

20220705 Project Meeting

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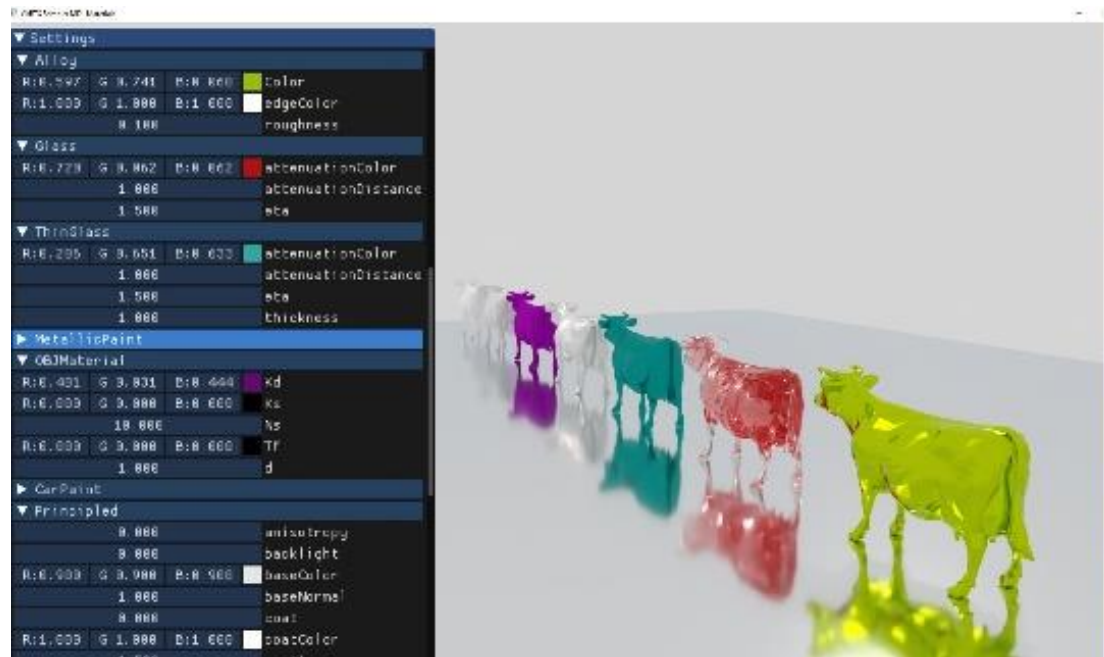
PEARLABYSS

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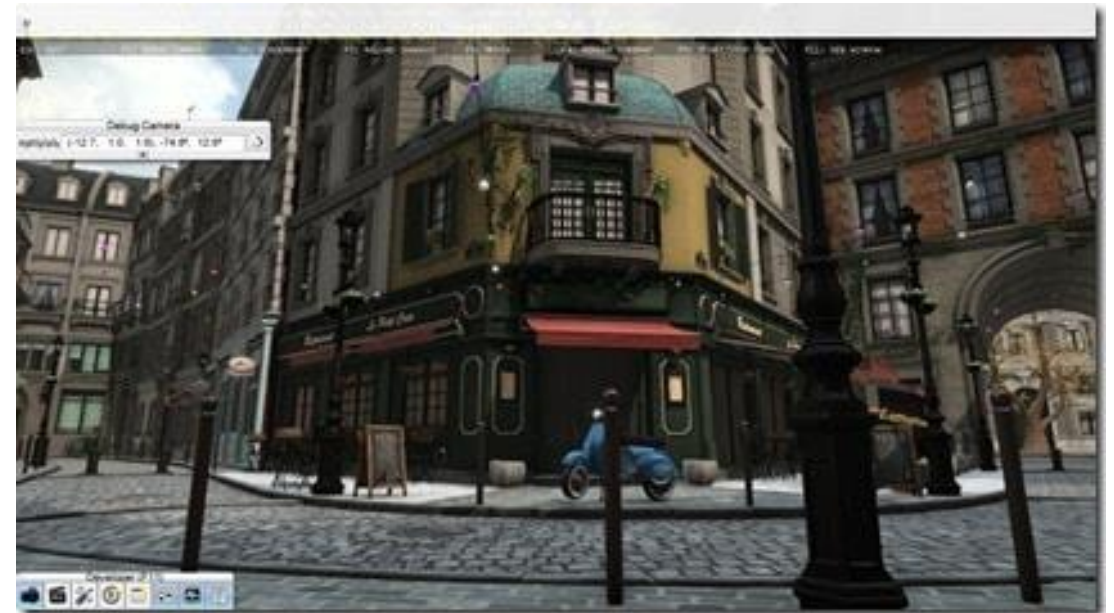
- Project Overview / Detail
- (1 Week) Work Progress
- TODO

Project Overview

- Goal : Implement real-time path tracer using DXR



VisRTX

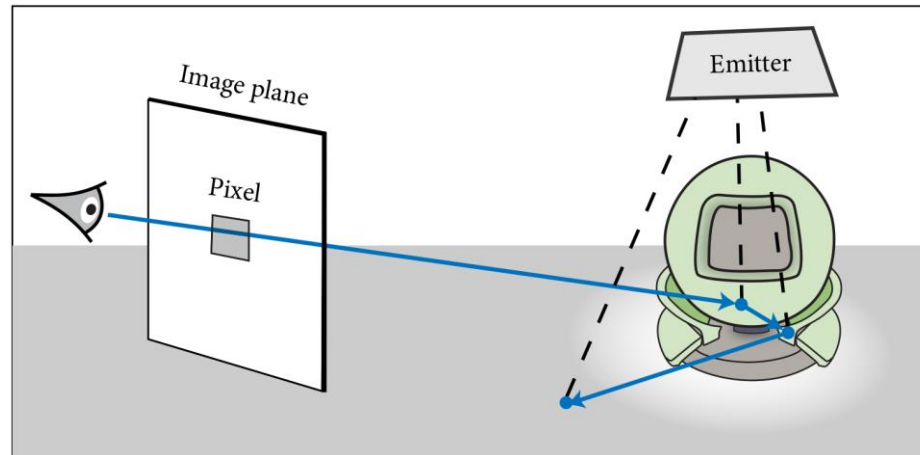


Falcor

Example of real-time path tracer

Project Detail

- Mitsuba / Tungsten renderer styled path tracer
- Core components to implement
 - i. BSDF (phase function) / Shape / Sensor / Texture / Sampler / Spectrum
 - ii. Integrators (rendering equation estimator such as path tracer, volumetric path tracer or photon mapping renderer)
 - iii. XML parser for xml file that describes scene information.
- Real-time property !! (optimization is important)



Plugin reference

Plugin reference

Shapes

BSDFs

Phase functions

Emitters

Sensors

Textures

Spectra

Integrators

Samplers

Films

Reconstruction filters

Program structure example
of Mitsuba2 renderer

(1 Week) Work Progress

- Understand basics of DXR
 - Raytracing pipeline (anyhit-closesthit-miss)
 - DXR Initialization & setup
 - Acceleration structure (BLAS, TLAS)
 - Root signature & association
 - Ray tracing pipeline state object (RTPSO)
 - Shader table

CHAPTER 3

Introduction to DirectX Raytracing

Chris Wyman and Adam Marrs
NVIDIA

ABSTRACT

Modern graphics APIs such as DirectX 12 expose low-level hardware access and control to developers, often resulting in complex and verbose code that can be intimidating for novices. In this chapter, we hope to demystify the steps to set up and use DirectX for ray tracing.

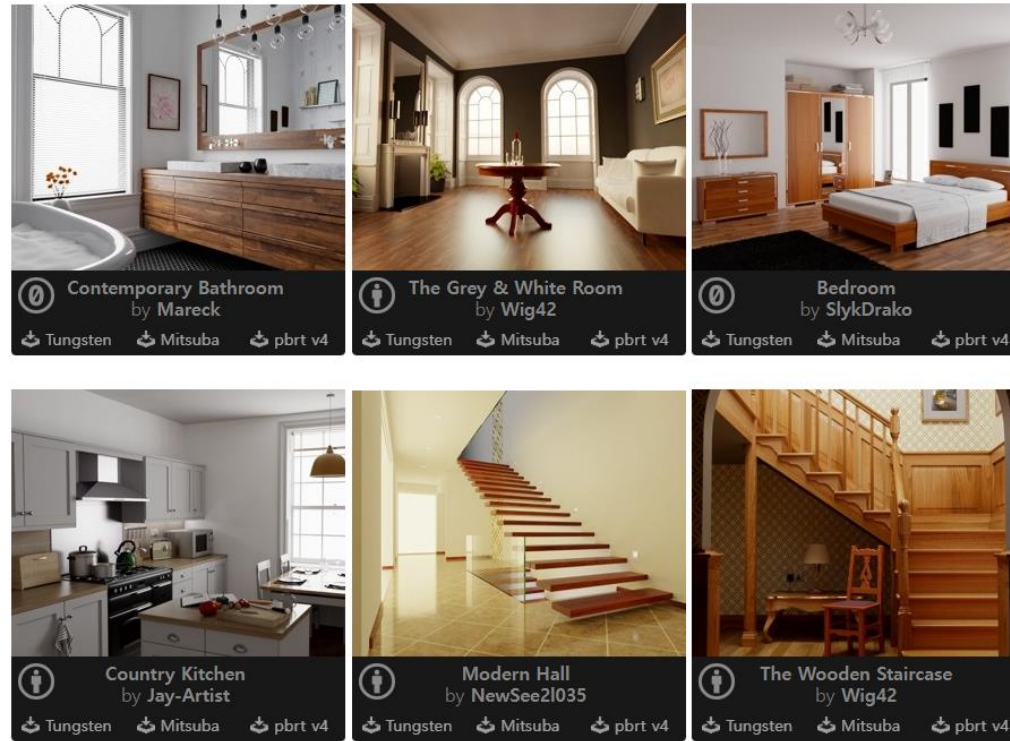
http://cwyman.org/code/dxrTutors/dxr_tutors.md.html

<https://github.com/NVIDIAGameWorks/DxrTutorials>

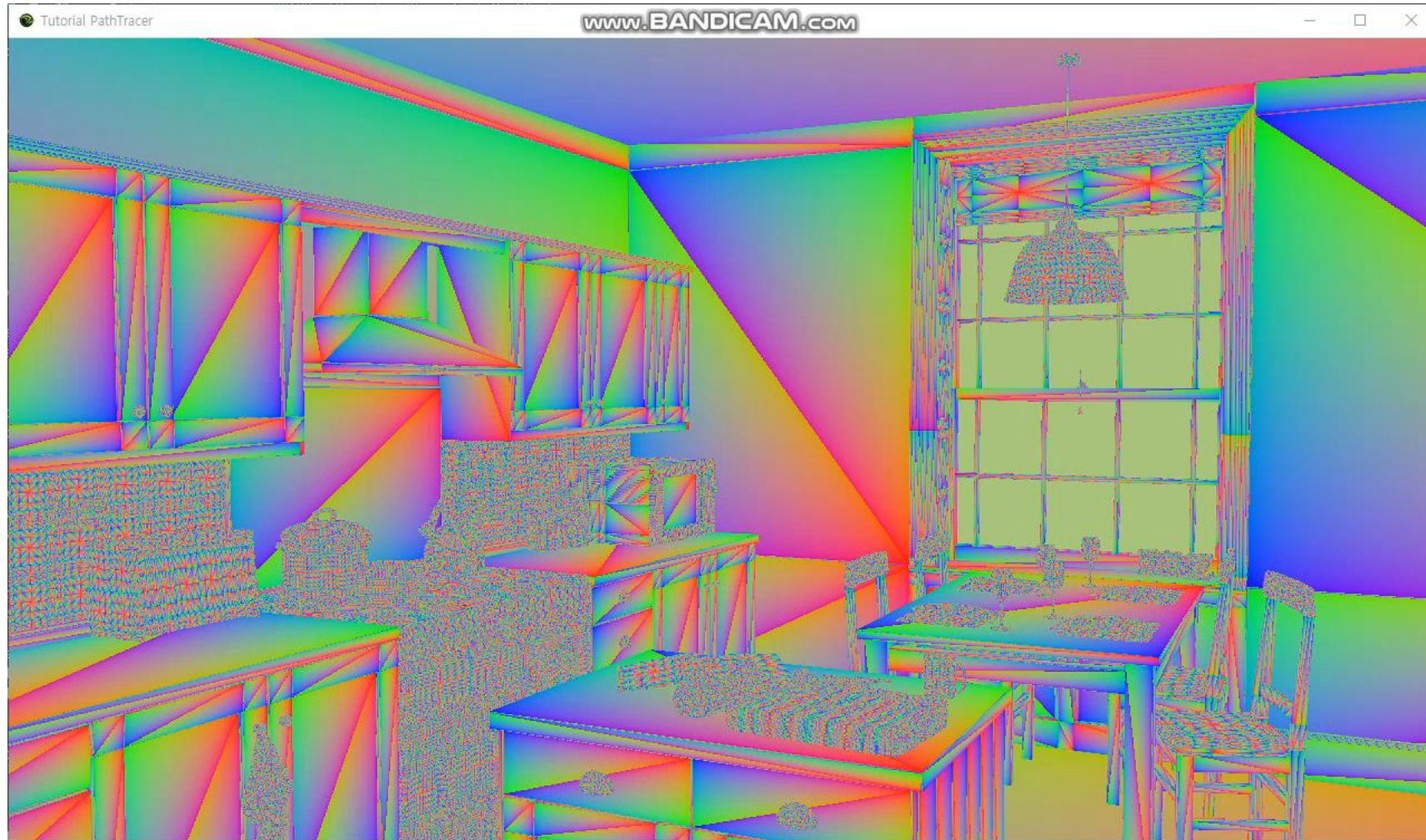
Very helpful!!

(1 Week) Work Progress

- Implement basic DXR ray tracer
- Load mesh & show geometry only (+camera translation)



(1 Week) Work Progress



TODO

- Simple BSDF
 - Diffuse without texture
- Texture loading
- Emitter
- Accelerating loading OBJ Files