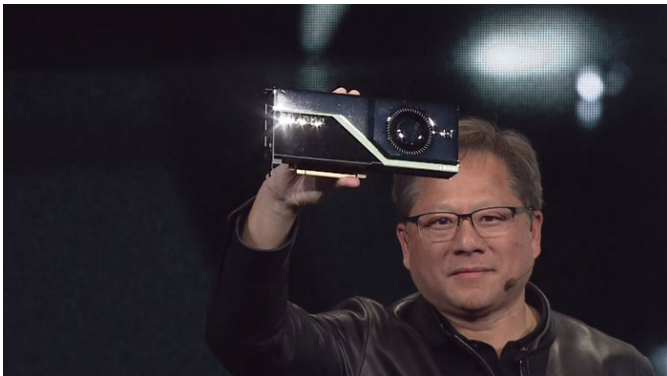# Nvidia Presents Turing Architecture

Written by Marco Attard
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Nvidia CEO Jensen Huang takes the SIGGRAPH 2018 main stage to unveil the company's 8th generation GPU architecture-- Turing, described as "the greatest leap since the invention of the CUDA GPU in 2006."

The biggest claim for Turing is hybrid rendering, a combination of ray tracing with traditional rasterisation. Nvidia says Turing architecture features an RT core, a set of dedicated processors able to render ray tracing in real time. For the curious, the RT core does by accelerating ray-triangle intersection checks and bounding volume hierarchy (BVH) manipulation, a popular data structure for object storage in ray tracing.

Also included are an improved version of the tensor cores from Volta architecture, allowing for not only further acceleration in the aforementioned ray tracing, but also more powerful neural networking hardware (after all, the use of Nvidia hardware is not solely limited to graphics). Further features include a Streaming Multiprocessor (SM) able to speed address generation and Fused Multiple Add (FMA) performance, support for a wider range of precisions (namely INT8 and INT4) and an NGX SDK able to integrate neural networking into image processing.

The announcement came with the reveal of 4 Turing-based products-- the Quadro RTX 5000, Quadro RTX 6000, Quadro RTX 8000 and the Quadro RTX Server with x8 Turing GPUs. All are professional pieces of hardware, complete wtih Samsung 16Gb GDDR6 memory, NVLink connectivity and support for enhanced VR technologies such as Variable Rate Shading, Multi-View Rendering and VRWorks Audio.

To show off just how powerful the Quadro RTX hardware is, Nvidia presented a new version of the spectacular Star Wars-themed real-time ray tracing demo seen back on March 2018. Whereas the demo previously required DGX Station equipped with x4 Volta GPUs, it now runs

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on a single Quadro RTX 8000.

Of course, Turing will also trickle on the consumer side-- Nvidia closed the SIGGRAPH presentation with a tease of the GeForce RTX 2080, a gaming GPU the company will probably detail at the upcoming Gamescom 2018.

Go Nvidia Reinvents Computer Graphics With Turing Architecture