Supplemental Material III: Rendering algorithm implementation validation

Zdravko Velinov, and Kenny Mitchell

Abstract—Path tracing involves multiple steps and proper implementation requires to correctly combine multiple integrators, sampling strategies and weighting functions to produce an estimate that converges to the expected result while keeping bias within the required precision of the application. We validate our techniques against Mitsuba 2 to ensure that our techniques were correctly implemented and converge to valid results.

Index Terms—raytracing, color, shading, shadowing, texture.

1 Introduction

We have implemented multiple integration algorithms that follow different integration strategies. While trivial biases are immediately visible after comparing the outcome of integration between different algorithms. It is important to evaluate the algorithms against other implementations that are formally validated. Mitsuba 2 [1] is one such system commonly used in academia. The correctness of this system was proven by many existing publications that use it in myriad applications. We use it to prove that our technique converges to correct results.

2 Validation

The results for the box scene are generated for isotropic medium (g=0) and albedo ($\sigma_s/\sigma_t = 0.9911020971138298$). They are shown in Tab. 1.

- *Zdravko Velinov was with Disney Research Los Angeles, Glendale, CA. ORCiD: 0000-0002-1258-1223*
- *Kenny Mitchell was with Disney Research Los Angeles, Edinburgh Napier University and Roblox Corporation, San Mateo, CA. ORCiD: 0000-0003-2420-7447*

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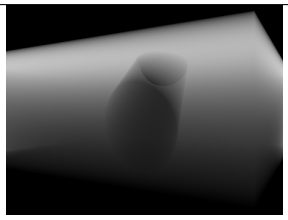
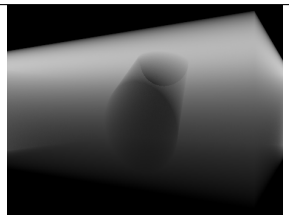
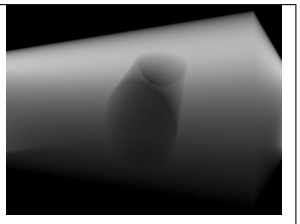
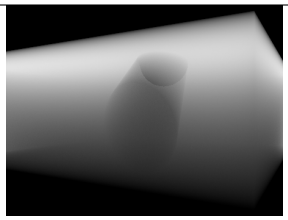
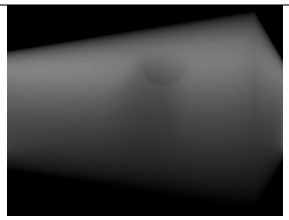
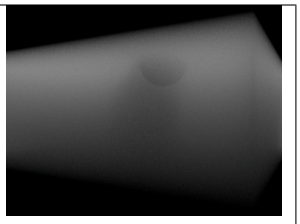
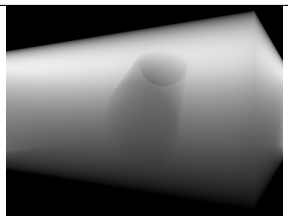
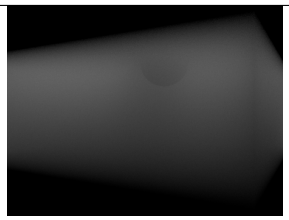
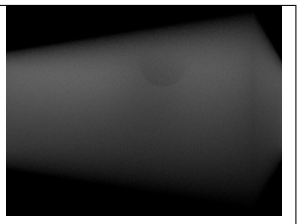
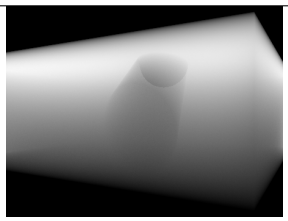
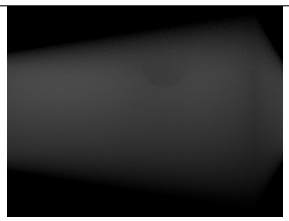
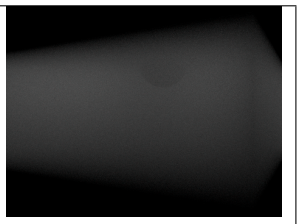
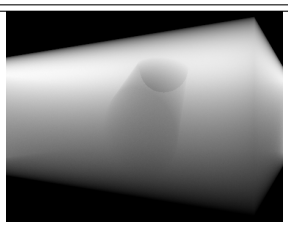
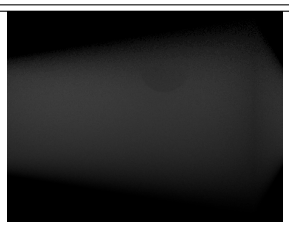
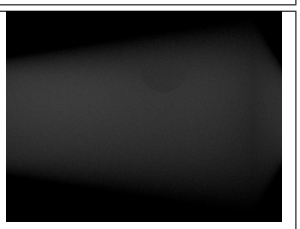
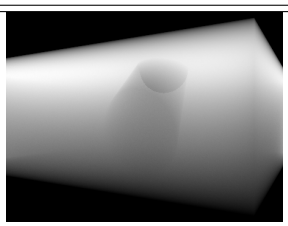
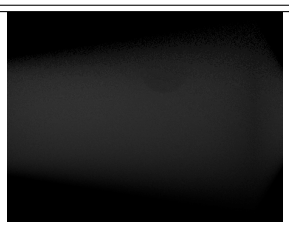
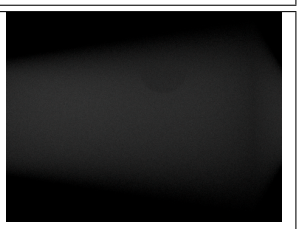
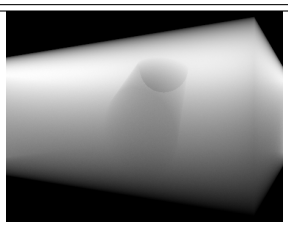
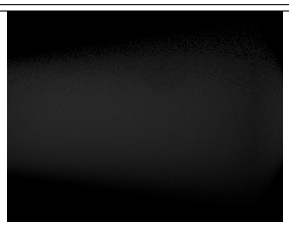
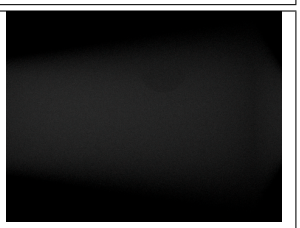
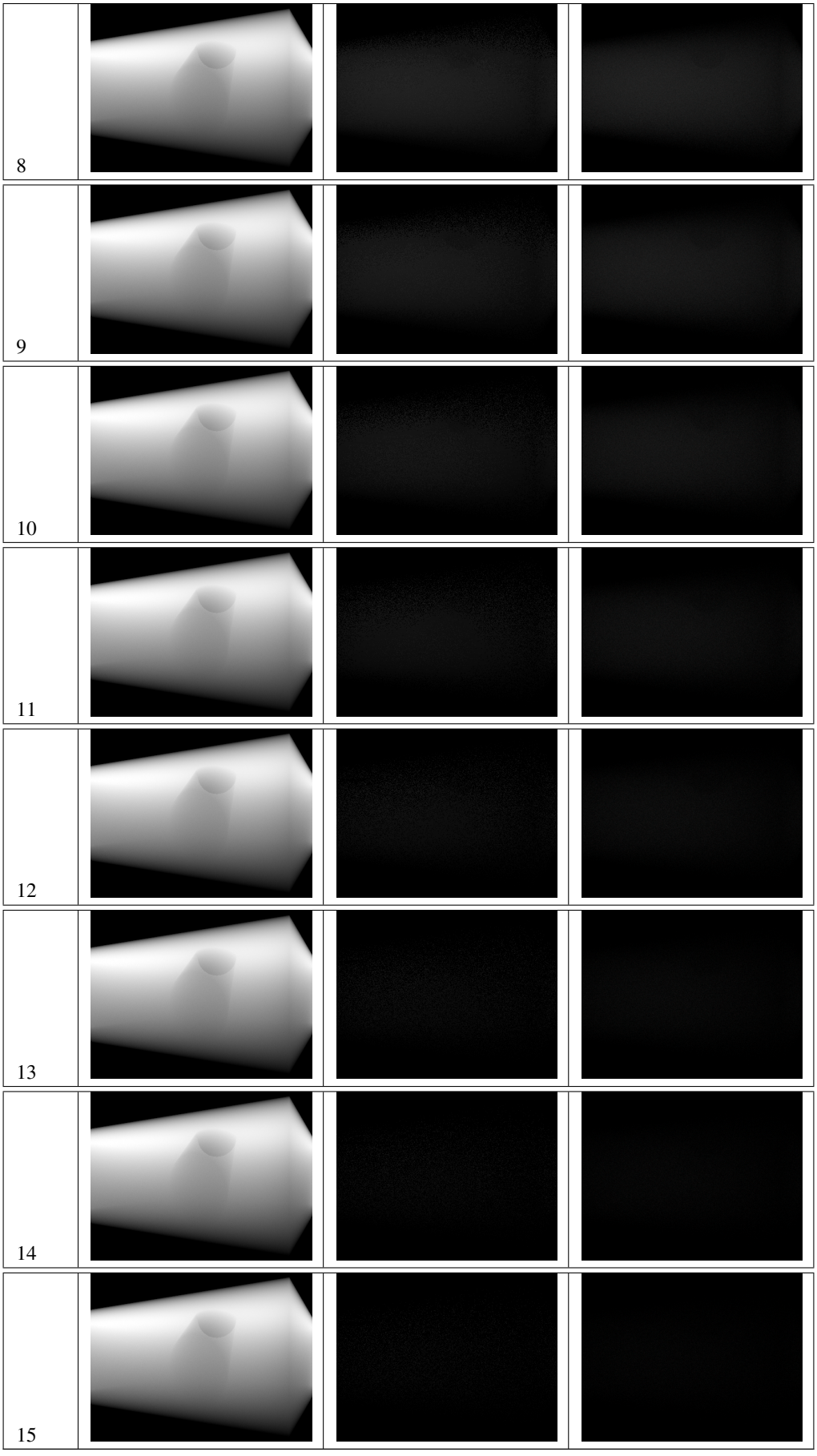
TABLE 1: Validation of example supplemental renderer against Mitsuba 2

Ray Depth	Rendering (Our Renderer)	Light Bounce Contribution (Our Renderer)	Light Bounce Contribution (Mitsuba 2)
1			
2			
3			
4			
5			
6			
7			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REFERENCES

[1] M. Nimier-David, D. Vicini, T. Zeltner, and W. Jakob, "Mitsuba 2: A retargetable forward and inverse renderer," *ACM Trans. Graph.*, vol. 38, no. 6, Nov. 2019.