

Posudek diplomové práce

Matematicko-fyzikální fakulta Univerzity Karlovy

Autor práce Michal Wirth
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Studijní program Informatika **Studijní obor** Počítačová grafika a vývoj počítačových her

Autor posudku Alexander Wilkie **Role** Oponent
Pracoviště KSVI

Text posudku:

The thesis describes work undertaken to design and implement a state of the art HDR viewer for a modern commercial photo-realistic 3D rendering software suite. The rendering software in question is one of the market leaders in its area, and by default generates HDR content that needs to be displayed properly. Designing a viewer for integration into such an advanced commercial software meant that a number of non-trivial features were needed, and that the design of the user interface had to be done carefully, both from a general use ability viewpoint, and to remain consistent with the remainder of the system. Also, the performance of the resulting system had to be satisfactory, as the end users of such a system will use it for data-intensive daily work.

All these aspects are well documented and discussed in the thesis, and the resulting viewer is both technically interesting and satisfactory from a performance viewpoint. The thesis also includes a proper state of the art section as well: other extant software in this area is listed and discussed. But the thesis is not just the project description of a software development effort: in addition to presenting an interesting general case study of how such software should be designed, the thesis also discusses one particular technical aspect of HDR viewer (and image processing software in general) design in more detail. Amongst writers of image manipulation software, it has been known for a considerable time that modern vector processors tend to perform better on Structure of Array (SoA) memory layouts of image data, than on the semantically considerably more obvious Array of Structures (AoS) layout. However, so far this knowledge has been more anecdotal, and of the "it stands to reason that it should be so" variety. Which is why it is very interesting that the author of the thesis managed to use the software he designed and wrote to systematically investigate the impact of this memory layout choice on overall system performance. And his findings do support the opinion that SoA performs better. The fact that the author performed his experiments not in a lab setting, but in a real, complex viewer that offers industrially relevant features (and not some research toy) make his findings all the more pertinent and interesting.

Overall, the thesis offers a very practical but still in-depth discussion of a complex and non-trivial engineering and research problem, and can be commended for acceptance.

Práci doporučuji k obhajobě.

Práci nenavrhuji na zvláštní ocenění.

Pokud práci navrhuje na zvláštní ocenění (cena děkana apod.), prosím uveďte zde stručné zdůvodnění (vzniklé publikace, významnost tématu, inovativnost práce apod.).

Datum 23. January 2017

Podpis