A Perfect Pair: adidas and Covision Media Use AI, NVIDIA RTX to Create Photorealistic 3D Content

Covision's AI-based 3D technology helps businesses scan thousands of products, creating photorealistic 3D images, videos and AR experiences for websites and mobile apps.

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Creating 3D scans of physical products can be time consuming. Businesses often use traditional methods, like photogrammetry-based apps and scanners, but these can take hours or even days. They also don't always provide the 3D quality and level of detail needed to make models look realistic in all its applications.

Italy-based startup Covision Media is tapping into AI and NVIDIA RTX to enhance 3D scanning processes and 3D-based content creation.

Covision Media develops AI-based 3D scanners that allow customers to create digital twins of any product, including footwear, eyeglasses, sports equipment, toys, tools and household items. The company is a member of NVIDIA Inception , a free program that provides startups with access to the latest resources and technologies.

Using Covision's technology, customers can quickly create 3D scans and automatically preserve detailed textures, materials, colors, geometry, and more to make images look as realistic as possible.

The technology runs on NVIDIA RTX, which allows users to create high-quality, detailed, photorealistic 3D models. Covision Media is also using neural radiance fields (NeRFs) to increase the quality of 3D models while tackling typical challenges like accurately capturing lighting, reflections and transparent surfaces.

adidas and its partner NUREG, a content creation studio, are among the first to use Covision Media's 3D scanning technology for automating and scaling e-commerce content production.

Covision's 3D scanners are connected to several workstations that run on NVIDIA RTX A5000 and RTX A6000 GPUs, both of which provide high ray-tracing performance and powerful AI capabilities.

The ray-tracing performance of the NVIDIA OptiX framework, coupled with the NVIDIA RT Cores, enables Covision to precisely measure the lighting of a scanned object. This is one of the biggest unique factors that allows customers to put their scanned products into any kind of virtual environment. Covision also harnesses NVIDIA's software infrastructure to develop state-of-the-art AI solutions for its neural texture approach.

"Without NVIDIA RTX GPUs, it would simply not be possible to achieve the level of accuracy and performance that we need," said Dr. Burkhard Güssefeld, tech lead at Covision Media. "NVIDIA's hardware and software capabilities are indispensable in pushing the boundaries of our technology."

Covision's technology allows 3D models to be fully relightable, meaning users can adjust and manipulate the lighting in the scene. Users can also merge partial scans together to build a 360-degree scan of the product, which can be used in extended reality (XR) environments.

The core technology uses computer vision and machine learning. Covision's strong expertise in NeRFs has enabled them to integrate it into existing pipelines to overcome traditional challenges like transparencies and reflections. This allows Covision Media to quickly reconstruct 3D shapes and appearances with just a few images.

The company has very high requirements for quality, millimetric precision, material separation and relightability. So the team adapted and expanded the capabilities of NeRF technology using data from elements such as precise light poses, controlled environments and accurate geometric cues.

NeRFs allow the team to create high-quality 3D images from the start of the process. This lets them increase throughput while reducing the amount of post-processing work required.

"Our 3D scanner automatically delivers the highest quality assets at mass production while at the same time helping customers to create value and save costs," said Franz Tschimben, CEO of Covision Media. "Furthermore, our scanning device will help companies create high-quality 3D assets needed to populate applications and worlds on new spatial computing devices and mixed reality headsets, like Apple's Vision Pro and Meta's Quest."

Covision is looking to integrate additional NVIDIA products and research projects into its solutions, such as Nvdiffrast for high-performance differentiable rendering and Tiny CUDA as a fast neural network framework. The team is also■ deploying a custom NeRF implementation into its system, which will make use of the APIs provided by NVIDIA's Instant-NGP .

adidas scans thousands of items a year using Covision's technology for its online websites and apps, where they're compatible on both desktop and mobile.

The 3D models have helped enhance adidas' Virtual Try-On feature, which allows customers to virtually try on shoes before buying them. adidas also uses the 3D models to automatically create 2D virtual product photos and videos, replacing the need for traditional product photography.

According to adidas, Covision's scanning technology has helped the team take a quantum step forward in quality while maintaining its scaled scanning production. With the highly realistic scans, adidas has experienced time and cost efficiencies by switching from traditional content production, such as photo and film, to computer-generated content production.

To scale production of 3D assets, adidas relies on Covision's technology and works with an important set of partners. NUREG is an essential partner in creating and preparing the 3D assets to go live on adidas' platforms. In addition to NUREG's expertise in logistics, styling and scanning, the studio provides its own software tools, as well as specialties in 2D and 3D production, which enable the 3D workflows to be scalable for thousands of assets every year.

"The unparalleled quality and relightability of 3D scans allows our global team of 3D and photo specialists to leverage the 3D models for all final applications we are creating," said Tommy Lenssen, head of the adidas team at NUREG. "I am furthermore happy with the success of our post-production platform that allows lean collaboration and quality control."

And for post-production workflows, Covision and NUREG work with The Kow Company, one of the leading image and video editing companies for businesses all over the world.

Customers can buy Covision Media's 3D scanners to start production in their own content creation studios, or they can get products scanned through Covision's partners in Europe or North America.

Learn more about Covision Media and NVIDIA RTX .

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