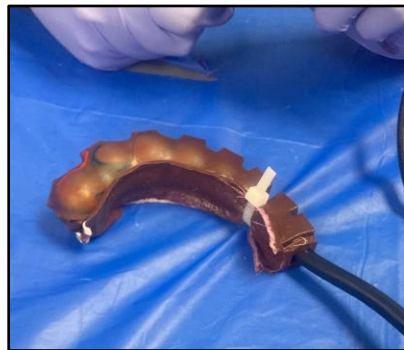
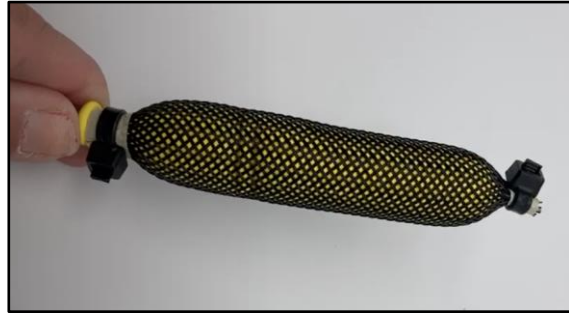
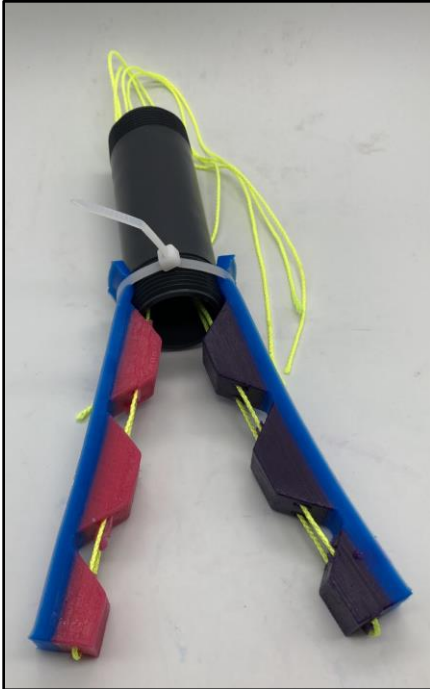


Design Activity



Recap: Below are some images of the actuators that you made during the past two weeks.

1. Rank who you believe is most important in a soft robotic design: 1 least important, 4 most important.

____ Mechanical engineer
____ Electrical engineer
____ Bioengineer
____ Business marketer

OR

Do you think all the above are equally important?

Bio-Inspired Design Modifications

As engineers, we are always building, testing, and making our products better. Characteristics of biological animals and plants inspire some features that may be beneficial for our designs.

2. Observe images of animals to become inspired by some natural grippers (claws, talons, paws, tentacles, etc).
3. Would you add anything to the grippers that you made that are bio-inspired?
4. Now think of what you use in your everyday life. What products utilize grippers? Think about getting ready in the morning, doing schoolwork, athletics...

Design Challenge

Scenario: *A patient loses their hand in an accident. The doctor suggests that the patient receives a prosthetic hand so they can still live and work independently. The prosthetic hand is made from soft-robots, similar to the string-gripper you made. The patient works in an office so needs to be able to pick up some items such as paper clips and pens.*

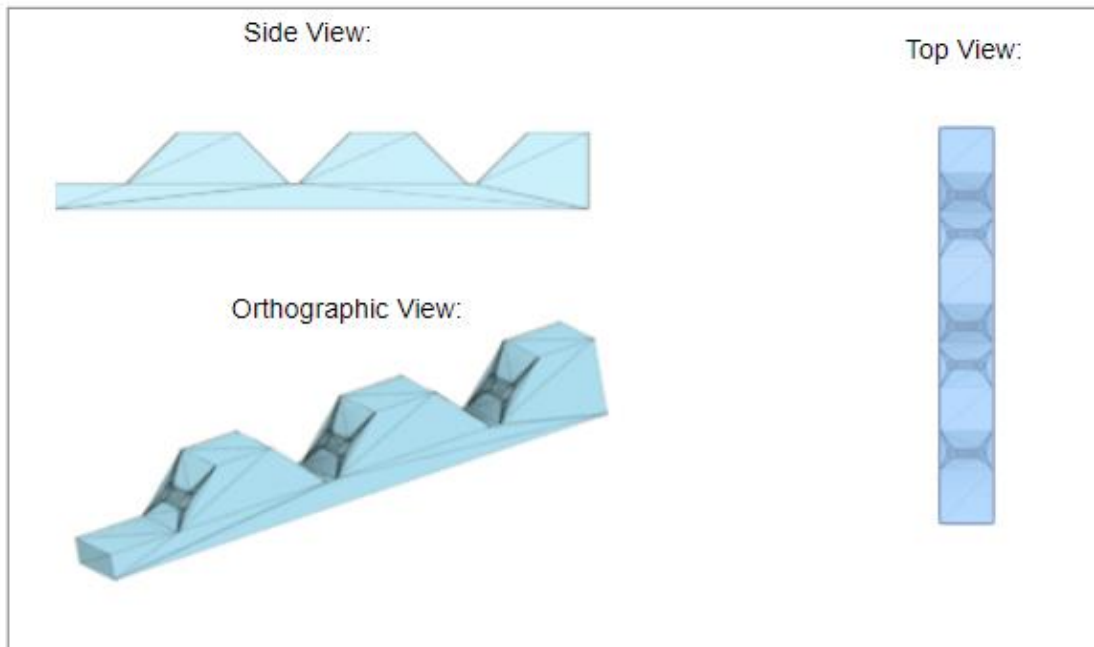
Big Question: What modifications would you make to your string-based actuator so the patient can still work in their office?

Re-design Guide:

1. List what items your gripper was able to pick up from last week:
2. List what items your gripper was not able to pick up:
3. In general, was the gripper able to pick up small or big items? Heavy or light items?

4. Based on the patient's needs, what needs to be changed about the current design dimensions?
 - a. Should the gripper be thinner or wider in width?
 - b. Should the gripper be shorter or longer?
5. Based on the patient's needs, brainstorm some features that would be useful to add to the gripper. Note some ideas below:
6. Share your ideas with your table. Try to include some bio-inspired features. Note some of your table's ideas below:

7. Markup the CAD (Computer-Aided Design) designs below with the modifications.



- a. What would you add? How would this help the patient at home and at work?

b. What would you remove? How would this help the patient at home and at work?

8. How will these changes and additions help the patient in their daily life and at work?