

Spaceship Attempts to Abduct Animal

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User's Guide

Goals:

I hoped to create a graphic with 2 assemblies: a spaceship and an animal.

For the simpler of the two, the animal, I hoped to create an assembly which moved on-screen via user input. Particularly, I wanted to implement keyboard controls that allowed the animal to move forward and backward in space, along with mouse and keyboard controls that allowed the user to drag the animal across the screen. I also wanted to accompany the sole keyboard controls for moving the animal forward and backward with some animation to make the animal appear as if it was moving its legs.

For the spaceship, I hoped to create an assembly that rotated and moved through space without needing user input. I wanted the spaceship to spin and move throughout the screen and have a top that rotated in the direction opposite to the entire spaceship. In addition, I wanted to include a claw structure that rotated back and forth across an axis below the spaceship, and then add a sequential joint that flexed the claws within the structure.

I later added some other goals that the user should be able to input an angle for the entire claw structure to flex between and allow the user to drag a slider that would increase and decrease the speed at which the claws within the structure flex in and out.

User Instructions

1. Move the animal forwards and backwards by pressing and holding the 'W' and 'S' keys respectively. If the animal is disappearing, this is because the animal is entering another dimension and escaping the spaceship! (Really the z-value for the animal is moving past the CVV)
2. Translate the cow around the screen by pressing and holding the 'M' key, and simultaneously clicking and dragging the mouse across the screen.
3. Use the slider to increase and decrease the speed at which the claws flex inward and outward.
4. Use the first submit box to enter an angle magnitude for the entire claw structure to flex within. Entering a number from 0 to 30 will allow the claw structure to flex in a sensible way but entering a large number such as 50 will allow the user to easily see the difference in the flex angle.
5. Click the Run/Stop button to stop and start the spaceship animations
6. Click a color button to change the primary color of the spaceship base.

Results

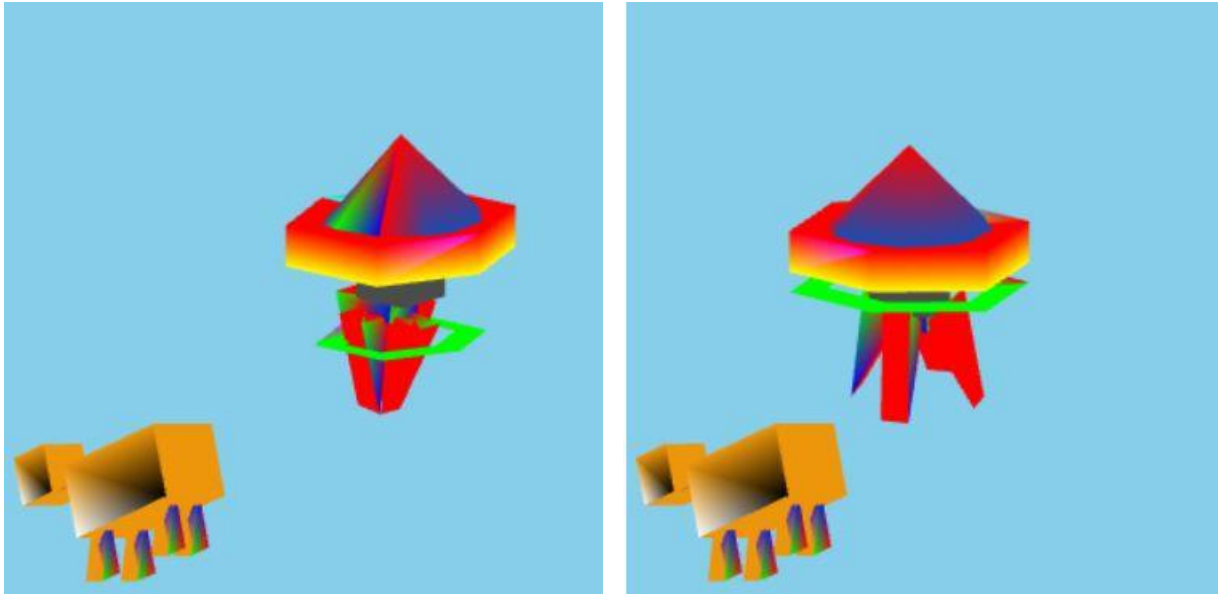


Figure 1: Demonstration of Claws flexing inward and outward

Figure 1 demonstrates the claws flexing inwardly and outwardly. This is rather evident from the figure. When users move the slider, the rate of this flex is what they are controlling. Figure 1 also happens to show that the spaceship top is rotating since we can see the colors of the top being starkly different. However, it is not evident that this rotation is happening independently of the spaceship base, and so to test this the user will need to enter the graphic and notice the direction of the two rotations.

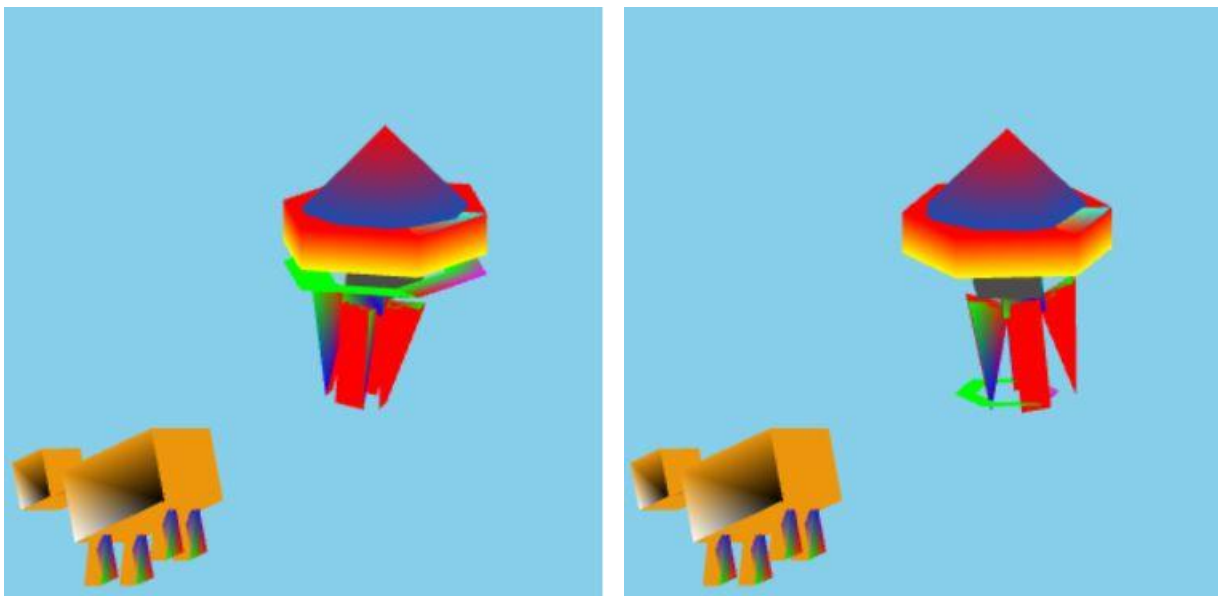


Figure 2: Demonstration of Angle of Entire Claw Structure Changing

Figure 2 demonstrates the flexing of the angle for the attachment of the entire claw structure to the spaceship. One can see that although the rotation of the entire spaceship is relatively similar here (note that the location of the blue on the spaceship base gives one an idea of how the spaceship is rotated), the angle of the claw structures is very different between the two images above.

From Figures 1 and 2 we can gather that the spaceship base is rotating through space as well, since the blue stripe on the spaceship base is visible in Figure 2, but in Figure 1 it is not visible to the viewer, since the spaceship has rotated.

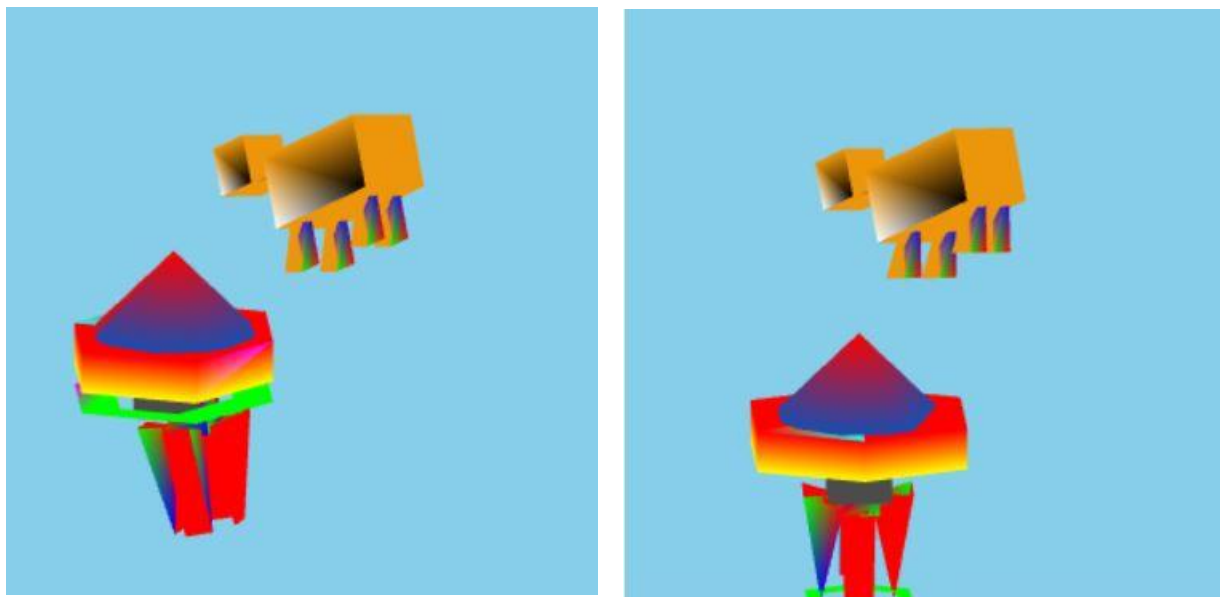


Figure 3: Demonstrates the animal's legs change their angle.

From Figure 3 we see that the animal's legs are changing their angle in relationship to the animal's torso. To see this functionality in total, a user will need to open the graphic and use the 'W' key or 'S' key.

In a total view of the figures, one can see that the spaceship is moving through space. Other functionalities outlined in the user guide are better demonstrated by watching the animation, and not just viewing pictures of the animation. In general, the goals outlined in this report are met by the graphic created.

SCENE GRAPH

