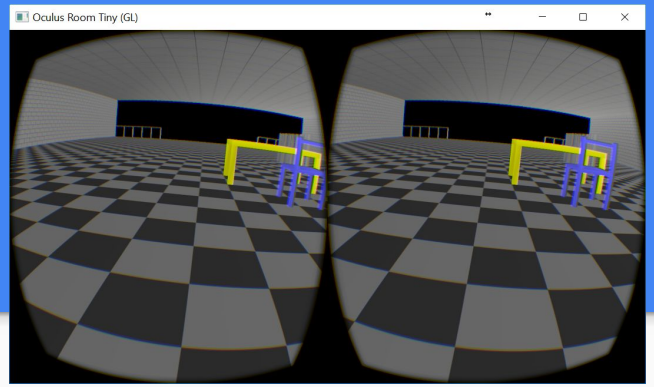
Discussion 1

Get Started with Oculus PC SDK and Assimp

Setup Oculus SDK for Windows

1. Both Visual Studio 2015 and Rift setup software have already been installed in the lab computers.
2. Download Oculus SDK from the following link: https://developer.oculus.com/downloads/package/oculus-sdk-for-windows/
3. Follow the Oculus documentation to test out some samples: https://developer3.oculus.com/documentation/pcsdk/latest/concepts/pcsdk-intro/
4. For API search - Oculus SDK LibOVR Reference Manual https://developer3.oculus.com/doc/1.3.0-libovr/

Test Demo

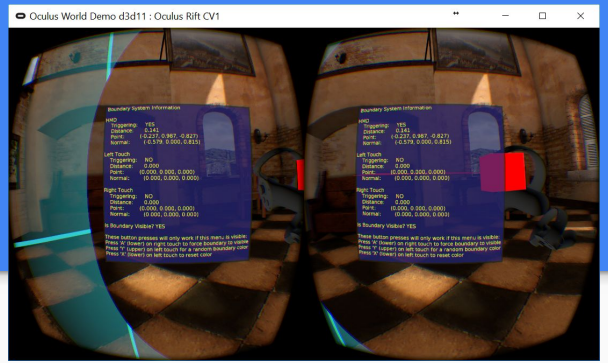


OculusRoomTiny(GL)

https://developer3.oculus.com/documentation/pcsdk/latest/concepts/gsg-intro-oneworld/

1. You can run it by opening the following sln file in the lab computer:
   `OculusSKD\Samples\Projects\Windows\VS2015\Samples.sln`
2. Select **`OculusRoomTiny\OculusRoomTiny(GL)`** and build OculusRoomTiny(GL) with **`Release`**, **`x64`** setting
3. Run the **`OculusRoomTiny(GL).exe`** file under:
   `OculusRoomTiny\OculusRoomTiny(GL)\Bin\Windows\x64\Release\VS2015\`
4. Possible Errors: **`Fail to initialize libOVR`**
   This only happens when you installed Oculus, but did not restart the computer for the first time.

More Demos



1. **OculusWorldDemo**
   https://developer3.oculus.com/documentation/pcsdk/latest/concepts/gsg-intro-oneworld/
   This is a more advanced demo that includes an overlay menu with options that customize many aspects of rendering: FOV, timewarp, etc.
2. **OculusMinimalExample**
   https://github.com/jherico/OculusMinimalExample/blob/master/OculusMinimalExample.cpp
   An easy example to get started, but unfortunately, the SDK has gone over several changes, so there are some inconsistencies. Please refer to the official demo for the most up-to-date API.

Get Started with PC SDK Developer Guide

This guide has all the official information you'll need to start using the SDK:
https://developer3.oculus.com/documentation/pcsdk/latest/concepts/book-dg/

Use the Oculus SDK LibOVR Reference Manual (https://developer3.oculus.com/doc/1.3.0-libovr/) to learn how to use the functions, and refer to the demo apps for inspirations.

For a starter code to build on with GLFW, reference the code from CSE167:
http://ivl.calit2.net/wiki/index.php/BasecodeCSE167F16
Remember to link your Oculus SDK to your project too, see here for how to link an external lib in VS.

3D Models

Use library Assimp for obj file loading:

1. Your old OBJObject class probably doesn't get all the information in the .obj files.
2. For this project, you will need: vertices, normals, faces, materials

Download Assimp from master:
https://github.com/assimp/assimp

Generate build file using cmake, then build from the solution file.

3D Models

A great tutorial to getting Assimp up and running:

https://learnopengl.com/#!Model-Loading/Assimp

Note:

1. You don't need any of the texture loading for this assignment, but it is nice to have for future assignments.
2. This tutorial does not cover material loading, see the tutorial in next page.
3. The Model class from this tutorial require the SOIL library for texture loading. This is not necessary for this project, but you can get SOIL using NuGet

3D Models

A great reference that goes over how to read the material information: http://www.assimp.org/lib_html/structai_material.html

Each mesh has a material associated with it. Just send that material's information to the shader.

For First Time Oculus Users

1. Run Oculus app on your lab computer.
2. Register for an Oculus account if this is your first time using Oculus.
3. Calibrate your Oculus device following the setup steps for better tracking.

Hints:

1. move your two cameras as further apart as possible, and point them forward in parallel for faster calibration.
2. If your touch controllers run out of battery, please bring them to the TA in their office hours. To test if they have battery: press Menu + Y(Left) or Oculus + B (Right) for 2 seconds, if no indicator light is lit, then it might be out of battery.
3. Some break boxes may have connection issues, feel free to report that on Piazza, and try to connect the devices from the back USB/HDMI inputs of the lab computer.

Reference Links:

- Previous CSE167 setup: http://ivl.calit2.net/wiki/index.php/BasecodeCSE167F16
- Oculus SDK: https://developer.oculus.com/downloads/package/oculus-sdk-for-windows/
- Oculus Documentation: https://developer3.oculus.com/documentation/pcsdk/latest/concepts/pcsdk-intro/
- Official Oculus Test Demos: https://developer3.oculus.com/documentation/pcsdk/latest/concepts/gsg-intro-oneworld/
- Online OculusMinimalExample: https://github.com/jherico/OculusMinimalExample/blob/master/OculusMinimalExample.cpp
- API search: https://developer3.oculus.com/doc/1.3.0-libovr/

Reference Links:

- Assimp github repo:
  https://github.com/assimp/assimp
- Assimp cmake:
  http://assimp.sourceforge.net/lib_html/cmake_build.html
- Assimp Setup Tutorial:
  https://learnopengl.com/#!Model-Loading/Assimp
- Assimp Material Reference:
  http://www.assimp.org/lib_html/structai_material.html

Other Resources

- Other resources (API may be out of date):
    a. http://www.glfw.org/docs/3.1/rift.html
    b. https://forums.oculus.com/community/discussion/8152/simple-opengl-example-with-glfw-glew-and-oculussdk-0-3-1