

Popular science summary of the PhD thesis

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Title of the PhD thesis Towards interactive photorealistic rendering

PhD school/Department DTU Compute

Science summary

* Please give a short popular summary in Danish or English (approximately half a page) suited for the publication of the title, main content, results and innovations of the PhD thesis also including prospective utilizations hereof. The summary should be written for the general public interested in science and technology:

In many fields, including manufacturing, product design, and entertainment, it is becoming more and more important to generate photorealistic images, or images that look like real life. In these various fields, we also need fast feedback, as it is not possible to wait hours and hours for images to be generated. So, our image generation process, or rendering, needs to be both interactive and photorealistic. In this thesis, we contribute within this spectrum with two novel techniques suitable for graphics processing units (GPUs), improving the accuracy of rendering of translucent materials and temporal stability in globally illuminated scenes. We also describe a new digitization pipeline that can be used to compare renderings with photographs. These comparisons are not only useful for validation of rendering techniques, but also for estimating the optical properties of objects, such as how they reflect, scatter, and absorb light. In general, this thesis explores the use of data structures to let interactive rendering techniques include complex light-material interaction effects.

Please email the summary to the PhD secretary at the department