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1 Waldo Input

3. 1. 1. 1 was the figure I had submitted for 3.1.1 (last week) which included movement of both ears, head, and tail. But I have modified my plan now based on TA feedback received on Gradescope. My dog input is about 4 inch x 4 inch, and has been laser cut and mounted on poles using the hot glue gun. The tail, paw, and one of the ears is moving currently. I will still try to make both the ears move in the output, but based on the feedback, it might not be feasible. I will still explore the possibility for 3.2.
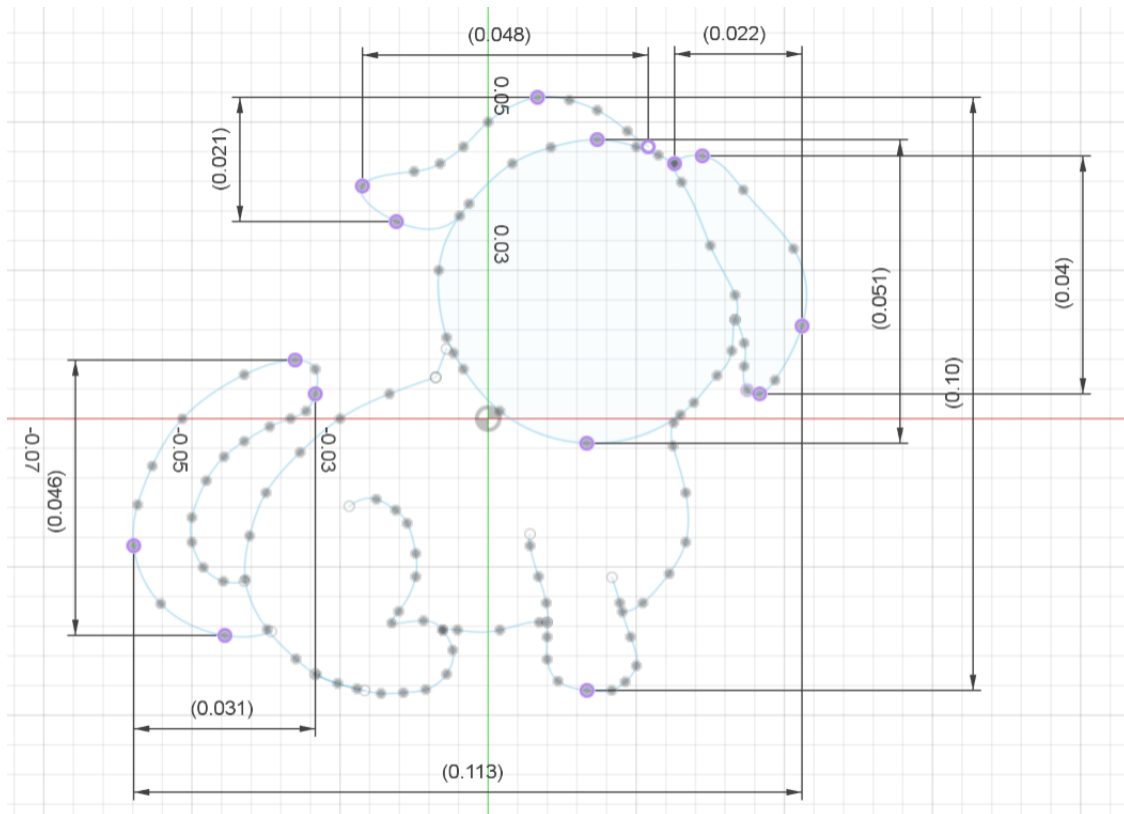

Figure 1: Dimensioned drawing of Waldo dog; units in metre (m)

2. The commented code is submitted separately on Gradescope.

3. - Link to video of Waldo input sensing: https://youtu.be/0LCpNLqVcD8
   - The code used is same as the previous question.
   - The modifications in the plan and drawing dimensions have been explained in the modified 3.1.1 above.
   - Sensitivity of the device is determined by the potentiometer range and the resolution of the ADC (number of bits). Since the range of the long-stem trim potentiometers is 300°, and the resolution of the ADC on the ItsyBitsy is 10 bits, we get the sensitivity as $\frac{300}{2^{10}-1} = 0.2933$°. The noise sources/sources of error in this setup could arise from improper connection between the potentiometer and the moving parts, loose connections between the soldered ends of the jumper wires and the potentiometer, or loose connections within the breadboard. I have taken care as to avoid these errors as much as possible. In the video, you can see that the angle output on the Putty window fluctuates sometimes by 1° or so. But that much is normal and might be due to wind or loose connections.

2   References

1. Latex template from the course CIS 5190 taught this fall.

2. MEAM 5100 Fall 2024 Lecture Slides.

3. Previous year lab videos posted on Canvas.

4. Took dog photo outline from url: https://tinyurl.com/meam510dog

5. Stack Overflow for writing in C.

6. Worked with peer Gia D'Costa in the lab, but we have submitted our own report, code, etc.