RSR - REAL-TIME SUPERSAMPLING FOR RENDERING USING MACHINE LEARNING

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Abstract

3D graphics is an area in computer science that requires high computational power. Major issues exist in 3D graphics that need to be solved. One of them is aliasing. Numerous solutions have tried to eliminate aliasing in the past. However, none of them is perfect with their pros and cons. Image super-resolution is an active research area where the primary concern is related to hallucinating information when upscaling images to higher resolutions. This methodology can be used in graphics anti-aliasing to fill in missing information that causes aliasing.

There has been very successful research done in the area of image upscaling using machine learning. With an image upscaling solution, aliasing could be negated by super-sampling frames. With current image upscaling solutions this is difficult to be done in real-time. Therefore, the viability of depth separable convolution neural networks in place of the traditional convolutional neural network will be evaluated.

The proposed solution to super-sample images is proved to be valid in real-time applications. The solution can be seen performing better than existing technologies when the runtime performance is compared.

Keywords: *Machine learning, Computer graphics, Computer vision, 3D rendering, Convolutional Neural Networks, Games*