ABSTRACT

Rendering an image using ray tracing algorithm had been widely used for animation movie, architecture design, and simulation. Huge computational resource becomes the biggest and most challenging problem on implementing ray tracing algorithm, so it needs additional data structure to lower the resources needed. One of the data structure that mainly used to accelerate ray tracing algorithm is uniform grid. This research will develop a rendering system using ray tracing algorithm on CUDA platform and using uniform grid as accelerating structure. CUDA is a parallel processing standard in GPU and can be use to compute anything (general purpose). The research result is a 3d rendering system using ray tracing algorithm that run on GPU and run 2 to 6 time faster than other similar system that run on CPU.

Keywords: ray tracing, parallel processing, CUDA, uniform grid
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