CIS-565 Final Project - RTX-Explore

Repo link (running on SM 6.0 with fallback layer)

Team:

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Overview

Given our interest in real-time rendering, we would like to contribute back to the community by utilizing the newly released Real-Time Raytracing platform developed by Nvidia and Microsoft. We will explore a new DXR raytracing & rendering API (D3D12), and will implement a Path Tracer. Our path tracer could potentially serve as a good starting point for future students that wish to embark on this real-time raytracing journey using DXR. It could also replace the current CUDA Path Tracer if successful.

In our path tracer, we will support:

1. Milestone 1
    a. Object & material loading (scene loading)
    b. Texture and bump mapping
    c. Debugger setup with fallback layer
2. Milestone 2
    a. Raytracing spheres, cubes, quads, and arbitrary meshes (triangles)
    b. Diffuse & reflection shading
    c. Anti-aliasing & depth of field
3. Milestone 3
    a. Schlick's & Fresnel effects
    b. Dispersion
    c. Subsurface scattering

References

1. Samples: https://github.com/Microsoft/DirectX-Graphics-Samples/tree/master/Samples/Desktop/D3D12Raytracing
2. Tutorial series: https://devblogs.nvidia.com/practical-real-time-ray-tracing-rtx/#part1
3. CUDA Path tracer: https://github.com/CIS565-Fall-2018/Project3-CUDA-Path-Tracer