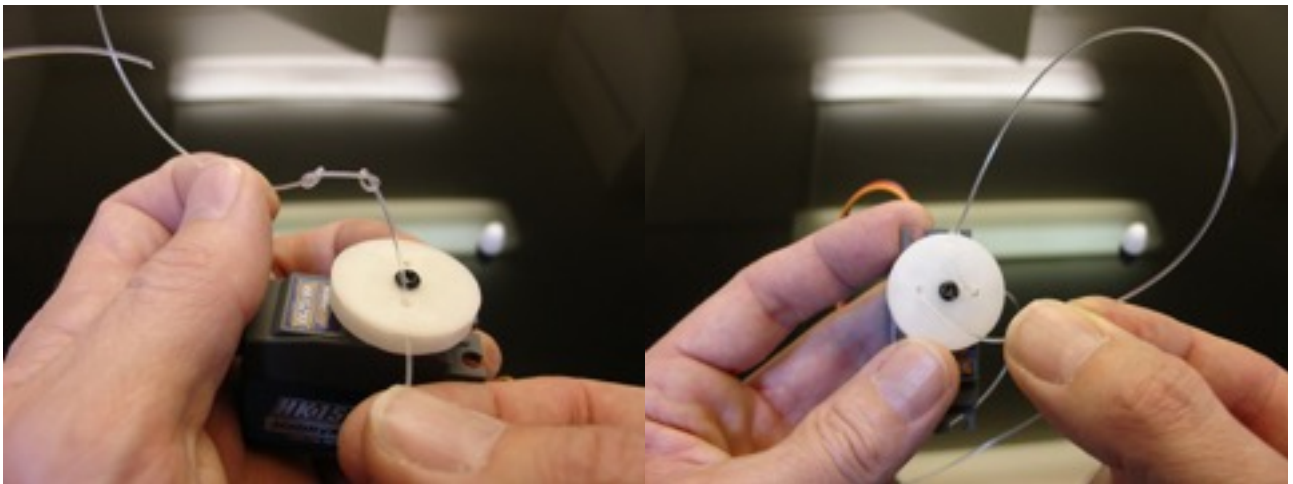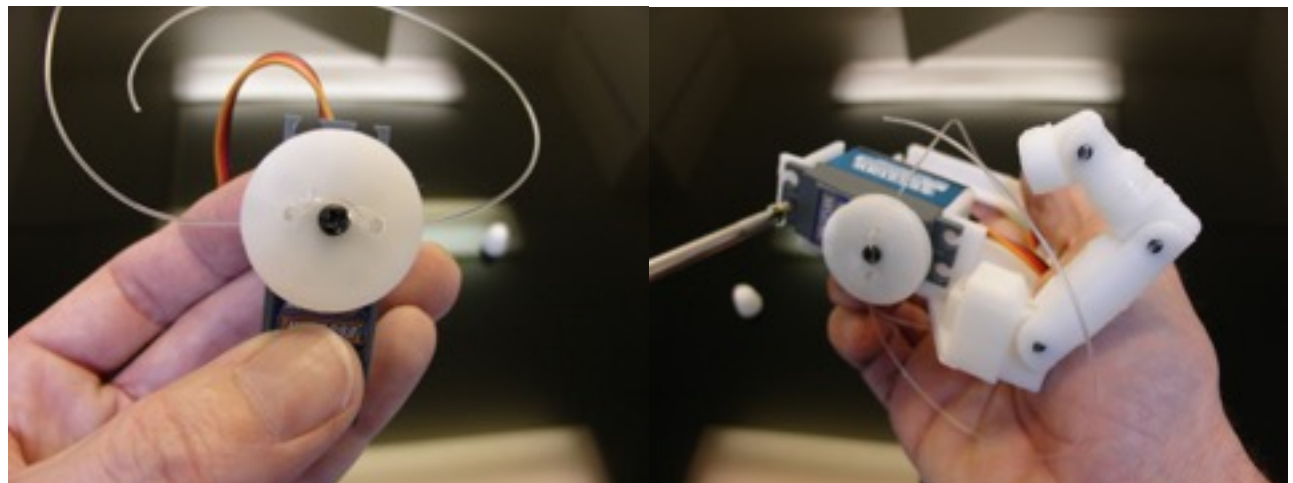
PART: FINGER STARTER

Make two knots at approximately 25cm of your rod, like this. make them well tight. Add another set of knots about a 1cm away from the first set.


On my picture I did only two knots like this, but they might run through the hole of "RobRing" and that shouldn't happen. Adding a bunch of knots will help to avoid that. Now run the other end of the rod through the second hole.

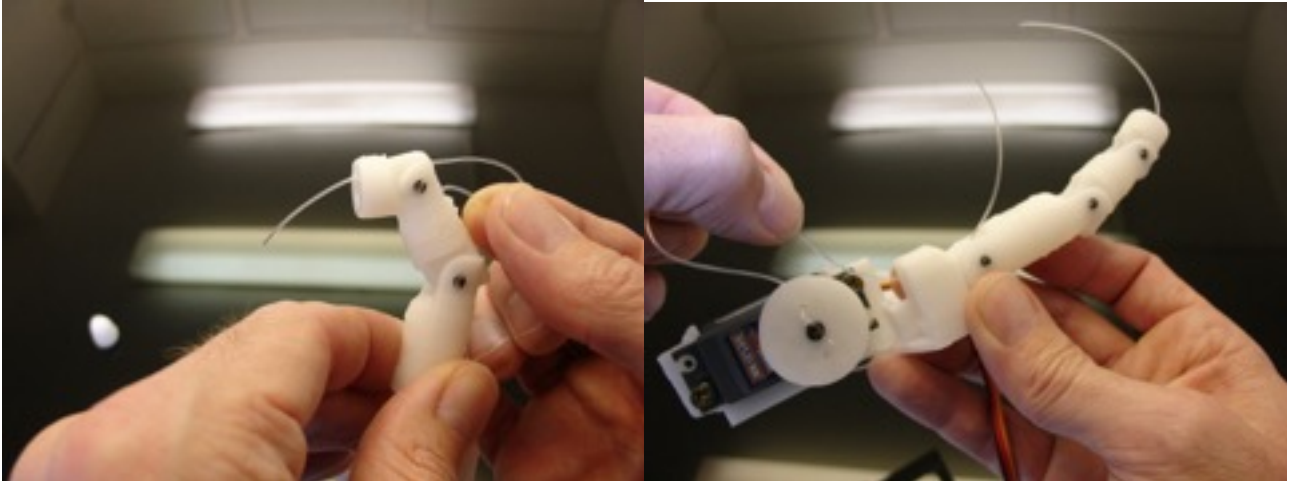This project was started by Gael Langevin: www.inmoov.fr

PART: FINGER STARTER

You should have something like this, with even more knots than me. Time to fix the servo to the base. Run the bottom rod through the parts like on the following pictures.
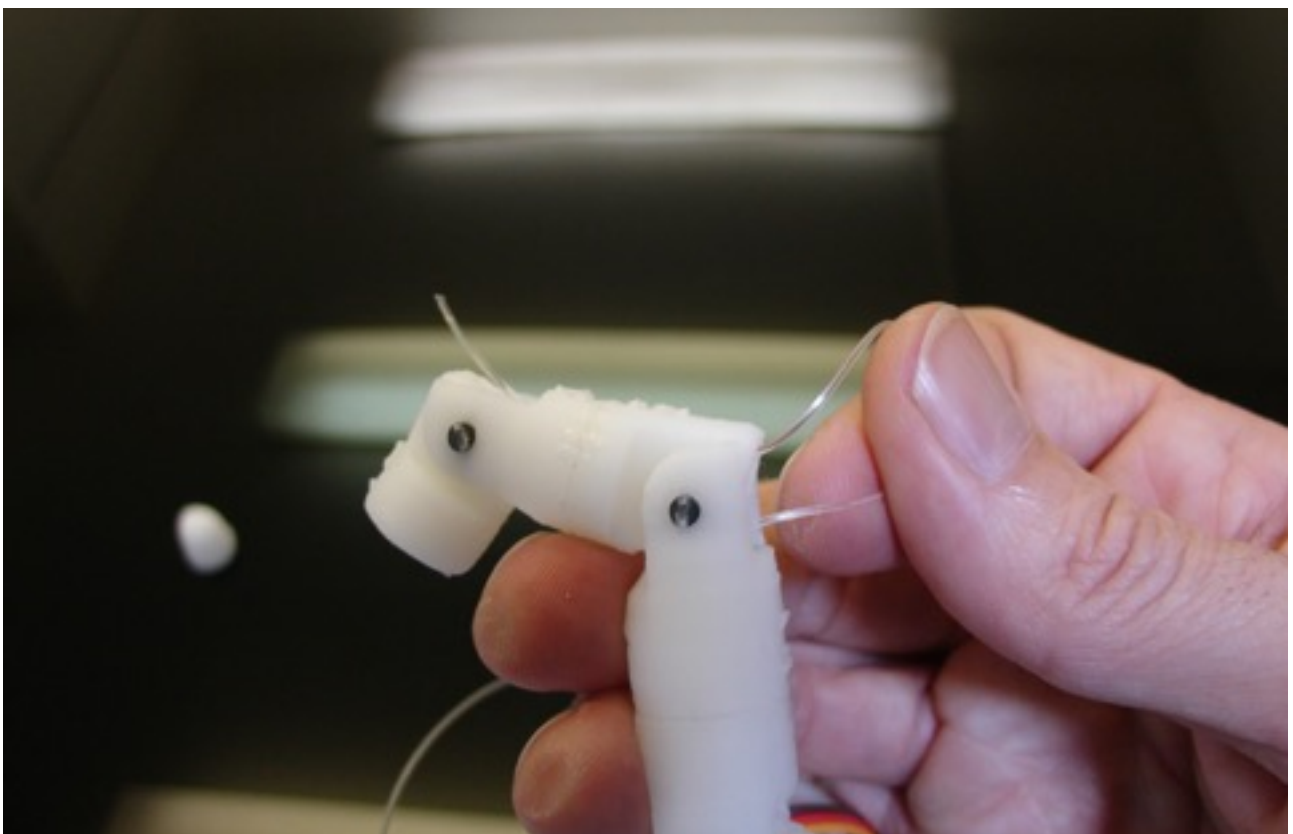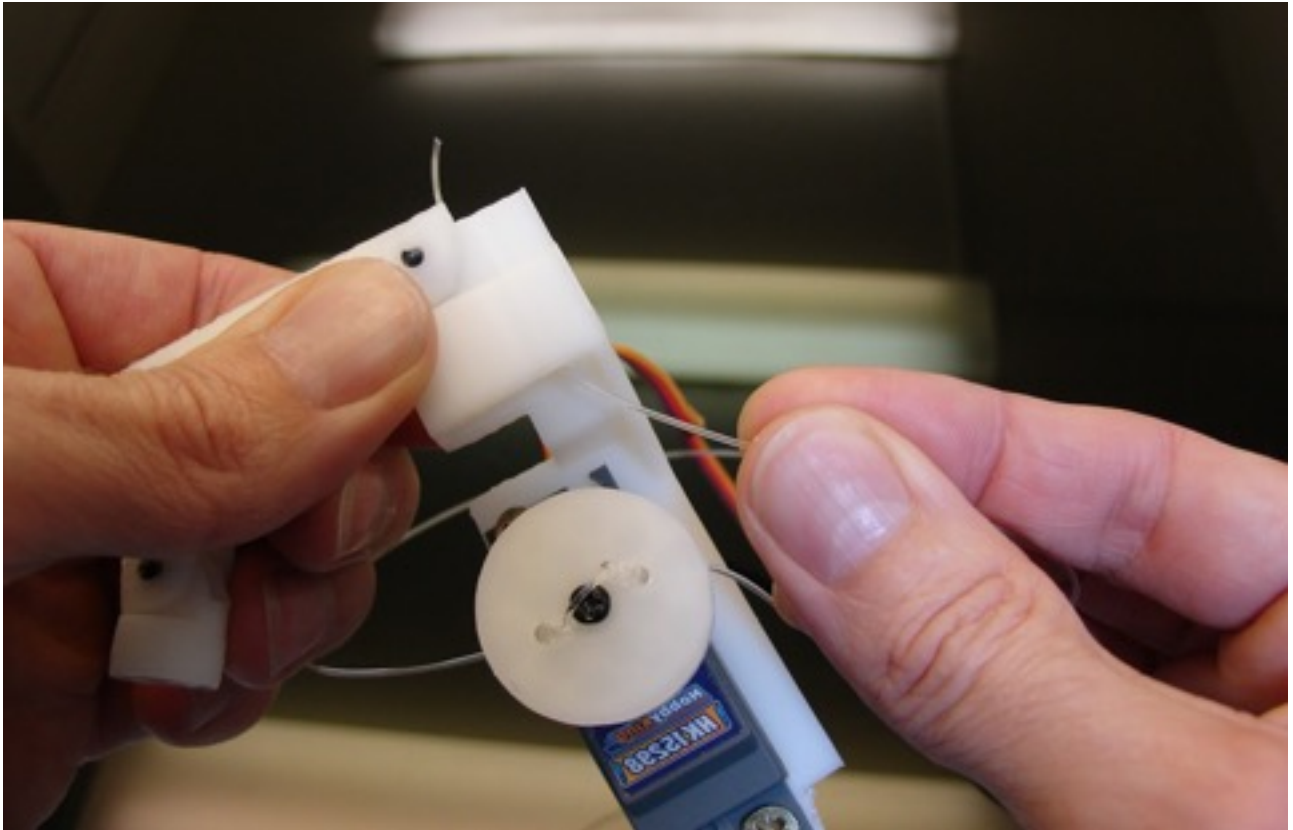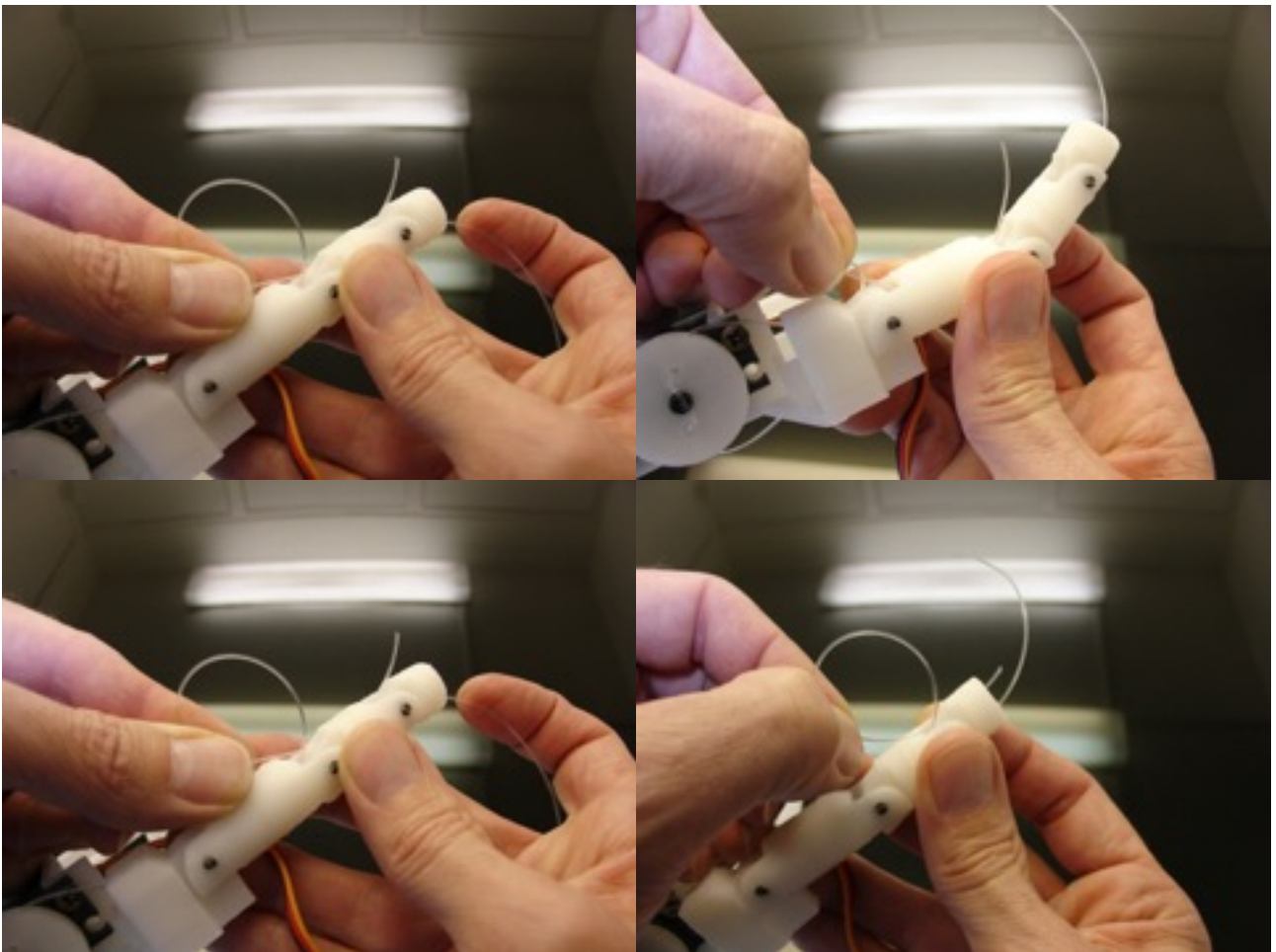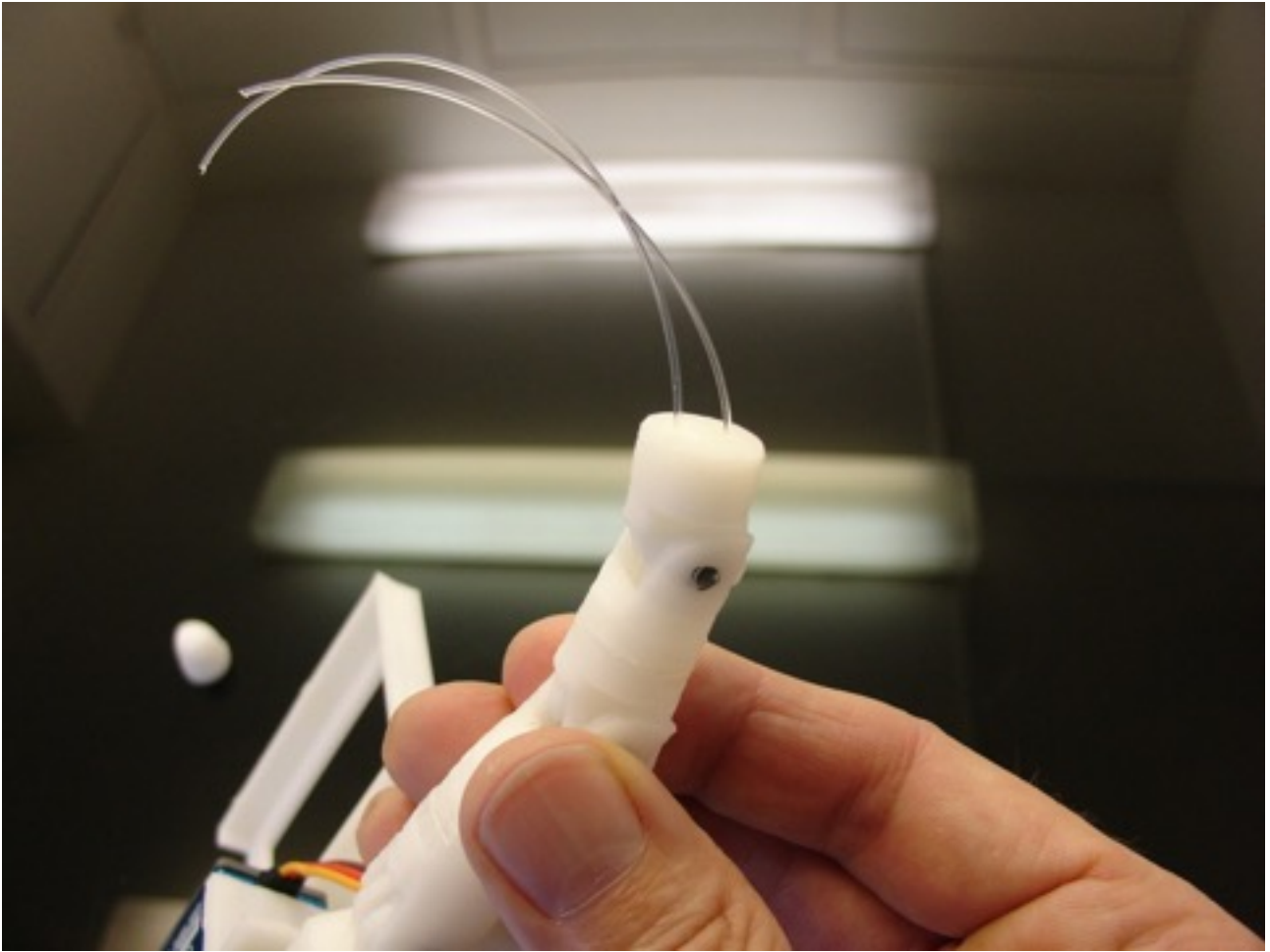
PART: FINGER STARTER

Just make sure not to invert your rod, it should always be on the back of the finger. Now run the second rod on the inside of the finger.
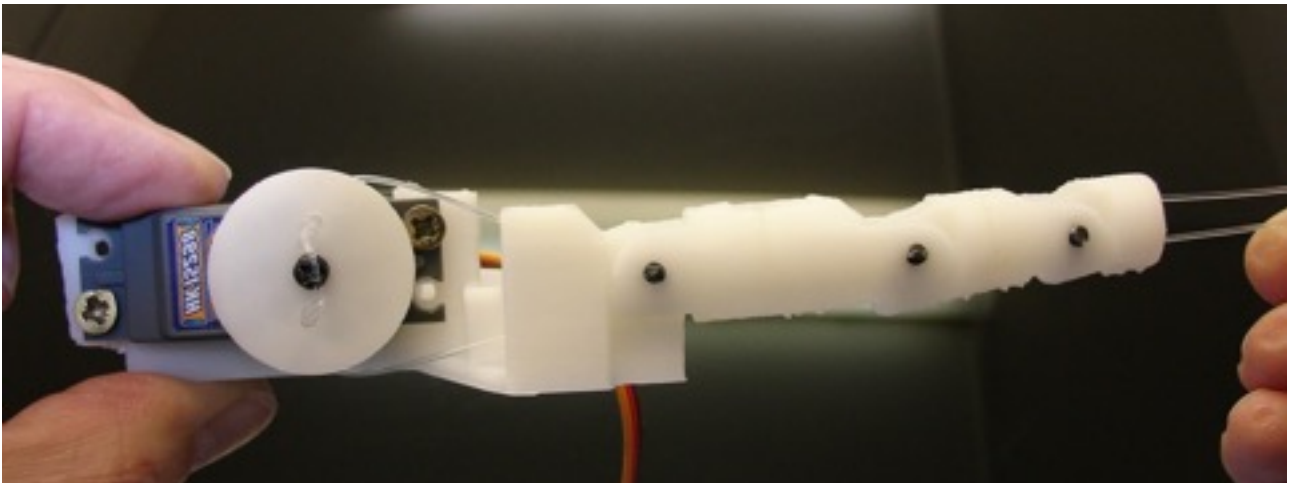
PART: FINGER STARTER

You should end up like this.

Check your servo is at it's zero arbitrary point.

PART: FINGER STARTER
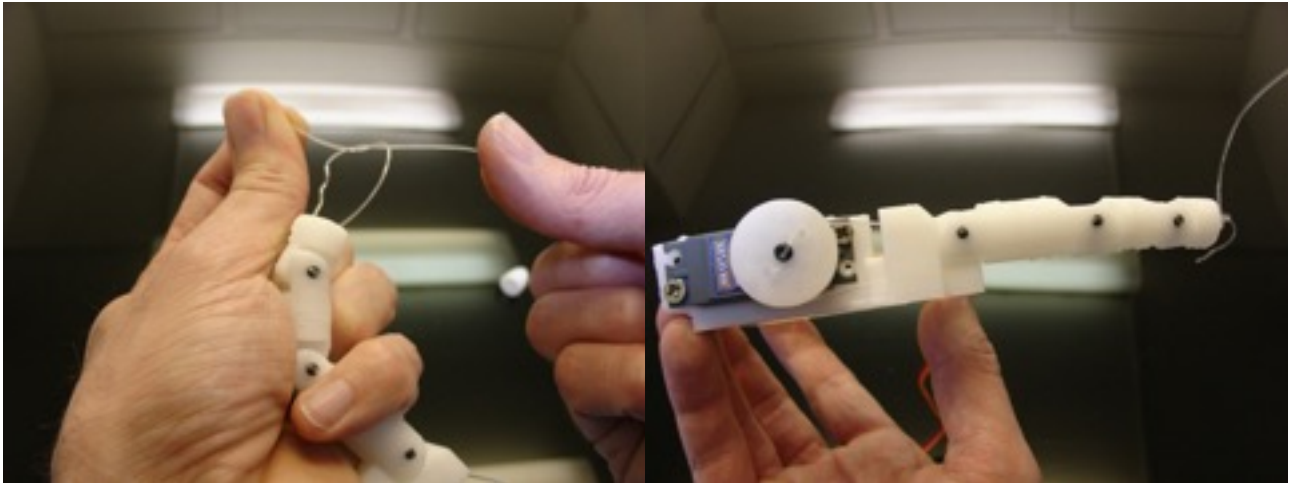
Curl a little bit the finger and make a few knots between the two wires. When turning "RobRing" by hand you should be able to get the finger in this position. Finger totally stretched.

Now cut the excess bits of rod and glue part 6 to 5. If you look closely at part 6, there is a nail side. I didn't put the number on the nail for aesthetic reasons.
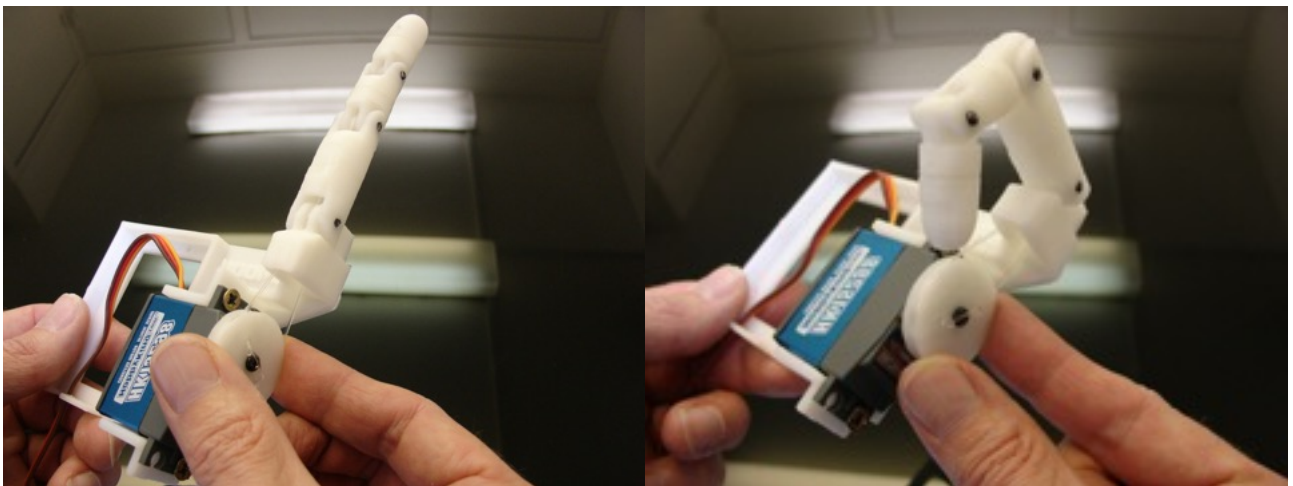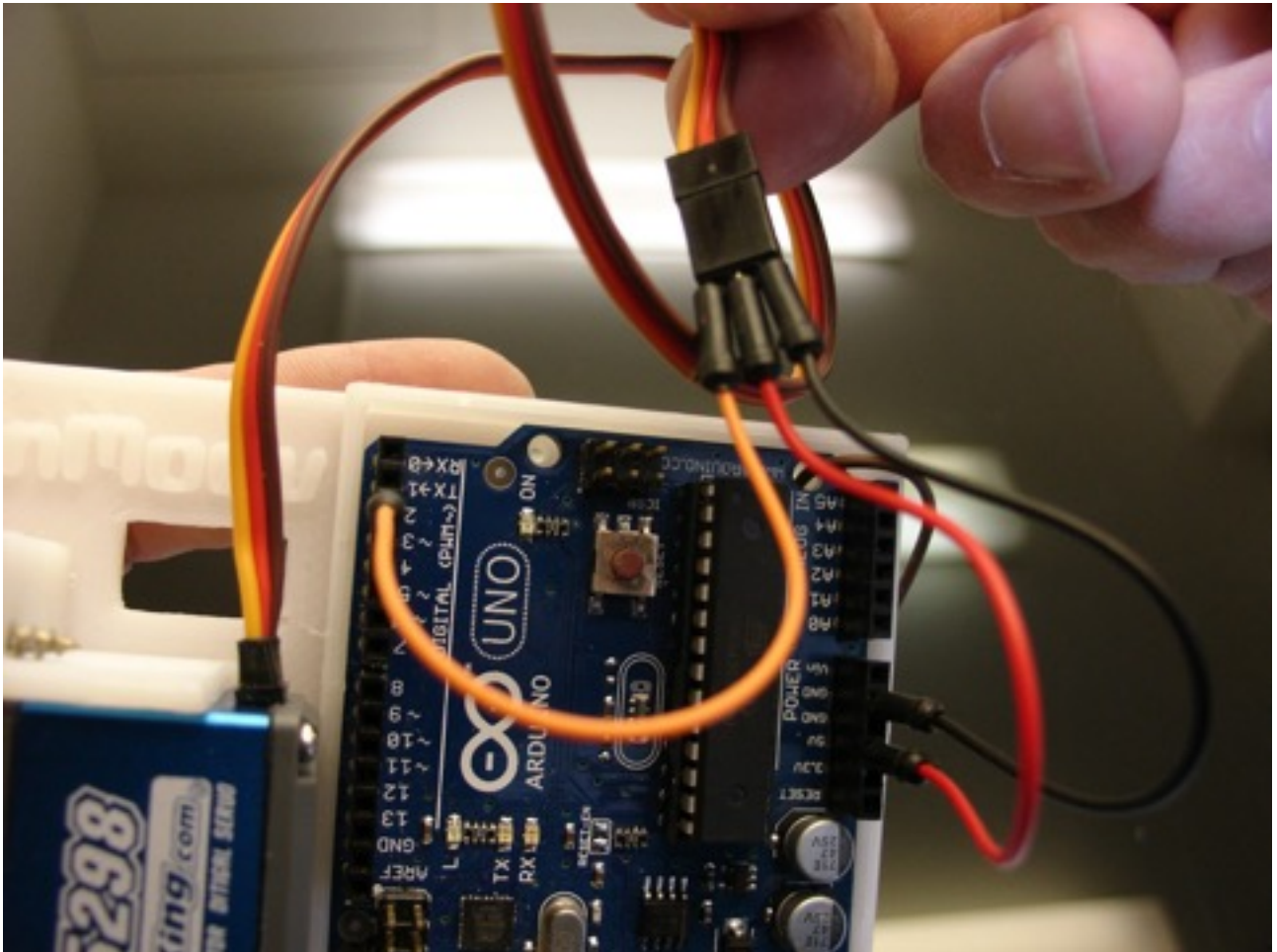

Try to move the finger by rotating "RobRing", it should move freely without locking.

PART: FINGER STARTER

Insert the Arduino board and make a wire connection like this. Orange or yellow to pin3 on PWM. Red on +5V. Black or brown on Gnd (ground).

REMEMBER: this connection set up can only power a single servo with low Amps drawing, if your board resets itself, or if the servo jitters, it means your servo is to high power consumption for the power pin. You will need an external power supply.

You can now upload this FingerStarter sketch to your Arduino to see it move. If you have never used Arduino before. Google "Getting started with Arduino".

You also can go to MyRobotLab and start learning about how to actuate the finger with a slider. To get started by going to MyRobotLab.org/tutorials

PART: FINGER STARTER

THINGS NEEDED:

- 1x Arduino Uno
- 1x HK15298 servo (HobbyKing.com)
- 1x servo-pulley_d22x2_5
- 1x RobRingV1
- 1x FingerTesterV2
- 1x FingerIndexV1