

Dog Feeder Instructions

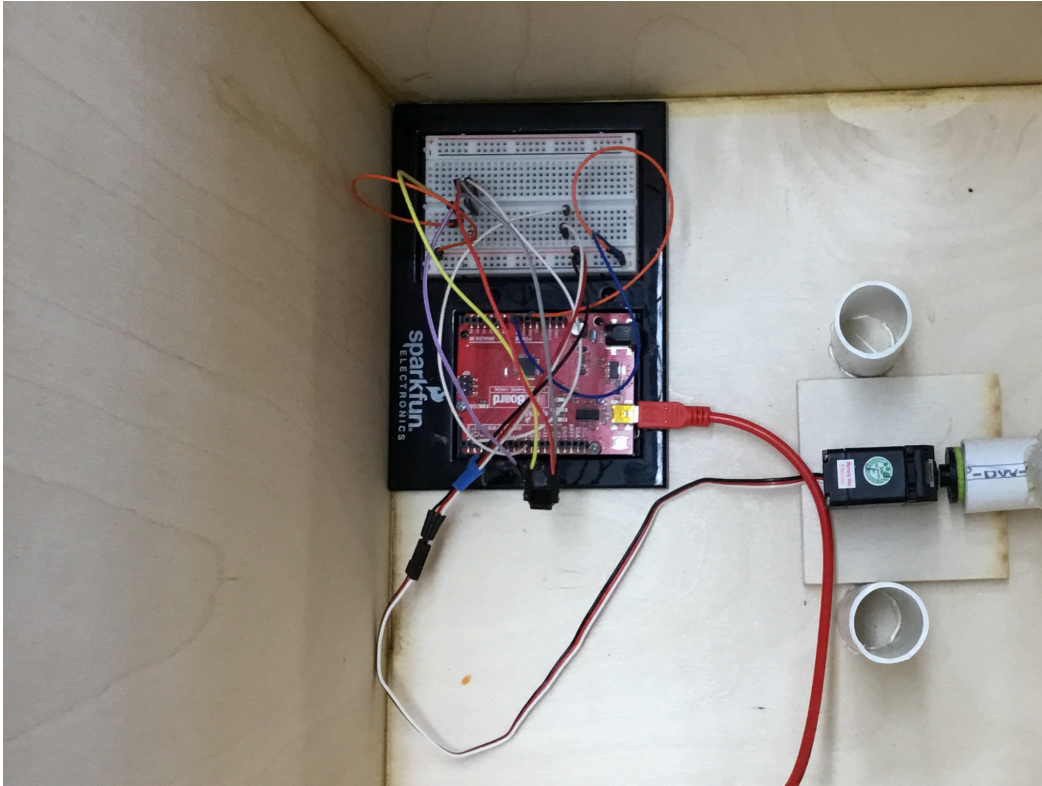
By Katie Chai

1. **Look through my “Servo - The Basics” presentation.** This will give you a decent understanding of Servos. The SIK Guide has a helpful summary on pg. 51. If this booklet is not available to you, the online version can be found here;
<https://learn.sparkfun.com/tutorials/sik-experiment-guide-for-arduino---v32/experiment-8-driving-a-servo-motor>.

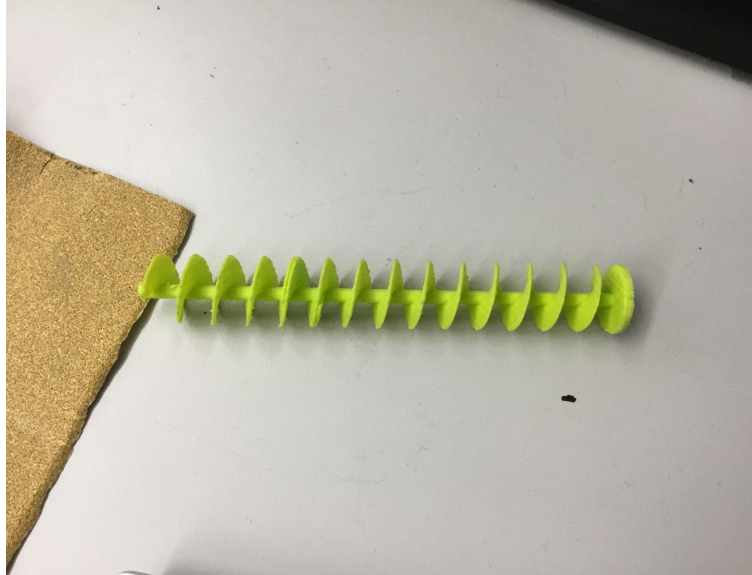
2. **Order your materials.** (see spreadsheets for links to exact models;
https://docs.google.com/spreadsheets/d/1OniEfXv2UHGmCUd5NmYmUw_hIon0LSks73RmX-yPelk;
<https://docs.google.com/spreadsheets/d/1-TAOFck9uzkdFbmL61e17-hKC6ZmlKBllJ6UTcYdimw>)
 - Arduino UNO (provided by Fab Lab)
 - [Continuous Servo](#) (make sure your model specifies the servo being continuous)
 - Cable to connect from the Arduino to the computer (provided by Fab Lab)
 - 3D Printed Auger (more to come later)
 - PVC pipe (provided by Fab Lab)
 - Wood (3mm thick) (provided by Fab Lab)
 - Clear Acrylic (provided by Fab Lab)
 - Container (brought from home)

3. **Find your tools.**
 - Computer
 - Laser cutter
 - 3D printer
 - PVC pipe cutter
 - Drill press / Drill
 - Table saw
 - *Sandpaper*
 - *Glue / Wood glue*
 - *Pencil*

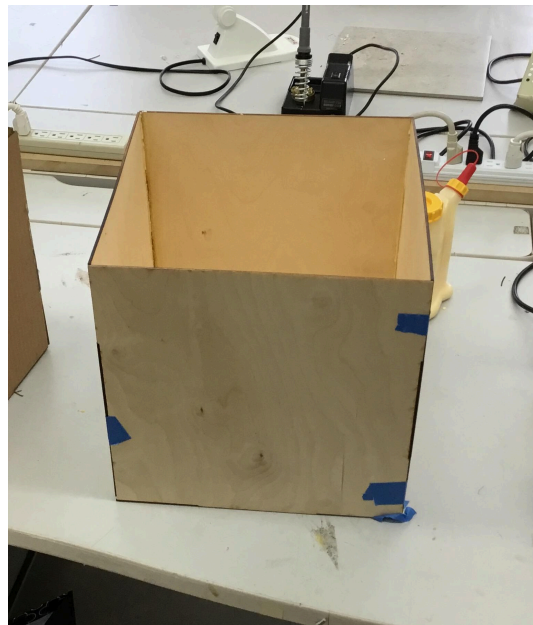
4. **Assemble your circuit.** (Below is a picture demonstrating the correct connections.)



5. **Start developing your code.** You can either try to write your own or you can use the one I came up with;
<https://drive.google.com/open?id=18iDhGPLQ0n0YD0IKdxLJfrN6vaz4Odbx> (“Final Code”). A greater explanation of my general code can be found in both my “Daily Diary” presentation and my “Servo - The Basics” presentation.
6. **3D print your spiral auger.** My design is linked below;
https://drive.google.com/open?id=1qbpBALglrjBge_JFLu-5ZTCRowm7m1-q. Print out a brim and support system along with your design. Set the temperatures of the bed and tip to 60° and 210°. Make sure to remove the excess plastic sand the auger after printing. After printing this piece, glue it to the tip of the continuous rotation servo.

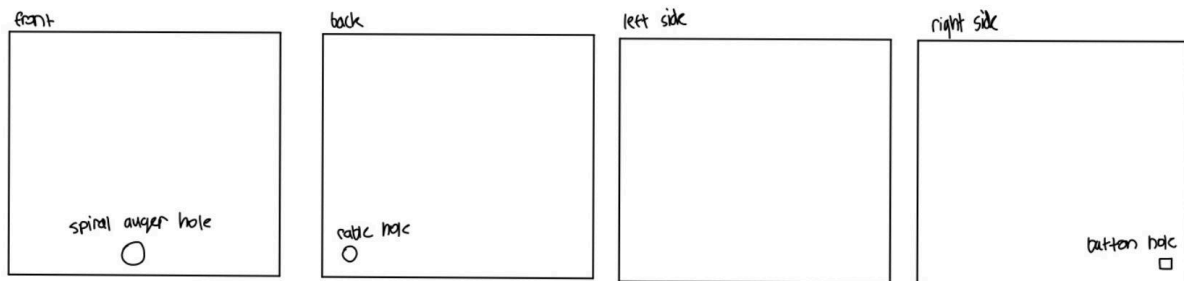


7. **Laser cut your box.** My design is here;
<https://drive.google.com/open?id=1NxjIY5-kQtIUvlO6QZ8Tkmc-iBG9Q-yh>. My box design did not account for wire holes or a PVC pipe hole. If you wanted to, you could create your own box design with the predetermined holes. I wanted to make sure my holes were measured accordingly the lengths and widths of my different components, so I waited and utilized the wood shop (see next step). Be warned, my box design may be too large for a smaller, toy dog or for short term use.



8. **Glue together the box and drill the holes.** I mistakenly glued together my box before

drilling my holes. I would recommend drilling holes after assembling your box. When drilling your holes, make sure to mark the outlines of your necessary holes with a pencil. You will need to drill 3 holes. The smaller holes can be drilled using a drill with a ½ inch bit. The PVC pipe hole (being larger) must be drilled using a drill press. Before using the drill press, make sure your hair is tied up and you are wearing goggles.



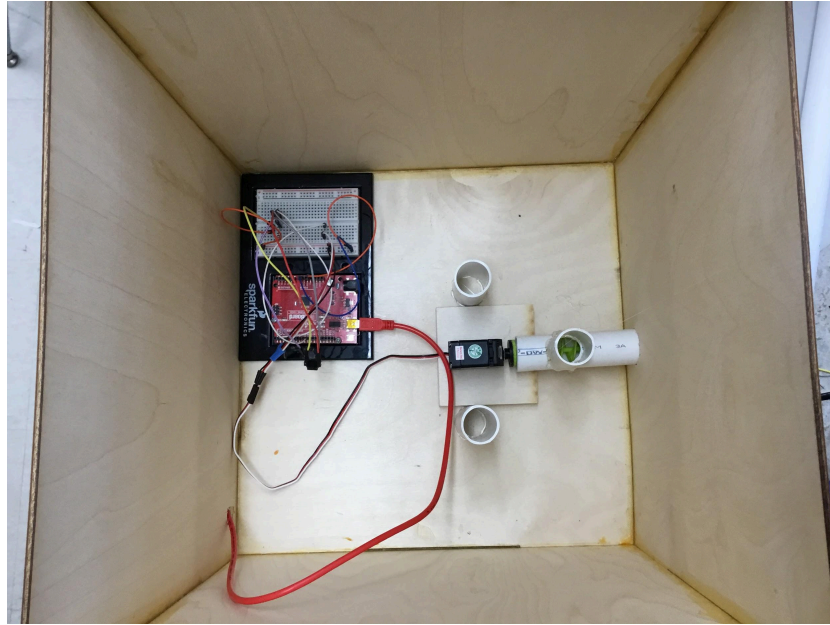
- 9. Cut and drill the holes in PVC pipe and container.** You need to cut the PVC pipe at an angle. You will also have to use a drill press to drill a hole in the dog food container and the PVC pipe (see the picture below).



- 10. Assemble the dog feeder.** First, insert the PVC pipe into the larger hole. Above the PVC pipe should sit the container (the holes aligned) Then, glue your arduino inside along with your servo and cable. Run the cable through the smaller hole. Your servo, along with the attached spiral auger, should slide into the PVC pipe. If your servo cannot support itself, complete step 11. (See the image below for a visual.)



- 11. Make a support system.** Using the excess wood from the box to hold up your servo.
- Glue the wood together in a stack. Make sure to line up the sides. You may need to trim the sides. like with the drill press, mark before you cut! Finally, glue your support system into the box and glue the servo on top. There is another support system required to align the container up with the PVC pipe. Simply, cut 2 pieces of excess PVC pipe equal to the height of the servo at its tallest point. Also, cut a piece of pipe that is the length from the hole in the original PVC pipe to the height of the servo. (Follow the image below to glue in these pipes.)



12. Final touches. An optional step would be to possibly stain your wooden box and/or laser cut a top. To laser cut a top you can use my design; (You will have to change the lines to hairline).

13. Enjoy your new dog feeder!

<https://m.youtube.com/watch?v=a5P2u7NR-2Y>