CS 6334.001 Virtual Reality

3D Manipulation (10 points)

Submission due by Sunday, October 7 at 11:59pm CT.

Purpose

Learn how to use Unity and the 5UDE to develop a 3D manipulation technique for VR.

Directions

1. Create a new Unity 2018.1.4 project and name it "3D Manipulation."

2. Download and import the "SteamVR Plugin" package from the Unity Asset Store.

3. Download and import the "5UDE" package from eLearning under Software > 5UDE.

4. Drag the "Vive" prefab from the 5UDE > Systems folder into the hierarchy of your scene and set the new "Vive" GameObject's position to the origin (0, 0, 0).

5. Create a realistic virtual environment. You can reuse the virtual environment that you created for Homework #1.

6. Use the "Interactive.cs" script in the 5UDE > Features folder to create a minimum of five unique and interactive virtual objects within your virtual environment.

7. Develop a 3D manipulation technique with a minimum of five meaningful interaction states. See the "VirtualHand.cs" script in the 5UDE > Interactions folder for an example 3D manipulation technique with three meaningful interaction states.

8. Use the "Vive" prefab's "Real World Simulator" to ensure that all five interaction states of your 3D manipulation technique are properly functioning and can be used with the HTC Vive to manipulate your five interactive virtual objects.

Submission

1. Clean up your Unity project by removing any unnecessary assets from the "Assets" folder and deleting the project's automatically generated "obj" and "Temp" folders. Your submission must be **250 MB or less**.

2. Create a "Source" document (.doc, .docx, or .pdf) that provides a unique URL for where you obtained each virtual object and sound file within your project.

3. Create a "ReadMe" document (.doc, .docx, or .pdf) that explains which Unity scene contains your realistic virtual environment, interactive virtual objects, and 3D manipulation technique. The document must explain what the meaningful states of your 3D manipulation technique are and how to use it with the HTC Vive. The document must also explain which virtual objects within your virtual environment are interactive.

4. Create a "Team" document (.doc, .docx, or .pdf) that lists the names of your two team members and describes what each member contributed to the assignment.

5. Create a zip file (**.zip**) that contains your **entire** "3D Manipulation" Unity project folder, your "Source" document, your "ReadMe" document, and your "Team" document. Do **NOT** use any compression file types (e.g., .rar, .7z, .tar) other than .zip. Such submissions will **NOT be graded**, which will result in **0 points**.

6. **Every team member must submit** the zip file on eLearning under Homework > HW #3 3D Manipulation.

Scoring

This assignment will be scored as indicated below. The maximum possible score is 10 points.

☐ Your 3D manipulation technique contains at least five unique and meaningful interaction states. **1 point per state**

☐ Your virtual environment contains at least five unique and interactive virtual objects. **1 point per object**

Deductions

Deductions will be applied as indicated below. The minimum possible score is 0 points.

☐ Your virtual environment contains inappropriately scaled or unrealistic virtual objects. **1 point per object**

☐ Your 3D manipulation technique contains meaningless interaction states. **1 point per state**

☐ Your submission is late. **2 points per day late**

☐ Your submission is not a .zip file. **10 points**

☐ Your submission is larger than 250 MB. **1 point per 50 MB over**

☐ Your Unity project does not properly work during initial grading. **5 points**

☐ Your supplementary files are not of the specified formats or do not contain the specified information. **1 point per file**

☐ You did not follow the specified naming conventions. **0.5 point per file or folder**

☐ You did not make a significant contribution to the submission. **5 points**

☐ You did not make any contribution to the submission. **10 points**

Academic Integrity

This is a two-person assignment. Pairs of students are expected to complete their own work. If found guilty of academic dishonesty, you will receive 0 points on this assignment.

These descriptions and timelines are subject to change at the discretion of the professor.