

NVIDIA RTX Technology Realizes Dream of Real-Time Cinematic Rendering

Decade of Development in Algorithms and GPUs Leads to Giant Leap in Computer Graphics

Game Developers Conference - NVIDIA today announced NVIDIA RTX™, a [ray-tracing technology](#) that brings real-time, cinematic-quality rendering to content creators and game developers.

NVIDIA RTX is the product of 10 years of work in computer graphics algorithms and GPU architectures. It consists of a highly scalable ray-tracing technology running on [NVIDIA Volta architecture GPUs](#). Architected to support ray tracing through a variety of interfaces, NVIDIA partnered closely with Microsoft to enable full RTX support for applications that use Microsoft's new DirectX® Raytracing (DXR) API.

Long considered the definitive solution for realistic and lifelike lighting, reflections and shadows, ray tracing offers a level of realism far beyond what is possible using traditional rendering techniques. Real-time ray tracing replaces a majority of the techniques used today in standard rendering with realistic optical calculations that replicate the way light behaves in the real world, delivering more lifelike images.

"Real-time ray tracing has been a dream of the graphics industry and game developers for decades, and NVIDIA RTX is bringing it to life," said Tony Tamasi, senior vice president of content and technology at NVIDIA. "GPUs are only now becoming powerful enough to deliver real-time ray tracing for gaming applications, and will usher in a new era of next-generation visuals."

Ray tracing has been used for years to pre-render lifelike worlds in movies. But until now, it has been too computationally demanding to be practical for real-time, interactive gaming, which requires fast frame rates and low latency. NVIDIA RTX overcomes those limitations.

Broad Industry Support

"DirectX Raytracing is the latest example of Microsoft's commitment toward enabling developers to create incredible experiences using cutting-edge graphics innovations," said Max McMullen, development manager of Windows Graphics and AI at Microsoft. "Our close partnership with NVIDIA on DirectX Raytracing and NVIDIA's RTX technology brings real-time ray tracing closer than ever for millions of gamers on Windows."

Industry leaders such as 4A Games, Epic, Remedy Entertainment and Unity are featuring NVIDIA RTX in their technology demonstrations at the Game Developers Conference this week. They are showing how real-time ray tracing can provide amazing, lifelike graphics in future games. And because RTX supports Microsoft DirectX Raytracing, the groundbreaking technology will be enjoyed by Windows users everywhere.

"The availability of NVIDIA RTX opens the door to make real-time ray tracing a reality," said Kim Libreri, chief technology officer at Epic Games. "By making such powerful technology available to the game development community with the support of the new DirectX Raytracing API, NVIDIA is the driving force behind the next generation of game and movie graphics."

"Integrating NVIDIA RTX into our Northlight engine was a relatively straightforward exercise," said Mikko Orrenmaa, technology team manager at Remedy Entertainment. "Developing exclusively on NVIDIA RTX, we were surprised just how quickly we were able to prototype new lighting, reflection and ambient occlusion techniques, with significantly better visual fidelity than traditional rasterization techniques. We are really excited about what we can achieve in the future with the NVIDIA RTX technology. Gamers are in for something special."

Introducing GameWorks for Ray Tracing

To allow game developers to take advantage of these new capabilities, NVIDIA also announced the NVIDIA GameWorks™ SDK will add a ray-tracing denoiser module. This suite of tools and resources for developers will dramatically increase realism and shorten product cycles in titles developed using the new Microsoft DXR API and NVIDIA RTX.

The upcoming GameWorks SDK -- which will support Volta and future generation GPU architectures -- enables ray-traced area shadows, ray-traced glossy reflections and ray-traced ambient occlusion.

With these capabilities, developers can create realistic, high-quality reflections that capture the scene around it and achieve physically accurate lighting and shadows. Making these capabilities available on an industry-standard platform like Microsoft DXR means every PC game developer will have access to levels of realism never before possible.

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Certain statements in this press release including, but not limited to, statements as to: the benefits, impacts, performance, abilities and availability of NVIDIA RTX, NVIDIA GameWorks SDK including the ray-tracing denoiser module and real-time ray tracing; the benefits and impact of NVIDIA's partnership with Microsoft; real-time ray tracing replacing a majority of the techniques used in standard rendering today; real-time ray tracing being a dream of the graphics industry and game developers and its ability to usher in a new era of next-generation visuals; NVIDIA being the driving force behind the next generation of game and movie graphics; the excitement and outcomes resulting from NVIDIA RTX technology; and NVIDIA GameWorks SDK adding ray-tracing denoiser modules are forward-looking statements that are subject to risks and uncertainties that could cause results to be materially different than expectations. Important factors that could cause actual results to differ materially include: global economic conditions; our reliance on third parties to manufacture, assemble, package and test our

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