Requirements

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6. Interface UI

Overview:

The interface shall have multiple viewports rendering a single scene. Whenever a user edits any object in the scene it shall update on all viewports respectively. The different viewports will be defined as, the Full View, Front View, Side View and Scene View. The interface shall have a tools navigation with a Create, Load, View and Edit option.

* 1. Hosted

The Viewer site shall be hosted on omega.uta.edu/~trd7801/cse4391/index.html. It shall load into the viewer page with no objects loaded.

* 1. Canvas Viewports

The viewer shall have 5 viewports:

* Full View-Perspective. All mouse controls will be handled in the full view. Full view shall allow for orbit controls around the origin of the world coordinates.
* Front View-Orthographic. A view based at eye point z = GRIDMAX
* Side View-Orthographic. A view based at eye point x = GRIDMAX
* Top View-Orthographic. A view based at eye point y = GRIDMAX
* Scene View-Orthographic. A full scene view that rotates around x, z at world coordinates origin
  1. Tools Navigation

The viewer shall have a side tools bar with the following options:

* Load
* Lighting
* View
* Edit

Load shall prompt for a choose file button to request a file to be loaded. It shall also show a list of sample files to load located on the server

Lighting shall be selected to Point light by default. It shall have a selection to select: Point, Directional and Ambient. Each light may have different options.

Point shall be able to change the hex value color of the light, the intensity from 0 to 1, and its distance from 0 to GRIDMAX.

Directional shall be able to change the hex value color of the light and intensity from 0 to 1.

Ambient shall be only able to change the hex value color of the light.

Each light shall have a slide bar to adjust its position based on x, y, z. the max values are from -GRIDMAX to +GRIDMAX

View shall list the objects loaded in the scene and be titled Scene Objects. It shall list the objects based upon file name. It shall also have a section for the Lighting and Environment objects. It shall list each object added as Grid being the first, then default lighting, Ambient, Point, Directional

Edit shall only show the objects loaded in the scene to be able to remove.

1. Loading an Object

Overview:

The Viewer shall load into the Load tools tab by default. The will be given the option to load a ply. The load shall be able to generate a wireframe and a bounding box of any supported ply loaded. A list of sample ply files will be given to be loaded.

2.1) Loading a PLY into the Scene

2.2) Sample PLY Files

1. Adjusting Light in the Scene

Overview:

The Viewer shall on load have three different types of lights in the scene: Point, Directional and Ambient. The Lighting tools tab shall have Point light loaded by default. The effect of changing the color, intensity and distance based on type selected shall effect the lighting object in real time. The Lighting tab shall also have position slide bars for x, y and z and shall go from GRIDMAX to -GRIDMAX. When loaded the values shall be set to 0, 0, 0 respectively

3.1) Point Light

Point Light shall be set to Red hex value on load and intensity at 1

3.2) Directional Light

Directional Light shall be set to Yellow hex value on load

3.3) Ambient Light

Ambient Light shall be set to White hex value on load

1. Viewing Objects

Overview:

The Viewer shall have a list of Objects loaded in the scene. Also it shall have a section for Lighting and Environment. The View tab shall allow for the object loaded to display its visibility, wireframe and bounding box. The Lighting and Environment shall list the objects in the scene and display an option to toggle visibility.

4.1) View Options for Loaded Objects

The loaded object in the View tab shall have three options: Visibility, Wireframe and Bounding Box. When toggling Visible the object will not be displayed in the scene. When toggling Wireframe, only the blue wireframe object becomes visible and the loaded object becomes not visible to only have one object visible in the scene. When toggling Bounding Box, the bounding box that has been computed on load of object will then display a red wireframe cube around the object

4.2) Lighting and Environment

The Grid and default loaded lighting objects shall only have one option: Visibility. When toggling visibility for each, the object will become non visible in the scene. When toggling visible for light, the light object shall not emit light.

1. Editing Objects

Overview:

The Viewer shall display a list of objects loaded in the scene. The object will have the option to remove it from the scene.

5.1) Remove Loaded Objects from Scene

The Edit tab shall have an option to remove the object from the scene. It shall remove the loaded object file, the wireframe and the bounding box associated with that model.