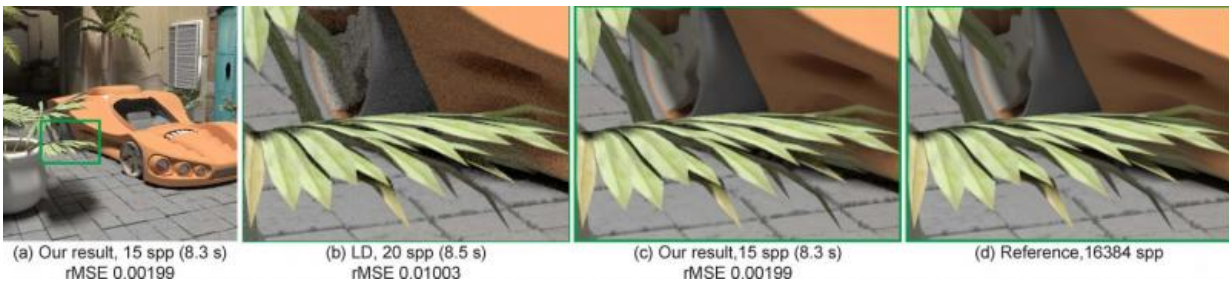


Team rendering method preserves detail in film quality production graphics

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Credit: Disney Research

Disney Research has developed a new method of rendering high-quality graphics for animated features that efficiently corrects for erroneous pixels while preserving the crisp detail in images, significantly increasing the efficiency of producing animated images.

The new approach enhances the performance of Monte Carlo ray tracing, a method for rendering 3-D scenes by randomly tracing the possible light paths for each pixel in an image. The images produced by ray tracing can be highly realistic, but can require large amounts of computer time to render.

The Disney researchers developed an adaptive rendering method, which reduces the number of ray tracing samples for each pixel, but also can introduce discolored pixels, or noise, into the image. The researchers

found that by analyzing errors in a relatively small number of image pixels they could identify patterns which could be used to correctly predict additional, multiple pixels. This approach is known as sparse modeling.

"The key idea of using a sparse approach lets us achieve an order of magnitude faster results than previous denoising methods," said Kenny Mitchell, senior research scientist at Disney Research. "Our adaptive method gives artists the ability to check approximate reduced noise results very quickly, rather than waiting overnight to see if their work turned out okay or not."

The researchers will present their findings at ACM SIGGRAPH 2015, the International Conference on Computer Graphics and Interactive Techniques, in Los Angeles Aug. 9-13. In their study, the researchers compared their new [method](#) to previous, state-of-the-art adaptive methods and showed it drastically reduced reconstruction time even with higher rendering quality.

Mitchell said the research results promise to be a significant advancement and are already being used in current productions of upcoming animated features.

The research was partly supported by the Innovate UK project, Lensflare, which seeks to improve the competitiveness of the UK computer graphics industry by revolutionizing production pipelines for films and videogames.

More information: www.disneyresearch.com/publications/linear-predictions/

Provided by Disney Research

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