

ReSTIR - Vulkan

CIS 565 Final Project Milestone 2

Xuanyi Zhou, Xuecheng Sun, Jiarui Yan

MS2 Progress

- **Milestone 2 (Pitch)**

- Baised ReSTIR algorithm

- **Milestone 2 (Done)**

- Baised ReSTIR Algorithm

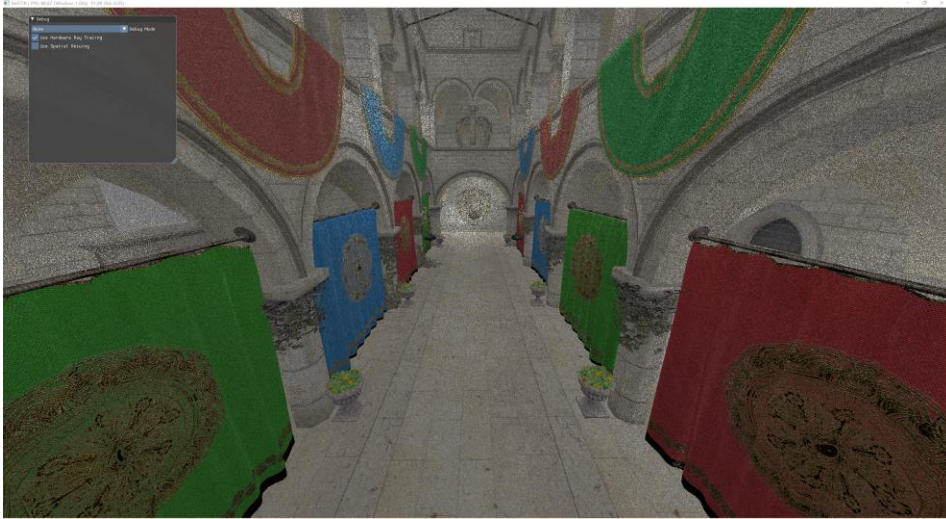
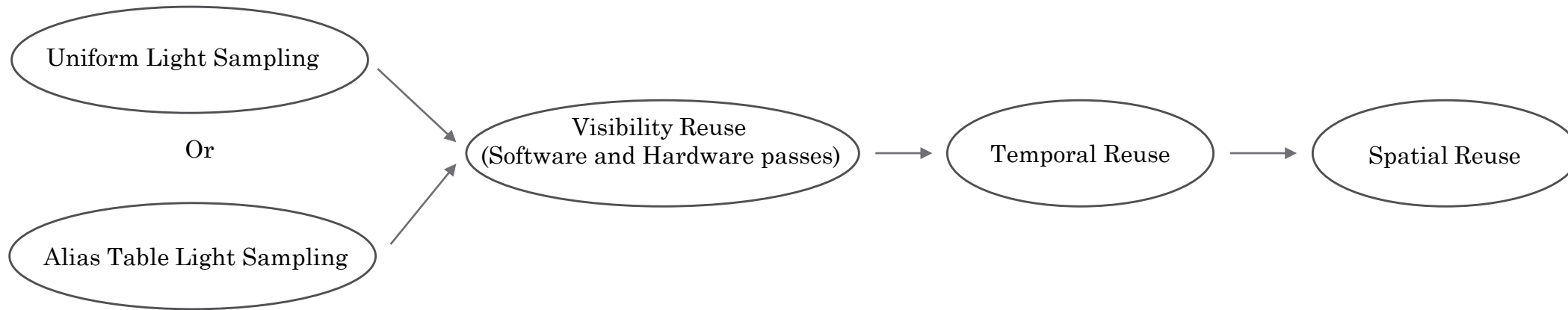
- **Milestone 2 (Extra)**

- Disney Principle BRDF Materials

- **Enviroment**

- CPU: AMD Ryzen R7 3700x
- GPU: RTX 2070 super
- Main Memory: 32GB DDR4 3200Mhz
- OS: Windows 10 x64
- Render Resolution: 2560 * 1440 (2K)

ReSTIR Workflow and Light Sampling



Point Lights Sampling

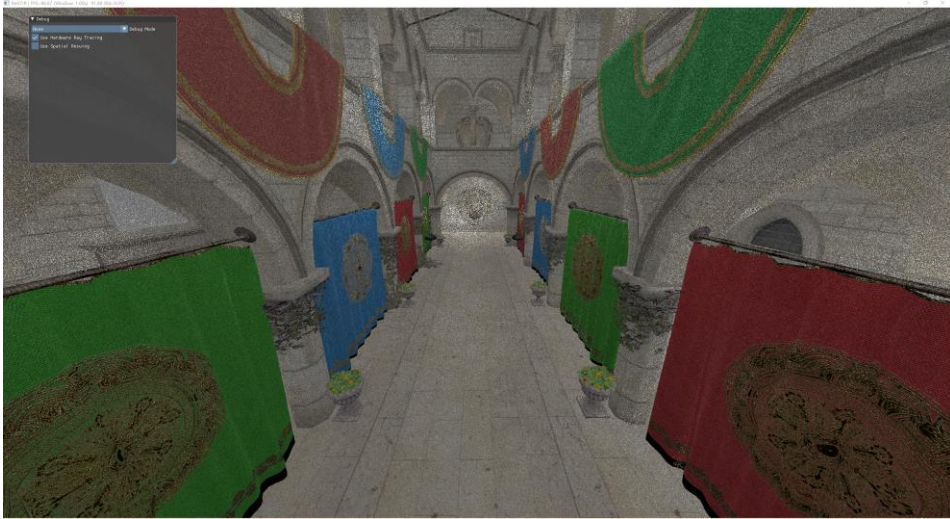


Mesh Lights Sampling

Visibility Reuse

- **Visibility Reuse Performance**

- Software RT: Average 13 fps
- Hardware RT: Average 38 fps

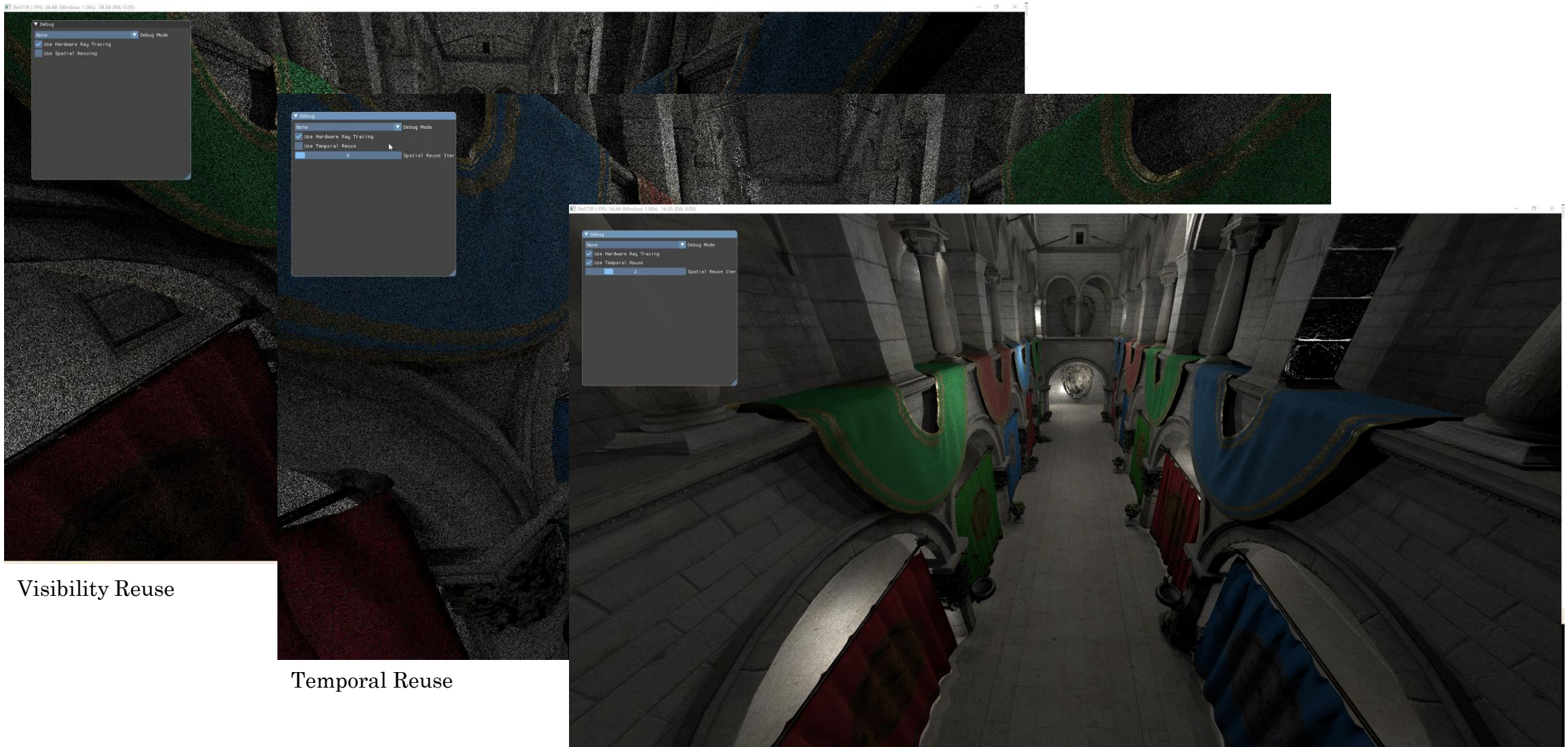


No Reuse



Visibility Reuse

Spatial Reuse and Temporal Reuse



Visibility Reuse

Temporal Reuse

Spatial Reuse

Proposed Timeline

- **Milestone 1**
 - Basic hardware and software Vulkan path tracer
 - GLTF scene loader.
- **Milestone 2**
 - Well-functioned hardware and software Vulkan path tracer
 - GLTF PBR support for rasterization rendering and two kinds of ray tracing
 - Biased ReSTIR
- **Milestone 3 and Final Presentation**
 - Unbiased ReSTIR algorithm