SurfelPlus Milestone 3

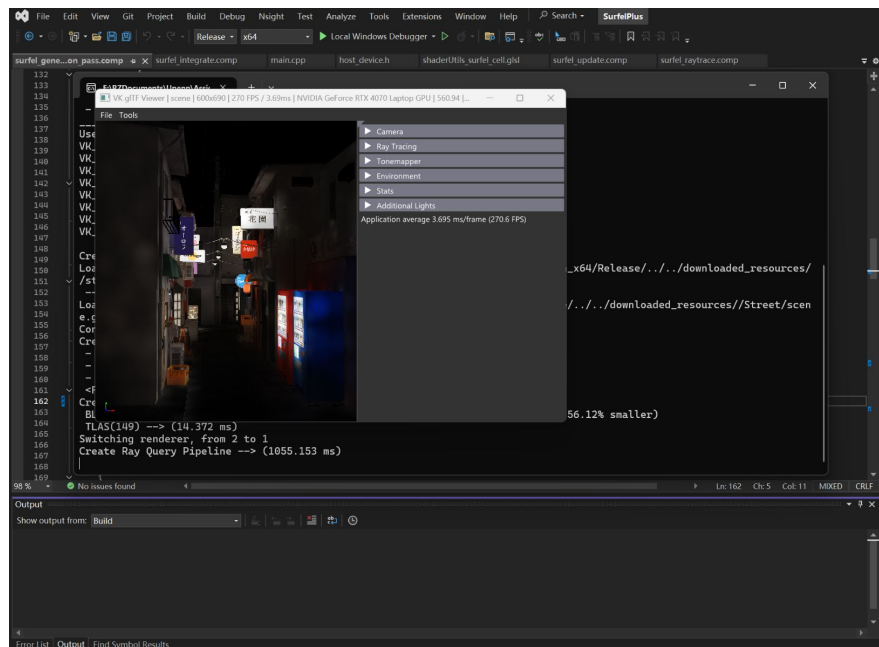Zhen Ren, Ruipeng Wang and Andy Wang
CIS 5650 – Final Project

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Engineering

Milestone II Recap

- Better surfelization
- Uniform acceleration structure
- Surfel recycle
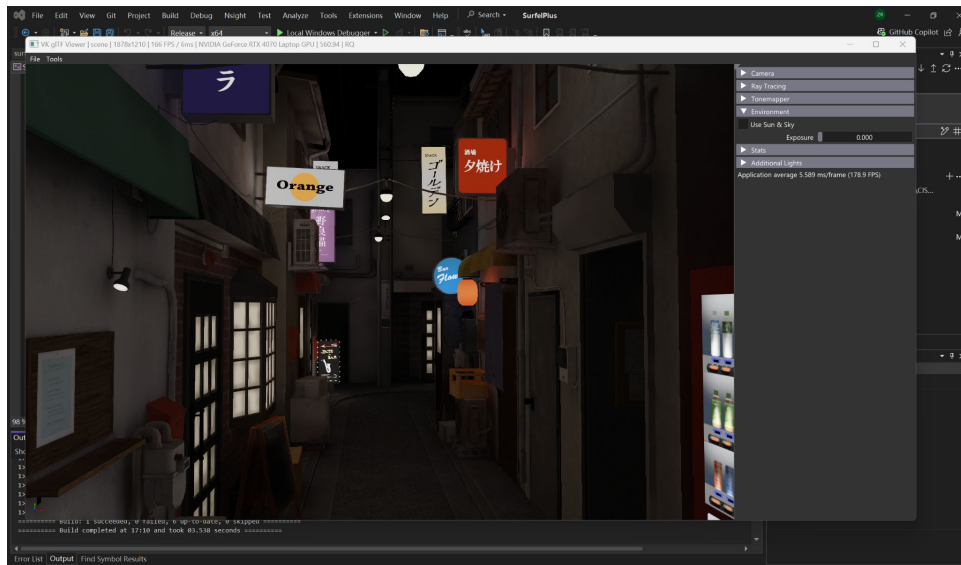- Surfel raygen & ray trace

M2 Issues
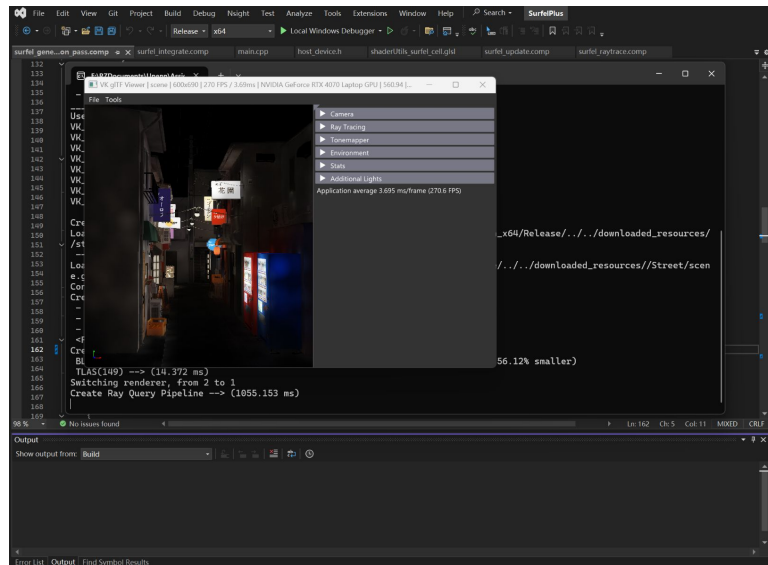

Low Res & Poor Performance
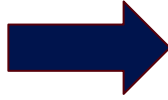

Low Frequency Noise

M3 Improvements

2560 x 1440

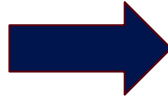**1080 x 720**

Bigger & Faster: Higher Resolution with 120+ FPS

M3 Improvements
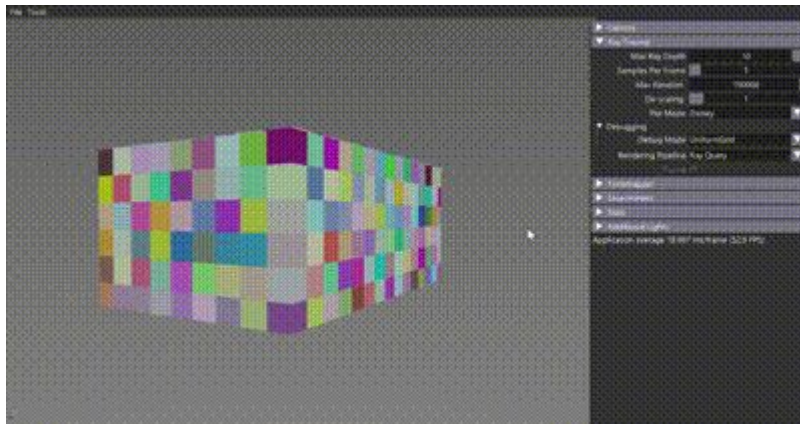

Clean: Less noise

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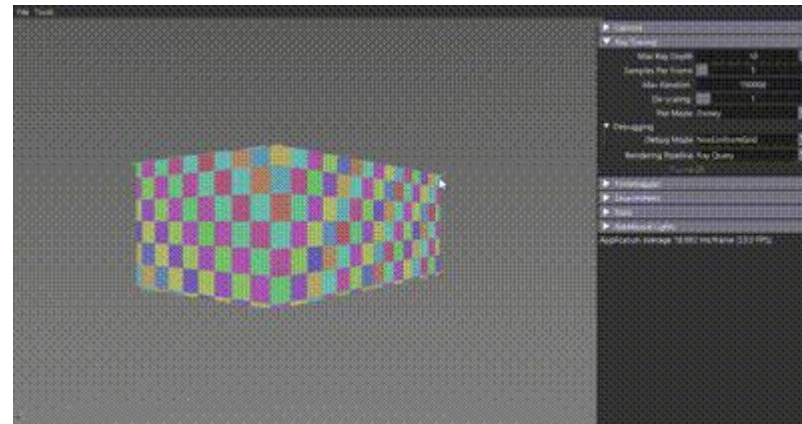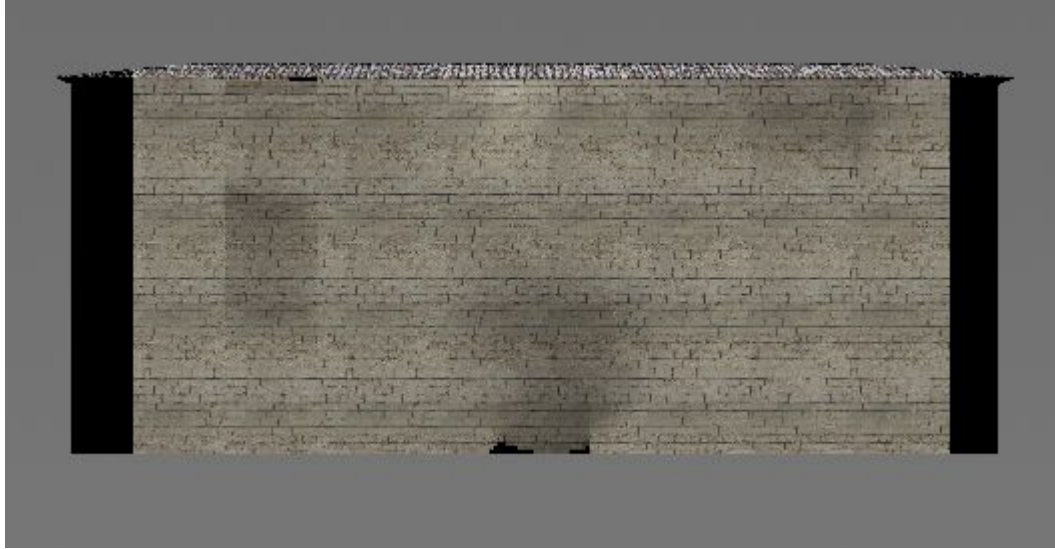# More Comparison

M3 Improvements

Uniform Grid

Non-Uniform Grid

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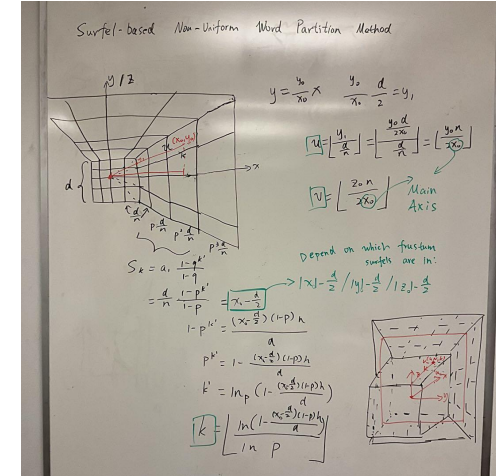
M3 Improvements

Non-uniform Grid (Little buggy)

Random Math Equations
(Nobody cares, decorative
purpose only)

M3 Improvements

More Stable:

- Render pipelines synchronization

- Gbuffer depth bias and ray offset

- More uniform surfel distribution

- …

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Goals

- Milestone 3 & Final:
  - Glossy Indirect (working on)
  - Spatial Temporal Filtering (working on)
  - Better Surfelization & Tracing √
  - Non-uniform Acceleration Structure √

Live Demo!