

# Posudek diplomové práce

Matematicko-fyzikální fakulta Univerzity Karlovy

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

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**Pracoviště** KSVI

**Role** Vedoucí

## Text posudku:

In his diploma thesis, Mr. Jakub Šťasta investigates the problem of denoising of images generated by Monte Carlo renderers. One of the published methods (Weighted Local Linear Regression) is implemented, thoroughly tested and some improvements are proposed and evaluated. The manuscript of the thesis is well written and demonstrates the deep understanding of the problem that the candidate has been able to acquire. The text starts with a good and insightful overview of related work. My criticism to this part of the manuscript is that it lacks references to the very latest development in the area of denoising of rendered images, published over the last two years. Some of these recent works should be mentioned and discussed at the defense. The work then provides a complete description of the basic building block of the denoising algorithm: weighted linear regression based on least squares. This is then used in the subsequent chapter to describe the complete denoising algorithm. While the two aforementioned theoretical chapters are very well written from the point of view of rigor (minus some occasional typos), clarity of text would benefit from diagrams depicting the presented concepts and ideas. The algorithm is then evaluated on a number of scenes exhibiting different kinds of challenges. Limitations of the method as described in the original paper are identified and improvements addressing these problems are proposed. Unfortunately, a complete set of results for all of the test scenes is missing in the manuscript and can only be found in the supplemental material. Overall, I consider the work of Jakub Šťasta of very high quality and I recommend the work for defense.

**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** 24. července 2017

**Podpis**