

Posudek diplomové práce

Matematicko-fyzikální fakulta Univerzity Karlovy

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Název práce Integration of the Embree Raycasting Library into a CSG Renderer

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Studijní program Informatika **Studijní obor** Počítačová grafika a vývoj počítačových her

Autor posudku Alexander Wilkie **Role** vedoucí

Pracoviště KSVI

Text posudku:

Goal of the thesis was the integration of Embree, a complex and highly optimised industrial software framework for efficient ray-object intersection calculations, into an existing rendering research software system called ART. The technical challenge in this was that ART, which is niche software, but is still quite complex in its own right, has an internal structure which makes using a library like Embree not immediately obvious. The non-standard structure of ART is a direct consequence of it being designed to go beyond the capabilities of normal rendering software, for research purposes: but this of course meant departure from industry design patterns in some regards. With one of them being how ray-object calculations are implemented: but for performance reasons, it became more and more pressing to also be able to use Embree in some form.

All things considering, the candidate did a good job of solving the numerous intricate and not immediately obvious pitfalls on the path to a working version of ART that relies on Embree for its underlying ray-object intersection acceleration. He also outlined the various issues he faced and solved in the thesis well: the thesis is easy to follow, and he used sufficiently diverse test cases to demonstrate that his implementation is robust enough, and actually offers performance benefits when compared to the solution that was in place before.

Práci doporučuji k obhajobě.

Práci nenavrhuji na zvláštní ocenění.

V Praze dne 1. 9. 2021

Podpis: