

Special Issue on
Real-Time Rendering Techniques for Gaming

CALL FOR PAPERS

Gaming has come a long way in terms of graphical presentation, in particular considering the incredibly fast development of 3D graphics in games. From the humble beginnings only 20 years ago, 3D gaming has experienced a continuous and impressive improvement of graphical realism, and currently open world games are able to provide near photorealistic 3D quality at interactive rates. This can be credited to advances in processing power, the development of better artistic tools, and last but not least the development of new and efficient rendering algorithms. Traditionally, LOD and visibility techniques have been used to make rendering of large scenes manageable in real-time. Recent advances in GPU processing power and technology allow interactive global illumination and lighting effects in fully dynamic scenes. Even more impressively, real-time ray tracing and path tracing techniques known from offline rendering are becoming useful in such interactive gaming scenarios. Recent developments like Sparse Voxel Octrees offer interesting alternatives to the rasterization paradigm, which has been predominant in real-time applications until now. Initially built for rendering, the unmatched parallel processing capabilities of modern GPUs have been shown to be useful in creating plausible physical effects in real-time.

In this issue, we welcome interesting contributions to any of these areas related to real-time rendering in gaming, to foster novel academic research in this area and further improve realism in games. In order to be useful in an open and interactive game environment, these algorithms have the requirements to be sufficiently fast, robust with respect a multitude of possible use cases, and memory-efficient, as opposed to less constrained noninteractive methods used, for example, in the film industry. Novel and creative exploitation and balancing of available GPU and CPU resources are highly encouraged. Since gaming on mobile devices has become very popular in recent years, this issue also welcomes contributions to the subset of games targeted for mobile devices, which puts even more emphasis on the efficiency of algorithms due to tighter hardware constraints.

Potential topics include but are not limited to the following:

- ▶ Real-time global illumination
- ▶ Data structures for real-time application
- ▶ Fluid and foam rendering
- ▶ Temporal coherence methods
- ▶ Natural phenomena/participating media
- ▶ Screen-space effects/deferred rendering
- ▶ Many-light methods
- ▶ Vegetation rendering
- ▶ Real-time ray/path tracing effects
- ▶ Out-of-core virtual textures/megatextures
- ▶ Multiresolution, output-sensitive, and multirate techniques
- ▶ Advanced lighting on mobile devices
- ▶ Skin and hair
- ▶ Real-time rendering techniques for virtual and augmented reality gaming
- ▶ NPR and cel-shading approaches

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