

Posudek diplomové práce

Matematicko-fyzikální fakulta Univerzity Karlovy

Autor práce Bc. Jakub Štásta
Název práce Image Denoising Using Weighted Local Regression
Rok odevzdání 2017
Studijní program Informatika **Studijní obor** Softwarové systémy

Autor posudku Mgr. Oskar Elek, Ph.D.
Pracoviště KSVI

Role Oponent

Text posudku:

This thesis addresses the problem of denoising synthetic images specifically in the context of Monte Carlo light transport simulation. The denoiser is integrated into Corona Renderer, a production rendering system focused on architectural and product visualization.

Positive points:

- * Implementing an experimental module into a production system is typically a challenge and the author has in all accounts succeeded in this task.
- * The results achieved by the implementation are very solid and the eventual non-inclusion of his work in the system can be explained by the inherent limitations of the chosen filtering method. Regardless and independent investigation of a state-of-the-art method like this is valuable by itself.
- * The method is evaluated on a number of well selected scenes, with detailed analysis of all detected failure cases.
- * The resulting code is very clean and thoroughly commented, with references to the thesis text.

Negative points:

- * The choice of the filtering method (weighted linear regression) is never properly justified, and hence seems rather arbitrary. The overview of the other competing methods is quite mechanical as well, so it appears not much investigation has gone into evaluating their feasibility.
- * The text of the thesis is not written well. On the low and language levels, it is plagued by awkward formulations, grammar errors, and occasional sloppy typesetting. On the high level, I feel the exposition of the algorithm is too mathematically rigid and assumes an already very good understanding from the reader. The author clearly possesses this understanding, but does very little to share it with the reader. Especially in the case of a re-implementation of an existing algorithm, I would expect an additional didactic value from the thesis, in the form of intuitive insights and/or diagrams; none of this is present however. There are also some shortcomings in terms of the text structure (pointed out directly in the review copy).

Conclusion:

The implementation and evaluation parts of the work are very good and based on these I recommend it for defense. The thesis text unfortunately leaves a lot to be desired and I would recommend the author to study other well received papers and theses, if this is anyhow relevant for his future career.

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 27. August 2017

Podpis