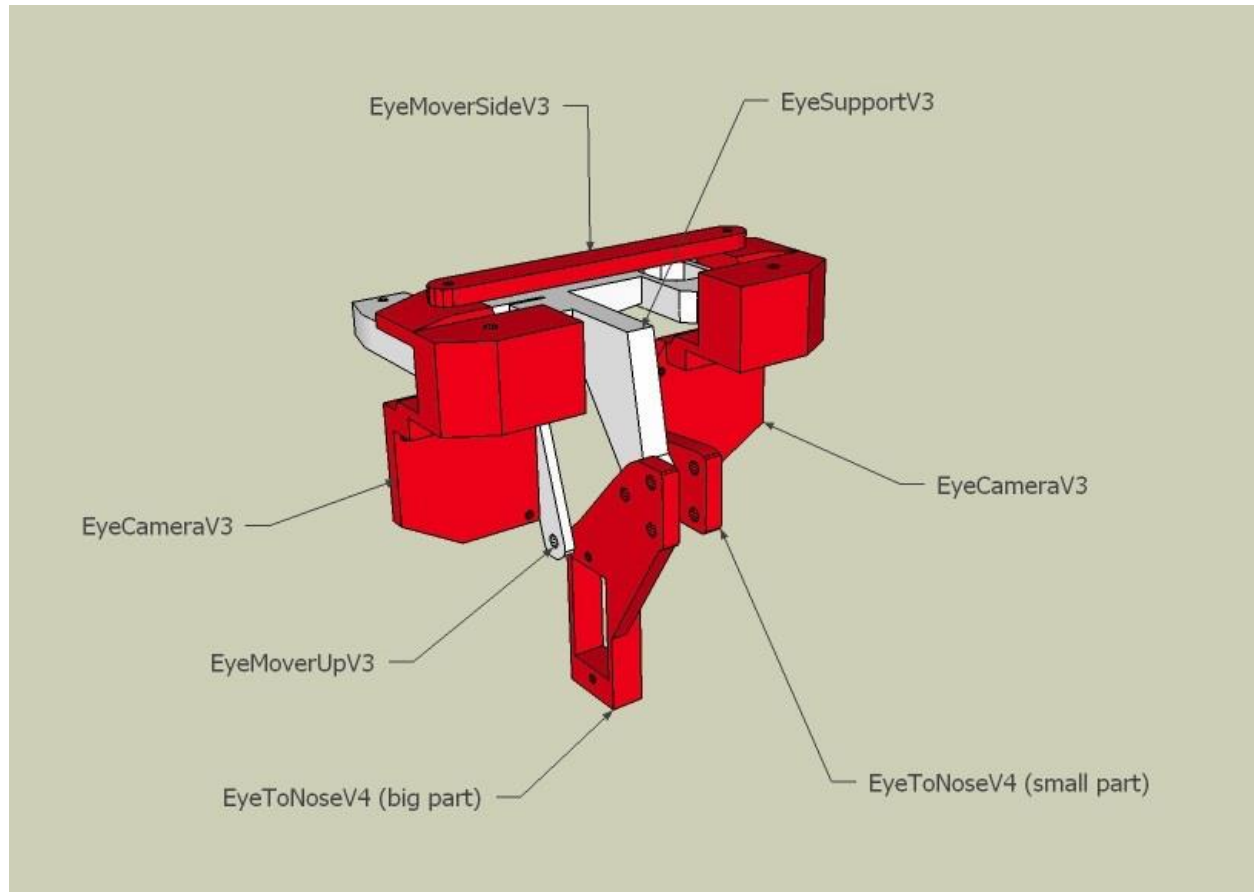# PART: EYE MECHANISM

Assembly

I used 3 DS929HV servos from Hobbyking. The two servos mounted for the right/left movement are connected with Y connector, so they receive the same data and act simulteanously. Some of the pictures in this tutorial are showing parts that might be a bit different than the one you actually printed. This is due to different iterations.

Parts List

1 x EyeMoveSide
1 x EyeMoverUp
1 x EyeToNose (big part)
1 x EyeToNose (small part)
1 x EyeSupport
2 x EyeCamera
3 x DS929HV servos
1 x Y connector

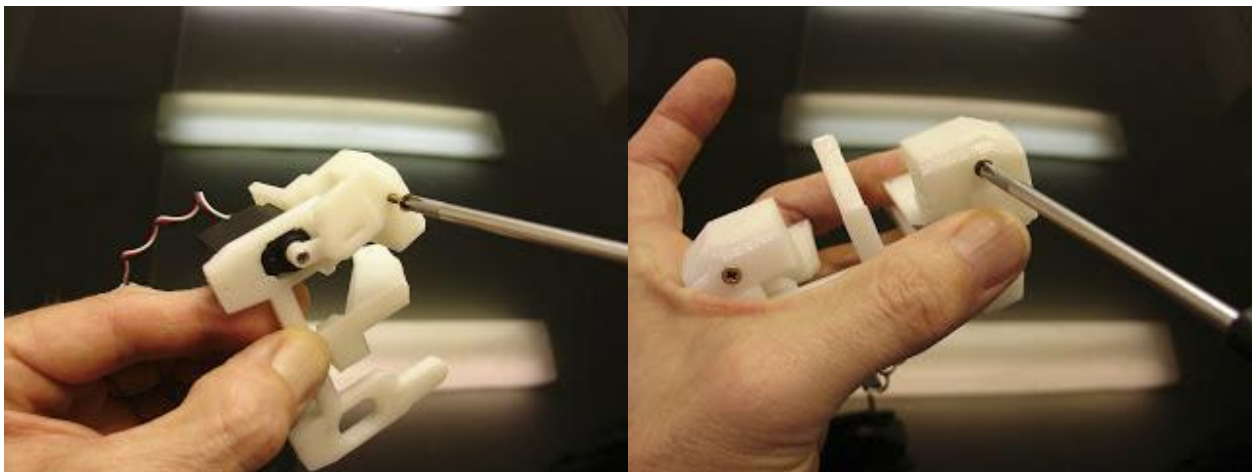*Optional:*
2 x PingPong balls
2 x Webcams (disassembled hercules twist will suffice)
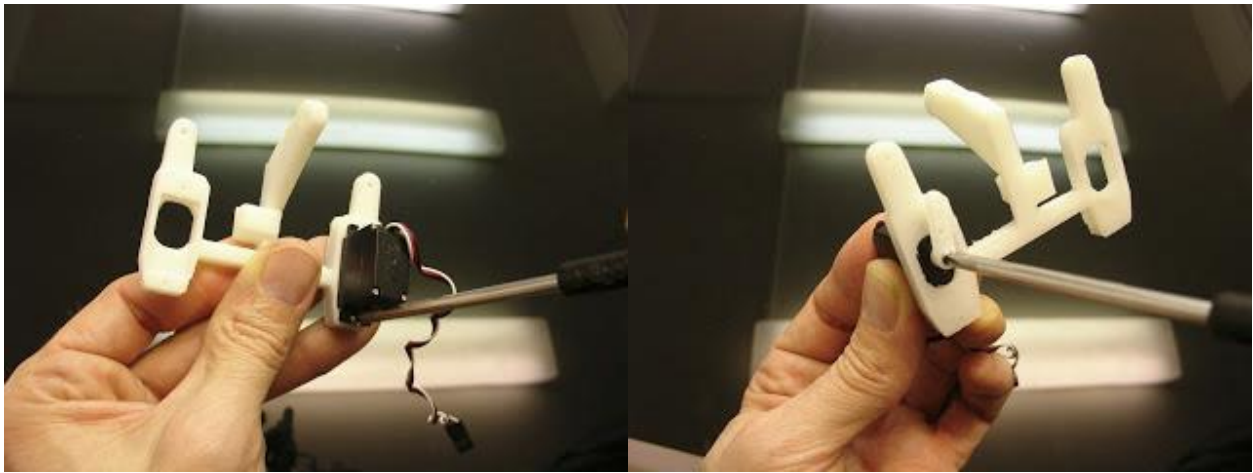
Start by screwing the two servos to EyeSupport. In the tutorial I have attached only one, but it is best to have two.

Set your servos at 90 degrees using your Arduino. Attach the actuators of your servos in this position.
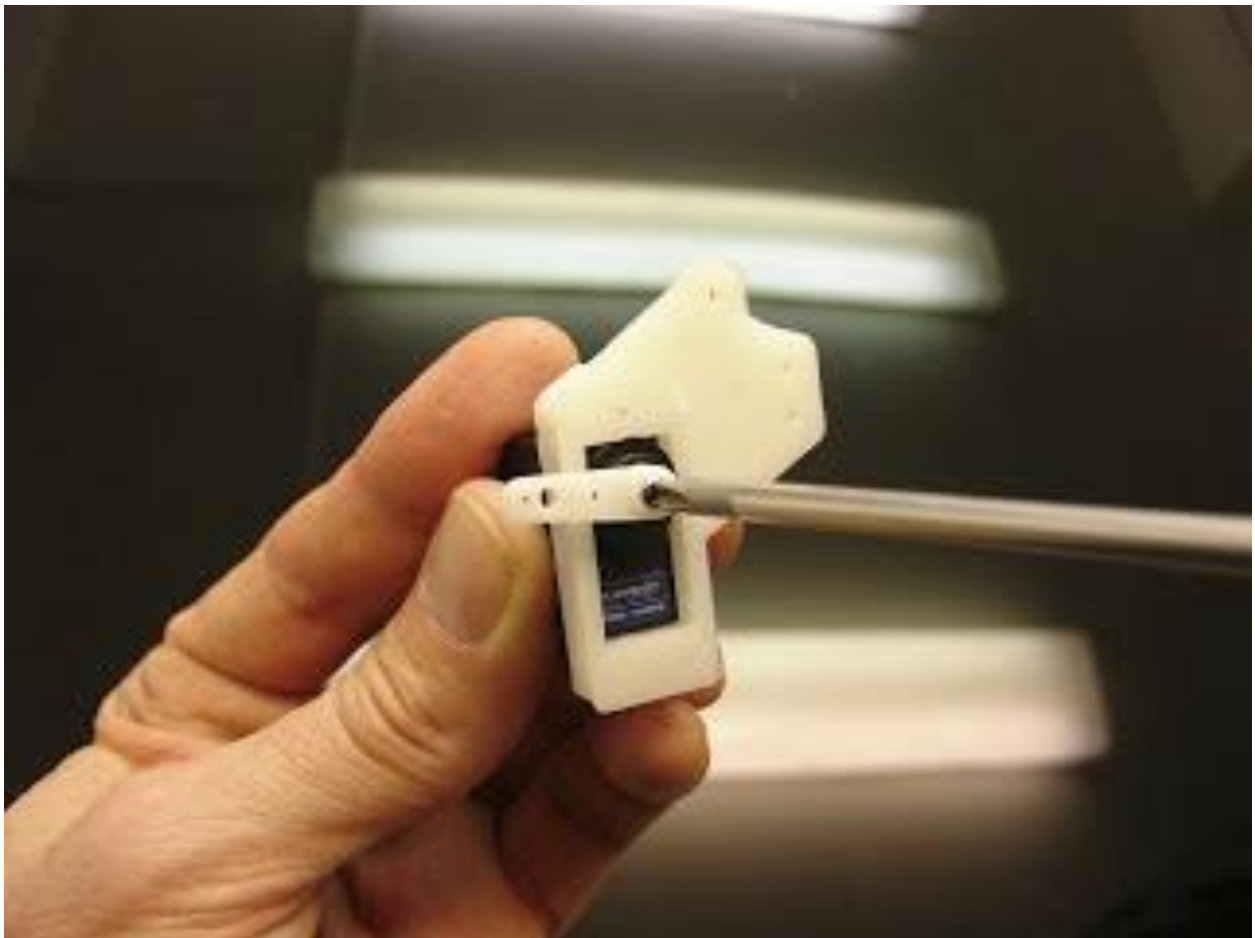

Mount EyeCamera part and make sure it can rotate freely on the screw.
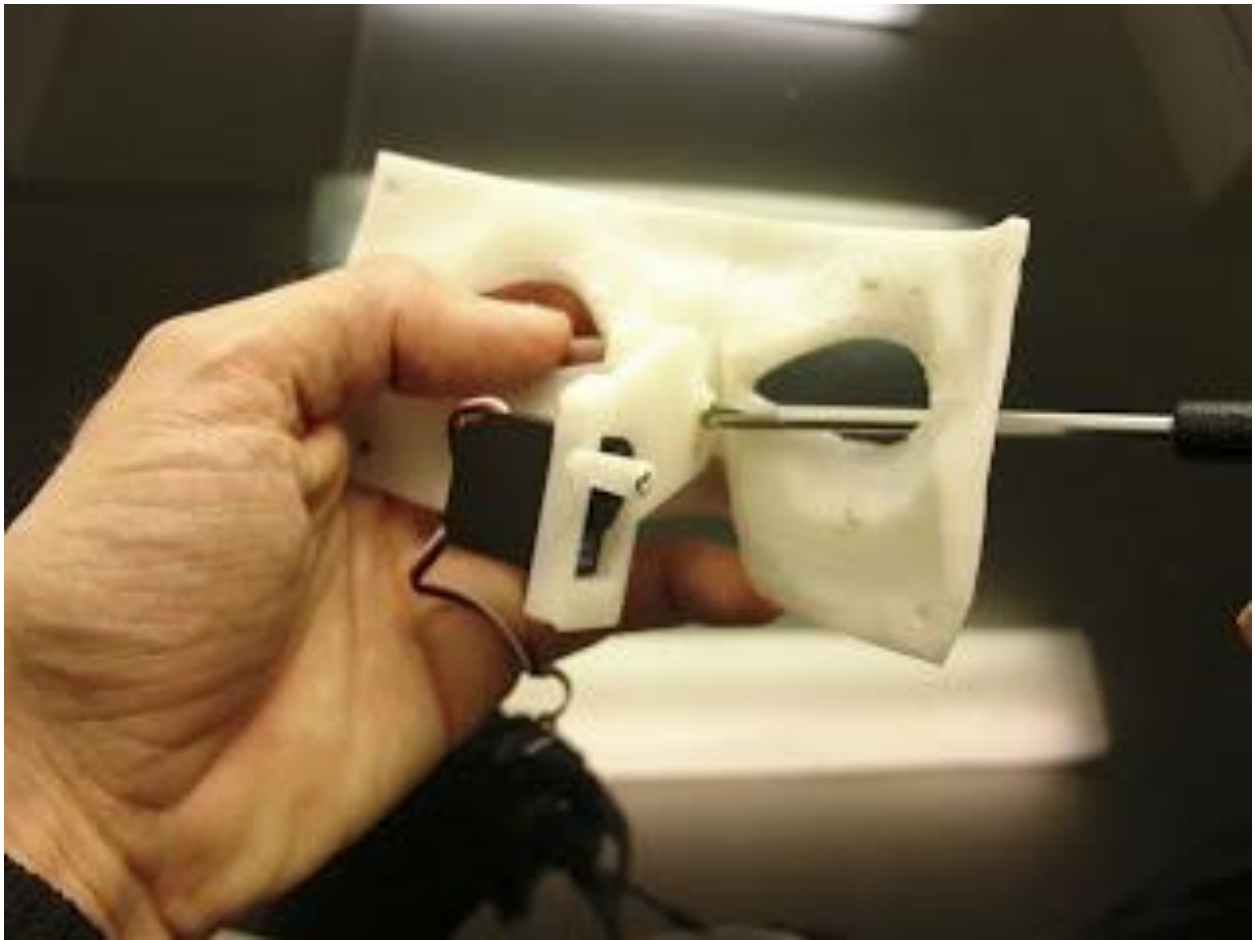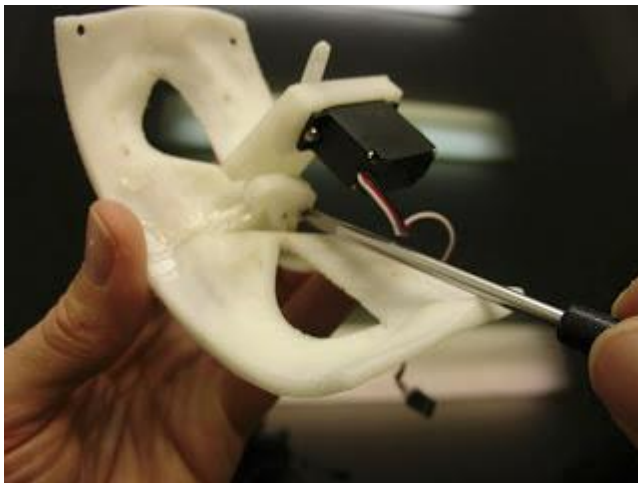
Mount the second EyeCamera part
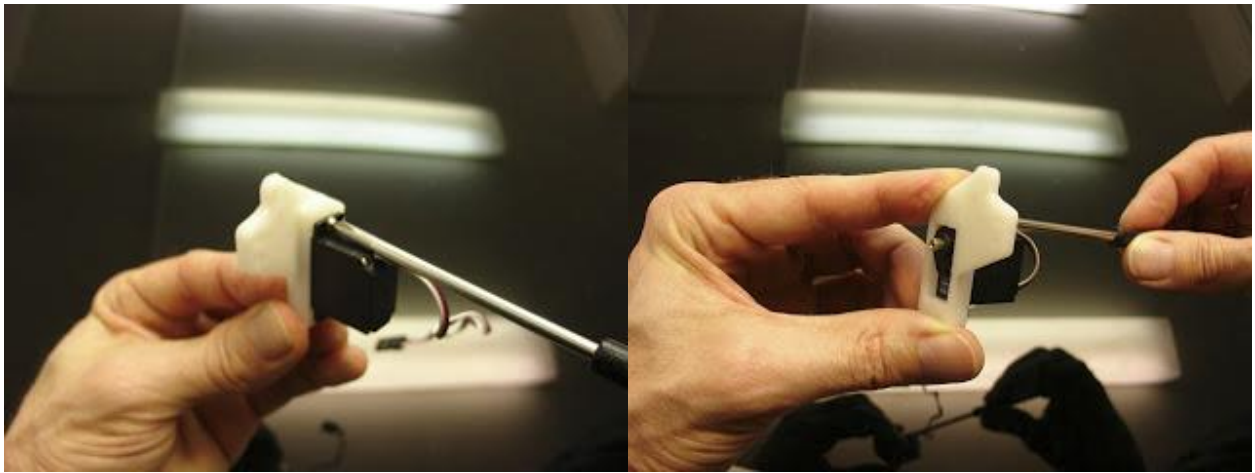
Now add and screw the third servo to EyeToNose.
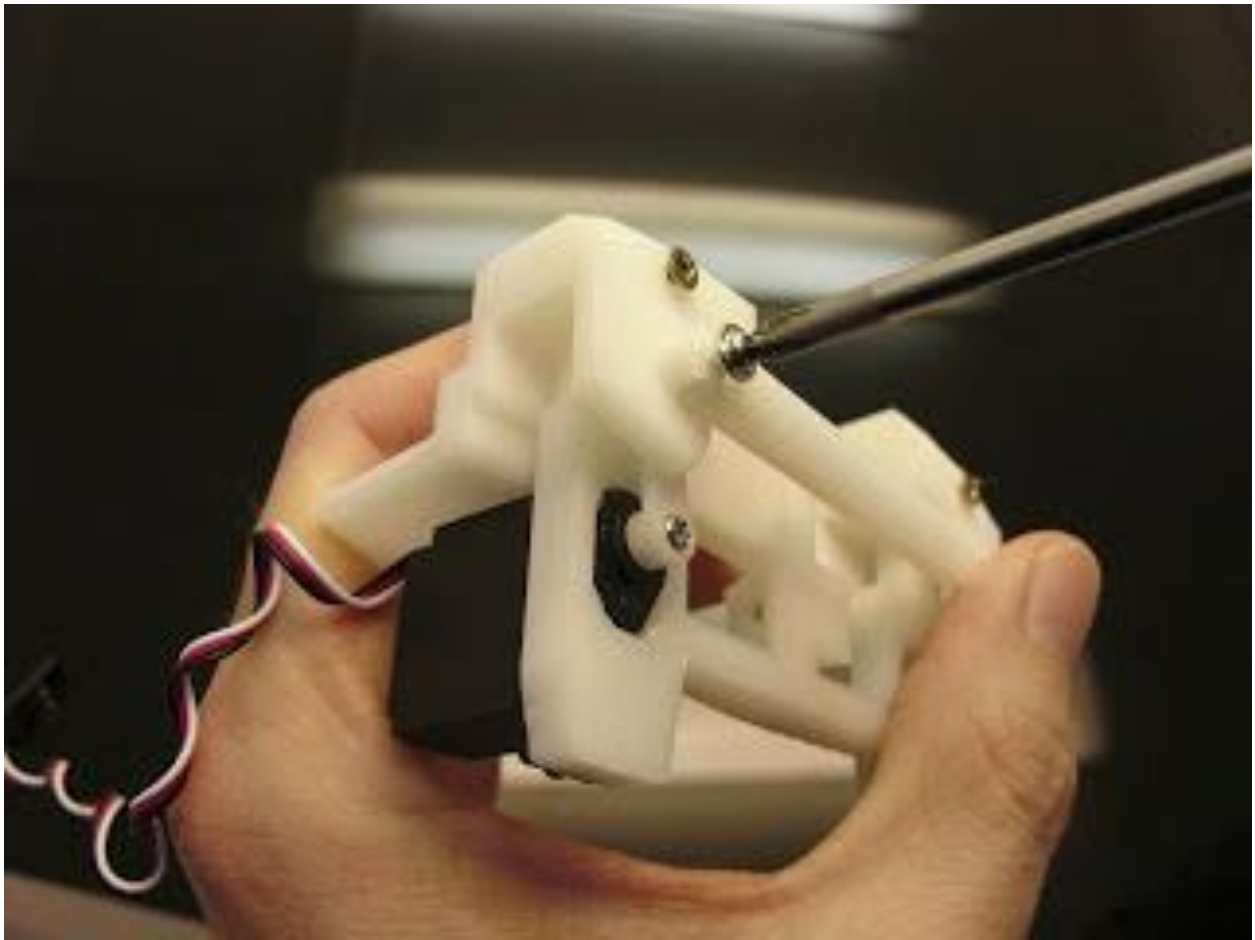Your part will look a bit different in length.

Be sure to have your servo set at 90 degrees and mount the actuator this way.
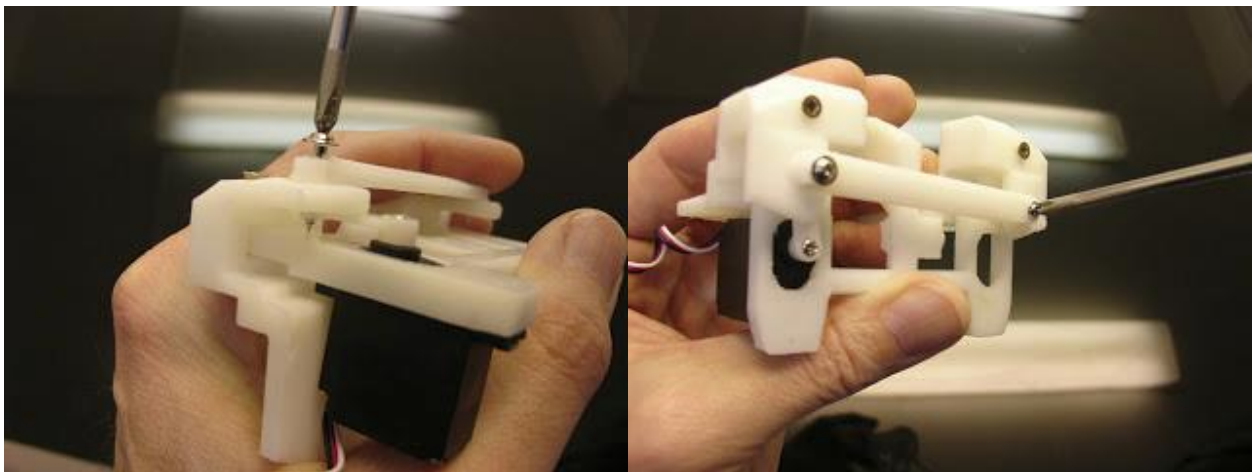
Attach EyeToNose to the EyeGlass part.

This is a bit difficult because the access with the screw driver isn't straight.

Now fix EyeMoverSide through EyeCamera to the actuator of the servo. You can also mount a second servo instead of using EyeMoverSide.
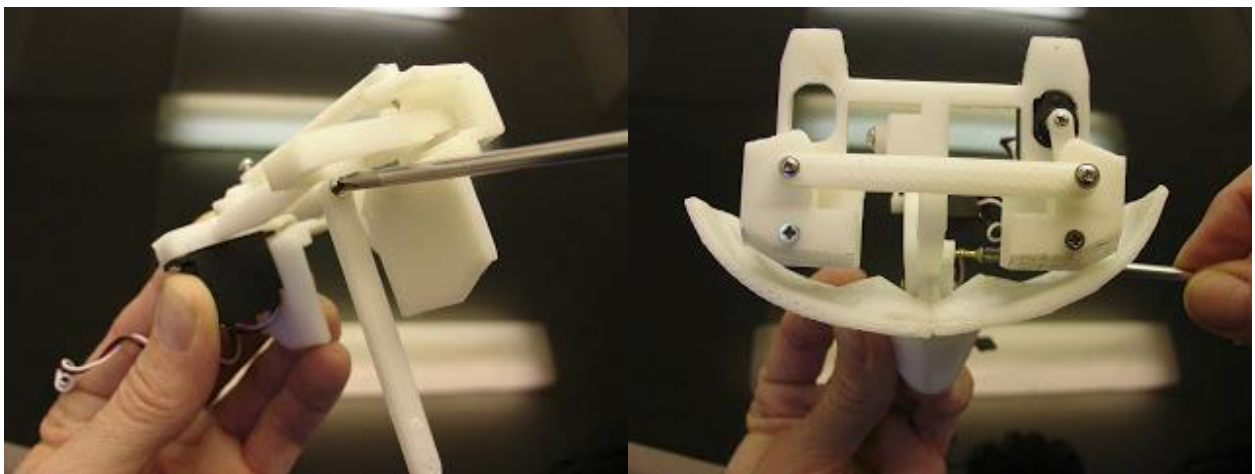
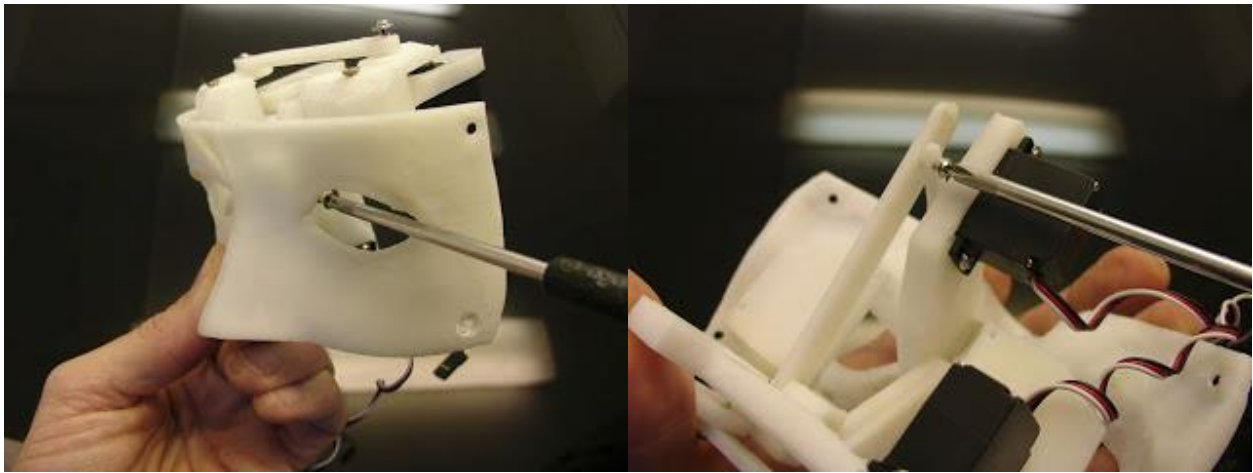Two servos makes the X movements more sturdy.


Repeat this on both of the eyes.

Mount EyeMoverUp, it should NOT be tight screwed.

Fix this assembly to EyeToNose, going through the eye space is an option to make it easier.

Fix the EyeMoverUp to the bottom servo actuator.
Normaly your mechanism should be ready for movements.
Making test with your Arduino is a good thing at this point. Be sure to start with small range degree movements, especially for the up and down movement. You can start with 30 to 120, it should be fine.
What follows is what I did to make the cameras look more like eyes.
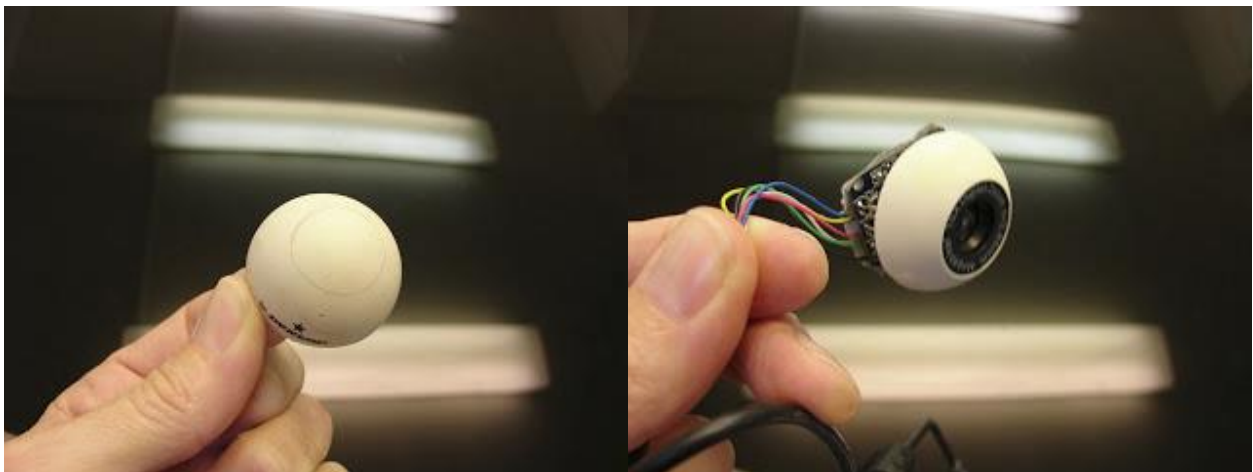

I used a ping pong ball cutted with a knife and small scissors.
The hole where you insert the lens can be rounded up with sand paper, because cutting a clean hole with a knife isn't easy.

Adjust the hole precisely to your lens and PCB board.
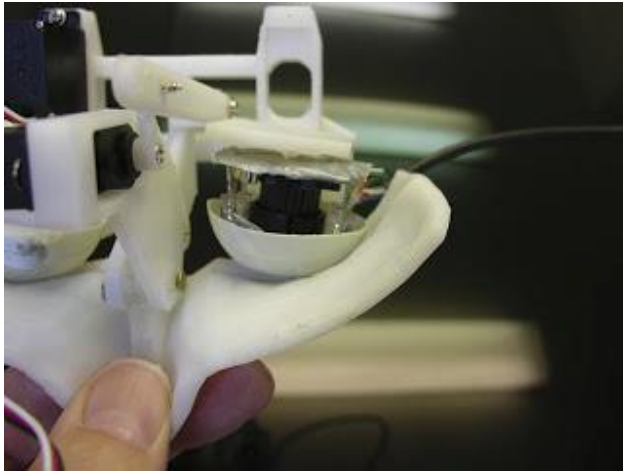
I used a piece of heavy tape to cover the back of the PCB, for two reasons:

First to avoid using hot glue directly on the components and also to shutter the back of the lens to keep it dark (Oddly light coming from the back of the lens interfer with the image received by the camera).
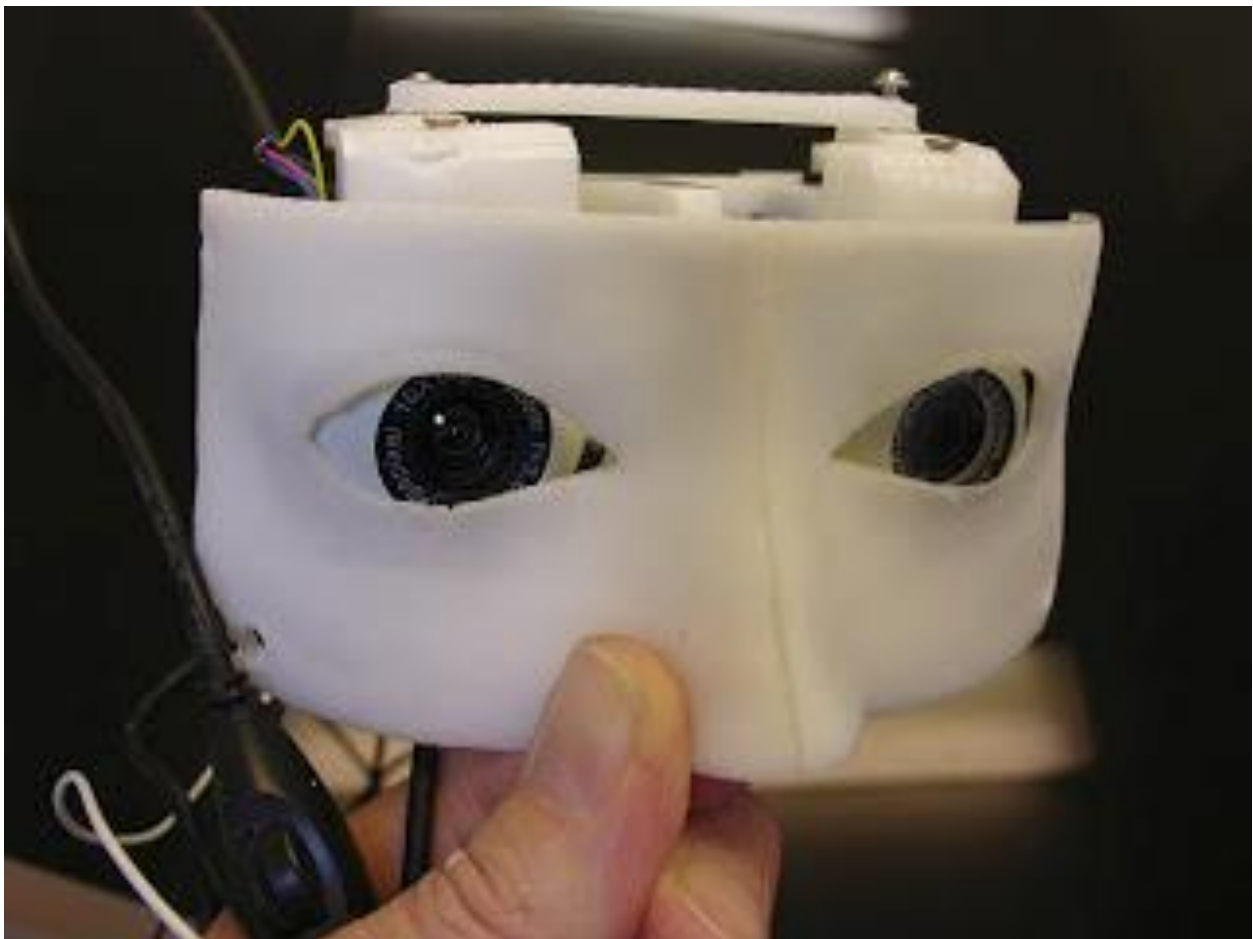
Now you can mount it to the head. You can see here my two different cameras. On the left the Megapixel and on the right the Hercule twist.

The connections of these three servos will be added on the Arduino board, once the InMoov service will be implemented for that.