CSCI 4458 | CSCI 5558
HW 03 - Ray Tracing Assignment

Assigned: October 28, 2019
Due: November 15, 2019 @ 17:00h

Purpose

To explore the challenges of constructing your own ray tracer and to gain a further and deeper understanding of computer graphics in general.

Assignment

The levels are incremental. You only need to demo the last one. You will be trusted on whether or not you are using Vertex Buffer Objects.

1. (50% level) Build a raytracer which only renders a sphere, basic shading, and the ability to output to a ppm file.
2. (60% level) Improve your raytracer to include shadows, planes, patterns, and a scene/world construct.
3. (70% level) Improve your raytracer to include reflection, refraction, cubes, cylinders, and groups
4. (80% level) Improve your raytracer to include triangles, the ability to read Wavefront OBJ files, and constructive solid geometry.
5. (90% level) Add one of the following features to your raytracer:
    - Area Lights and Soft Shadows
    - Spotlights
    - Focal Blur
    - Motion Blur
    - Anti-aliasing
    - Texture Maps
    - Normal Perturbation
    - Torus Primitive
    - Multithreading Acceleration

- Radiosity

6. (100% level) Add two of the following features to your raytracer (must be different than previous item):
    - Area Lights and Soft Shadows
    - Spotlights
    - Focal Blur
    - Motion Blur
    - Anti-aliasing
    - Texture Maps
    - Normal Perturbation
    - Torus Primitive
    - Multithreading Acceleration
    - Radiosity

Submission

Demo to me by showing a collection of scenes you have ray traced which include showing off each of the additional features you have developed.