# Project 2 – Carousel Horse

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**Description:**

I did the Horse Carousel Animation using different openGL transformations. I listed down the steps accordingly.

1. **Circle Base Creation**:
   - I initiated the project by creating a base circle with a radius of 2 in the X-Z plane, drawing 10,000 points using **GL_POINTS**.

2. **Horse Geometry Preparation:**
   - I created two functions to define the appearance of horses, one for polygon models and another for wireframe models. In these functions, I made sure the horses faced the X-axis by rotating them 90 degrees.

3. **Creating Display Lists for Polygon Geometry:**
   - I took the polygon shape and added it to a list during the initialization in the InitLists function.

4. **Rendering Transformations:**
   - In the Display function, rendered the carousel animation of a horse, applying OpenGL transformations in the following order:

     i. **Scaling**: Made the horse smaller for a better view.
     ii. **Rotation**: Created an oscillation effect for the horse using a cosine wave with respect to time for pitching.
     iii. **Translation**: Moved the horse up and down in a cosine wave pattern to match the pitching motion.
     iv. **Rotation**: Positioned the entire transformation around the circle depending on the number of horses, aligning them at equal distances.
     v. **Rotation**: Made the entire transformation rotate around the y-axis with respect to time.
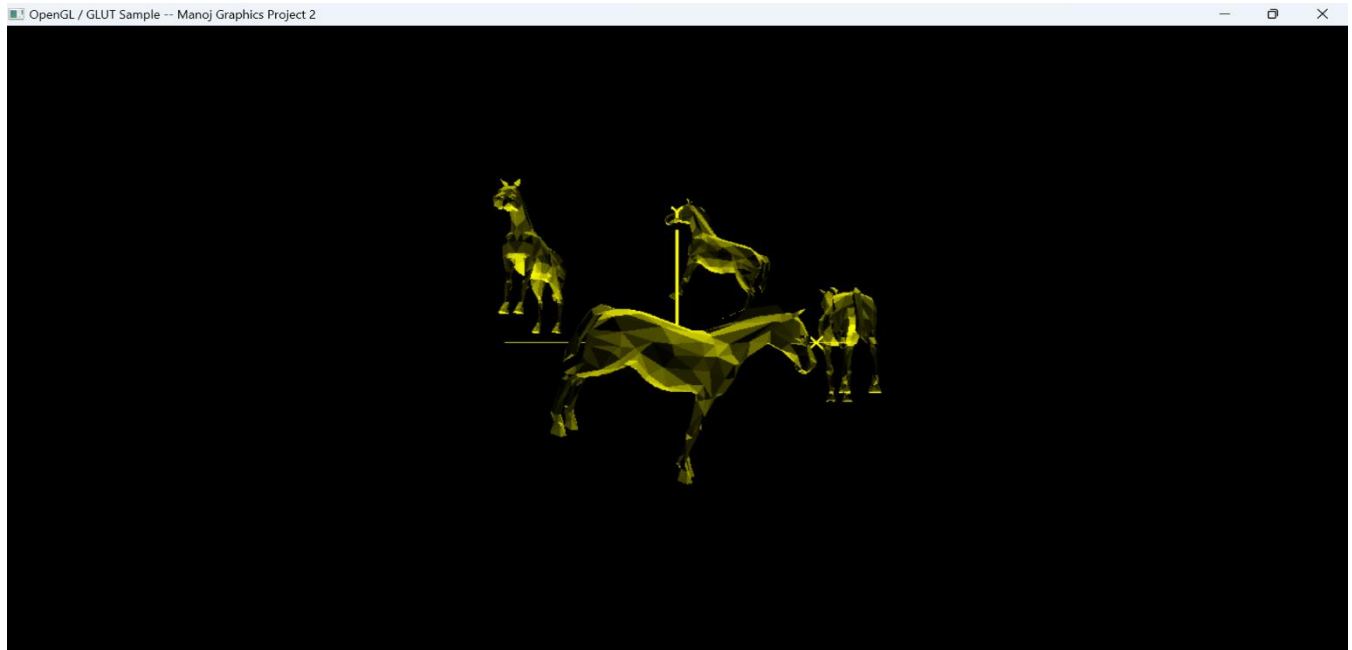
5. **Adjust Viewpoint:**
   - Improved the view by changing the eye position to **6** on the Z-axis.
   - Disable axis rotation for the inside view.

6. **Add an "In View" Menu:**
   - Implemented a menu to switch between inside and outside views.

7. **Customize the Number of Horses:**
   - Allowed flexibility to change the number of horses using the constant "**NumberOfHorses**".



**Kaltura Video Link:** https://media.oregonstate.edu/media/t/1_2kzmlnm4