Posudek diplomové práce

Matematicko-fyzikální fakulta Univerzity Karlovy

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Název práce Fluorescence Computations in a Hero Wavelength Renderer
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Text posudku:

Fluorescent surfaces and volumes are a common type of material in everyday environments. But so far, representing them in a modern rendering system posed a few technical problems that had not been solved yet. The problem had been addressed in older literature for the simpler rendering techniques that were in use back then: but as the state of the art advanced in rendering technology, the solutions proposed for the inclusion of fluorescence back then turned out to be no longer applicable to modern renderers.

In the submitted thesis, the author solves the two problems which prevented the inclusion of fluorescence effects modern spectral path tracers. These were the question of how one handles the propagation of wavelengths in a system that uses hero wavelength sampling (the current standard in spectral rendering), and how one deals with fluorescent volumes. The latter can possess a characteristic which causes standard volume rendering techniques to fail: and the author found a workable solution for this, which enables one to include even fluorescent volumes with very pathological properties in renderings. In this context, media with pathological properties are those which only exhibit fluorescence, but no normal scattering: such media do exist, as the candidate showed in his thesis, and he also analysed exactly why they pose such a problem.

Overall, the thesis is a very solid work that moves the state of the art considerably forward, and I wholeheartedly recommend it for acceptance.

Práci doporučuji k obhajobě.

Práci navrhuji na zvláštní ocenění.

Pokud práci navrhujete na zvláštní ocenění (cena děkana apod.), prosím uveďte zde stručné zdůvodnění (vzniklé publikace, významnost tématu, inovativnost práce apod.).
   The submitted thesis does an excellent job of solving a hard and industrially relevant problem in a theoretically rigorous way. It has already been submitted, in shortened form, for publication at a conference, but unfortunately we will not know until March 2018 whether it will be accepted there. But I am practically certain that the results of this thesis will be publishable at a very good venue for Computer Graphics, and that they will generate interest from the research community.

Datum 24. January 2018 **Podpis**