

Scene Benchmarks

Monday, March 21, 2022 11:50 AM

Benchmarks on 2080 TI

Noelle: 1920*1080p + 64 guard = 2048*1208

Scene Configuration:

Stochastic Depth:
Alpha: 0.5
Samples: 4
Format: 24_8

VAO:
Radius: 0.5
Thickness: 1.0
Exponent: 1.1 (Video 1.6)

HBAO:
Radius: 1.1
Frame ID 429 (Framerate 240)

Benchmark:

| Renderer | Depth Map (+linearize) | SSAO | Blur | Interleaving | Total |
|----------|------------------------|-----------|------|--------------|-------------|
| VAO | | 0.27 | 0.25 | | 0.52 |
| Dual-VAO | 0.13 | 0.34 | 0.25 | | 0.72 |
| SD-VAO | 0.26 | 0.31 | 0.25 | | 0.82 |
| RQ-VAO | | 0.68 | 0.25 | | 0.93 |
| RT-VAO | | 0.85 | 0.25 | | 1.1 |
| SD-SVAO | 0.11 | 0.3+0.09 | 0.25 | | 0.75 |
| RQ-SVAO | | 0.27+0.18 | 0.25 | | 0.7 |
| RT-SVAO | | 0.27+0.42 | 0.25 | | 0.94 |
| HBAO+ | | 0.3 | 0.25 | 0.13 | 0.68 |
| HBAO+SD | 0.29 | 1.02 | 0.3 | 0.13 | 1.6 |

RQ-SVAO speedup: 1.33

SD-SVAO speedup: 1.09

Bistro: 1920*1080p + 64 guard = 2048*1208

Stochastic Depth:
Alpha: 0.2
Samples: 4
Format: 24_8

VAO:
Radius: 0.2

Thickness: 0.8
Exponent: 1.12

HBAO:
Radius: 0.5

| Renderer | Depth Map (+linearize) | SSAO | Blur | Interleaving | Total |
|----------|---------------------------|-----------|------|--------------|-------------|
| VAO | | 0.21 | 0.24 | | 0.45 |
| Dual-VAO | 0.39 | 0.29 | 0.24 | | 0.92 |
| SD-VAO | 0.83 | 0.29 | 0.24 | | 1.36 |
| RQ-VAO | | 2.25 | 0.24 | | 2.49 |
| RT-VAO | | 1.18 | 0.24 | | 1.42 |
| RT-VAO - | | 4.0 | 0.24 | | 4.24 |
| SD-SVAO | 0.43 | 0.21+0.10 | 0.24 | | 0.98 |
| RQ-SVAO | | 0.21+0.84 | 0.24 | | 1.29 |
| RT-SVAO | | 0.21+0.81 | 0.24 | | 1.26 |
| HBAO+ | | 0.3 | 0.24 | 0.10 | 0.64 |
| HBAO+SD | 0.83 | 1.0 | 0.24 | 0.10 | 2.17 |

Bistro: 2560*1440p + 96 guard = 2752*1632

| Renderer | Depth Map (+linearize) | SSAO | Blur | Interleaving | Total |
|----------|---------------------------|-----------|------|--------------|-------------|
| VAO | | 0.35 | 0.34 | | 0.69 |
| Dual-VAO | 0.54 | 0.45 | 0.34 | | 1.33 |
| SD-VAO | 1.3 | 0.45 | 0.34 | | 2.09 |
| RQ-VAO | | 3.05 | 0.34 | | 3.39 |
| RT-VAO | | 1.75 | 0.34 | | 2.09 |
| SD-SVAO | 0.56 | 0.4+0.14 | 0.34 | | 1.44 |
| RQ-SVAO | | 0.38+1.18 | 0.34 | | 1.9 |
| RT-SVAO | | 0.38+1.22 | 0.34 | | 1.94 |
| HBAO+ | | 0.44 | 0.34 | 0.14 | 0.92 |
| HBAO+SD | 1.3 | 1.66 | 0.34 | 0.14 | 3.44 |

Bistro: 3840*2160p + 128 guard = 4096*2416

| Renderer | Depth Map (+linearize) | SSAO | Blur | Interleaving | Total |
|----------|---------------------------|------|------|--------------|-------|
| VAO | | 0.64 | 0.74 | | 1.38 |
| Dual-VAO | 0.78 | 1.05 | 0.74 | | 2.57 |
| SD-VAO | 2.5 | 0.88 | 0.74 | | 4.12 |
| RQ-VAO | | 5.65 | 0.74 | | 6.39 |
| RT-VAO | | 3.08 | 0.74 | | 3.82 |

| | | | | | |
|---------|------|-----------|------|------|-------------|
| SD-SVAO | 1.02 | 0.7+0.26 | 0.74 | | 2.72 |
| RQ-SVAO | | 0.64+2.06 | 0.74 | | 3.44 |
| RT-SVAO | | 0.64+2.08 | 0.74 | | 3.46 |
| HBAO+ | | 0.92 | 0.74 | 0.25 | 1.91 |
| HBAO+SD | 2.5 | 3.22 | 0.74 | 0.25 | 6.71 |

Emerald Square: 1920*1080p + 64 guard = 2048*1208

Stochastic Depth:
Alpha: 0.2
Samples: 4
Format: 24_8

VAO:
Radius: 0.2
Thickness: 1.0
Exponent: 1.6

HBAO:
Radius: 0.5
Exponent: 4

| Renderer | Depth Map (+linearize) | SSAO | Blur | Interleaving | Total |
|----------|------------------------|-----------|------|--------------|-------------|
| VAO | | 0.21 | 0.25 | | 0.46 |
| Dual-VAO | 1.21 | 0.3 | 0.25 | | 1.76 |
| SD-VAO | 1.74 | 0.32 | 0.25 | | 2.31 |
| RQ-VAO | | 5.6 | 0.25 | | 5.85 |
| RT-VAO | | 3.74 | 0.25 | | 3.99 |
| RT-VAO- | | 8.8 | 0.25 | | 9.05 |
| SD-SVAO | 1.45 | 0.21+0.15 | 0.25 | | 2.06 |
| RQ-SVAO | | 0.23+3.68 | 0.25 | | 4.16 |
| RT-SVAO | | 0.23+3.26 | 0.25 | | 3.74 |
| HBAO+ | | 0.3 | 0.25 | 0.09 | 0.64 |
| HBAO+SD | 1.74 | 1.3 | 0.25 | 0.09 | 3.38 |

Sponza: 1920*1080p + 64 guard = 2048*1208

Stochastic Depth:
Alpha: 0.2
Samples: 4
Format: 24_8

VAO:
Radius: 0.5
Thickness: 0.5

Exponent: 1.3

HBAO:

Radius: 1.0

| Renderer | Depth Map (+linearize) | SSAO | Blur | Interleaving | Total |
|----------|------------------------|-----------|------|--------------|-------------|
| VAO | | 0.22 | 0.22 | | 0.44 |
| Dual-VAO | 0.16 | 0.29 | 0.22 | | 0.67 |
| SD-VAO | 0.35 | 0.29 | 0.22 | | 0.86 |
| RQ-VAO | | 1.19 | 0.22 | | 1.41 |
| RT-VAO | | 0.9 | 0.22 | | 1.12 |
| RT-VAO- | | 2.62 | 0.22 | | 2.84 |
| SD-SVAO | 0.18 | 0.23+0.1 | 0.22 | | 0.73 |
| RQ-SVAO | | 0.22+0.48 | 0.22 | | 0.92 |
| RT-SVAO | | 0.22+0.54 | 0.22 | | 0.98 |
| HBAO+ | | 0.29 | 0.22 | 0.09 | 0.6 |
| HBAO+SD | 0.35 | 0.91 | 0.22 | 0.09 | 1.57 |

Zero Day: $1920 * 1080p + 64 \text{ guard} = 2048 * 1208$

Stochastic Depth:

Alpha: 0.5

Samples: 4

Format: 24_8

VAO:

Radius: 0.15

Thickness: 0.3

Exponent: 1.42

HBAO:

Radius: 0.3

FrameID: 0

| Renderer | Depth Map (+linearize) | SSAO | Blur | Interleaving | Total |
|----------|------------------------|-----------|------|--------------|-------------|
| VAO | | 0.22 | 0.22 | | 0.44 |
| Dual-VAO | 0.76 | 0.33 | 0.22 | | 1.31 |
| SD-VAO | 0.85 | 0.31 | 0.22 | | 1.38 |
| RQ-VAO | | 1.64 | 0.22 | | 1.86 |
| RT-VAO | | 1.36 | 0.22 | | 1.58 |
| RT-VAO- | | 2.5 | 0.22 | | 2.77 |
| SD-SVAO | 0.76 | 0.24+0.13 | 0.22 | | 1.35 |
| RQ-SVAO | | 0.24+0.7 | 0.22 | | 1.16 |
| RT-SVAO | | 0.24+0.88 | 0.22 | | 1.34 |

| | | | | | |
|---------|------|------|------|------|------|
| HBAO | | 0.29 | 0.22 | 0.09 | 0.6 |
| HBAO+SD | 0.85 | 1.10 | 0.22 | 0.09 | 2.26 |

Hairy Desert: 1920*1080p + 64 guard = 2048*1208

Stochastic Depth:

Alpha: 0.5

Samples: 4

Format: 24_8

VAO:

Radius: 0.15

Thickness: 0.3

Exponent: 1.42

HBAO:

Radius: 0.3

| Renderer | Depth Map (+linearize) | SSAO | Blur | Interleaving | Total |
|----------|---------------------------|-----------|------|--------------|-------------|
| VAO | | 0.22 | 0.22 | | 0.44 |
| Dual-VAO | 1.11 | 0.26 | 0.22 | | 1.59 |
| SD-VAO | 1.83 | 0.24 | 0.22 | | 2.29 |
| RQ-VAO | | 3.48 | 0.22 | | 3.7 |
| RT-VAO | | 2.08 | 0.22 | | 2.3 |
| SD-SVAO | 1.58 | 0.23+0.10 | 0.22 | | 2.13 |
| RQ-SVAO | | 0.21+2.27 | 0.22 | | 2.7 |
| RT-SVAO | | 0.21+1.93 | 0.22 | | 2.36 |
| HBAO+ | | 0.24 | 0.22 | 0.07 | 0.53 |
| HBAO+SD | 1.83 | 0.7 | 0.22 | 0.07 | 2.82 |