

Name: Chih Hsuan Huang

ID: 934554197

Email: huanchih@oregonstate.edu

Video Link: https://media.oregonstate.edu/media/t/1_tpf4wr58

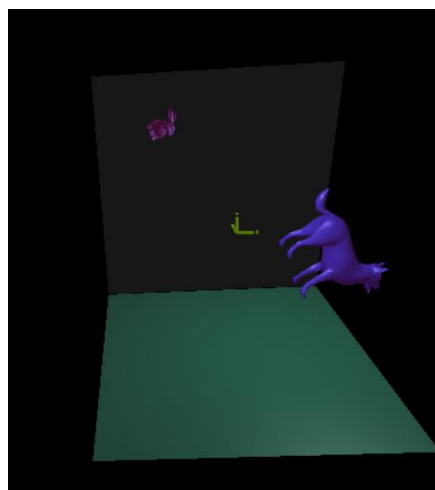
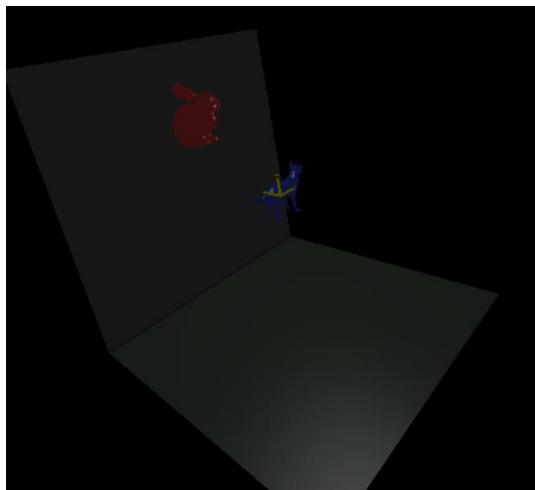
CS 450/550 -- Fall Quarter 2024

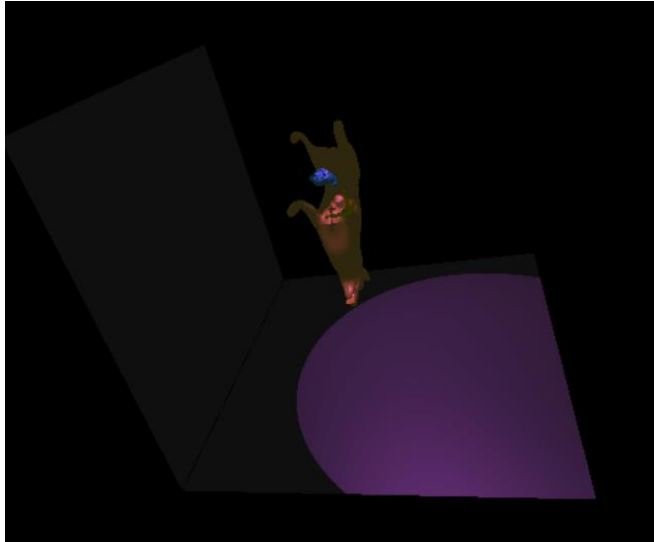
Project #4

Keytime Animation

Description:

This project focused on implementing key-time animation for a 3D scene using OpenGL, with an emphasis on animating properties of objects, the camera, and lighting over a 10-second loop. By leveraging the Keytimes class for interpolation, I animated elements such as object position, rotation, scale, and color, along with camera and lighting attributes, to create a visually engaging scene. The scene includes a dog and bunny model, featuring dynamic camera movements and lighting effects to enhance the animation's visual appeal.





Nine animated quantities:

Eye Position, Look-At Position, or Up-Vector

1. Eye Position on X-Axis (EyaPosX):
2. Look-At Position on Z-Axis (LookAtPosZ)
3. Up-Vector Z Component (UpVectorZ):

Light Source

4. Light Position (Xlight1, Ylight1, Zlight1)
5. Light Color (Rcolor1, Gcolor1, Bcolor1)
6. Light Intensity (LightIntensity)

Object Properties

7. Object Position (Xpos1, Ypos1, Zpos1)
8. Object Scale (XYZscale1)
9. Object Rotate (Xrot1)

Keytime values for each quantity:

Eye X Position	<pre> EyaPosX.Init(); EyaPosX.AddTimeValue(0.0, 0.0); EyaPosX.AddTimeValue(1.25, 1.5); EyaPosX.AddTimeValue(2.5, 3.0); EyaPosX.AddTimeValue(3.75, 0.0); EyaPosX.AddTimeValue(5.0, -3.0); EyaPosX.AddTimeValue(6.25, -0.75); EyaPosX.AddTimeValue(7.5, 1.5); EyaPosX.AddTimeValue(8.75, 0.75); EyaPosX.AddTimeValue(10.0, 0.0); </pre>
Look-at Z Position	<pre> LookAtPosZ.Init(); LookAtPosZ.AddTimeValue(0.0, 0.0); LookAtPosZ.AddTimeValue(1.25, 1.0); LookAtPosZ.AddTimeValue(2.5, 2.0); LookAtPosZ.AddTimeValue(3.75, 0.5); LookAtPosZ.AddTimeValue(5.0, -1.0); LookAtPosZ.AddTimeValue(6.25, 0.0); LookAtPosZ.AddTimeValue(7.5, 1.0); LookAtPosZ.AddTimeValue(8.75, 0.5); LookAtPosZ.AddTimeValue(10.0, 0.0); </pre>
UpVectorZ	<pre> UpVectorZ.Init(); UpVectorZ.AddTimeValue(0.0, 0.0); UpVectorZ.AddTimeValue(1.0, 0.1); UpVectorZ.AddTimeValue(2.0, 0.2); UpVectorZ.AddTimeValue(3.0, 0.3); UpVectorZ.AddTimeValue(4.0, 0.4); UpVectorZ.AddTimeValue(5.0, 0.5); UpVectorZ.AddTimeValue(6.0, 0.6); UpVectorZ.AddTimeValue(7.0, 0.7); UpVectorZ.AddTimeValue(8.0, 0.8); UpVectorZ.AddTimeValue(9.0, 0.9); UpVectorZ.AddTimeValue(10.0, 0.0); </pre>
Light Position	<pre> Xlight1.Init(); Xlight1.AddTimeValue(0.0, 0.0); Xlight1.AddTimeValue(1.0, 2.5); Xlight1.AddTimeValue(2.0, 0.0); Xlight1.AddTimeValue(3.0, -2.5); Xlight1.AddTimeValue(4.0, 0.0); Xlight1.AddTimeValue(5.0, 2.5); Xlight1.AddTimeValue(6.0, 0.0); Xlight1.AddTimeValue(7.0, -2.5); Xlight1.AddTimeValue(8.0, 0.0); Xlight1.AddTimeValue(9.0, 2.5); Xlight1.AddTimeValue(10.0, 0.0); </pre>

RGBcolor	<pre> Rcolor1.Init(); Rcolor1.AddTimeValue(0.0, 0.0); Rcolor1.AddTimeValue(1.0, 1.0); Rcolor1.AddTimeValue(2.0, 0.0); Rcolor1.AddTimeValue(3.0, 1.0); Rcolor1.AddTimeValue(4.0, 0.0); Rcolor1.AddTimeValue(5.0, 1.0); Rcolor1.AddTimeValue(6.0, 0.0); Rcolor1.AddTimeValue(7.0, 1.0); Rcolor1.AddTimeValue(8.0, 0.0); Rcolor1.AddTimeValue(9.0, 1.0); Rcolor1.AddTimeValue(10.0, 0.0); Gcolor1.Init(); Gcolor1.AddTimeValue(0.0, 1.0); Gcolor1.AddTimeValue(1.0, 0.0); Gcolor1.AddTimeValue(2.0, 1.0); Gcolor1.AddTimeValue(3.0, 0.0); Gcolor1.AddTimeValue(4.0, 1.0); Gcolor1.AddTimeValue(5.0, 0.0); Gcolor1.AddTimeValue(6.0, 1.0); Gcolor1.AddTimeValue(7.0, 0.0); Gcolor1.AddTimeValue(8.0, 1.0); Gcolor1.AddTimeValue(9.0, 0.0); Gcolor1.AddTimeValue(10.0, 1.0); Bcolor1.Init(); Bcolor1.AddTimeValue(0.0, 0.0); Bcolor1.AddTimeValue(1.0, 1.0); Bcolor1.AddTimeValue(2.0, 0.5); Bcolor1.AddTimeValue(3.0, 1.0); Bcolor1.AddTimeValue(4.0, 0.5); Bcolor1.AddTimeValue(5.0, 1.0); Bcolor1.AddTimeValue(6.0, 0.0); Bcolor1.AddTimeValue(7.0, 1.0); Bcolor1.AddTimeValue(8.0, 0.0); Bcolor1.AddTimeValue(9.0, 1.0); Bcolor1.AddTimeValue(10.0, 0.0); </pre>
Light Intensity	<pre> LightIntensity.Init(); LightIntensity.AddTimeValue(0.0, 0.2); LightIntensity.AddTimeValue(1.0, 0.4); LightIntensity.AddTimeValue(2.0, 2.0); LightIntensity.AddTimeValue(3.0, 3.8); LightIntensity.AddTimeValue(4.0, 4.9); LightIntensity.AddTimeValue(5.0, 5.0); LightIntensity.AddTimeValue(6.0, 0.9); LightIntensity.AddTimeValue(7.0, 0.7); LightIntensity.AddTimeValue(8.0, 0.5); LightIntensity.AddTimeValue(10.0, 0.2); </pre>

Object Rotation	<pre> Xrot1.Init(); Xrot1.AddTimeValue(0.0, 0.0); Xrot1.AddTimeValue(1.5, 45.0); Xrot1.AddTimeValue(3.0, 90.0); Xrot1.AddTimeValue(4.5, 135.0); Xrot1.AddTimeValue(5.5, 180.0); Xrot1.AddTimeValue(6.5, 225.0); Xrot1.AddTimeValue(7.5, 180.0); Xrot1.AddTimeValue(8.5, 135.0); Xrot1.AddTimeValue(9.5, 90.0); Xrot1.AddTimeValue(10.0, 0.0); </pre>
Object Position	<pre> Xpos1.Init(); Xpos1.AddTimeValue(0.0, 5.0); Xpos1.AddTimeValue(1.0, 2.0); Xpos1.AddTimeValue(2.0, 8.0); Xpos1.AddTimeValue(3.0, 3.5); Xpos1.AddTimeValue(4.0, 2.0); Xpos1.AddTimeValue(5.0, 3.0); Xpos1.AddTimeValue(6.0, 4.0); Xpos1.AddTimeValue(7.0, 5.0); Xpos1.AddTimeValue(8.0, 5.0); Xpos1.AddTimeValue(9.0, 1.0); Xpos1.AddTimeValue(10.0, 5.0); </pre>
Object Scale	<pre> XYZscale1.Init(); XYZscale1.AddTimeValue(0.0, 2.0); XYZscale1.AddTimeValue(1.0, 3.0); XYZscale1.AddTimeValue(2.0, 4.0); XYZscale1.AddTimeValue(3.0, 5.0); XYZscale1.AddTimeValue(4.0, 6.0); XYZscale1.AddTimeValue(5.0, 5.0); XYZscale1.AddTimeValue(6.0, 4.0); XYZscale1.AddTimeValue(7.0, 3.0); XYZscale1.AddTimeValue(8.0, 2.0); XYZscale1.AddTimeValue(9.0, 2.0); XYZscale1.AddTimeValue(10.0, 2.0); </pre>

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