



Art courtesy of Nikie Monteleone, Surfacing Artist

Studio: Adobe Substance Painter

RTX ray tracing accelerates baking performance by more than 10x compared to CPUs

OVERVIEW

3D art is brought to life with amazingly detailed materials and textures. This is typically done by “Surfacing Artists” who meticulously select, prepare, and apply textures to every part of a given 3D model. Highly detailed 3D models usually consist of a high number of polygons. Typically many of these models are used in real-time engines. This requires a reduction in polygons and therefore details. However, the rich visual detail can be retained by “baking” various maps (e.g., Ambient Occlusion, Normal, Curvature maps) that are projections of the highly detailed geometry onto a 2D map.

By using these maps, textures and materials that are now applied to an optimized model retain the visual fidelity of the original high-polygon count model, but can now achieve much higher performance. While Painter has revolutionized 3D painting, getting all the different textures prepared and "baked" is a necessary step before the actual painting phase. With RTX-accelerated ray tracing now integrated into Painter, baking times are reduced more than 10x compared to CPUs, allowing artists to quickly iterate between modeling and painting phases, allowing much more design iteration and leaving room for artistic creativity instead of waiting for long rendering times.

KEY POINTS

- Substance Painter is the reference 3D painting tool for games, M&E and design/manufacturing
- RTX baking was integrated into Substance Designer in 2018; now in 2019 it comes to Substance Painter
- Three commonly used bakers leverage RT Cores: ambient occlusion, thickness and bent normal. Acceleration can be more than 10x (for ambient occlusion).
- Other bakers are GPU accelerated when possible and the overall speedup of RTX when baking all channels is 10 to 15x compared to CPU.

QUOTES

"As a Surfacing Artist, I'm always trying to find ways to get through the technical side of my job as quickly as possible. The latest release of Substance Painter paired with my NVIDIA RTX has done just that by allowing me to get to the creative aspects sooner. This is an exciting time, spanning multiple industries, and I can't wait to start using this new process for future projects!"

Nikie Monteleone, Surfacing Artist, DreamWorksTV Animation

"For artists, getting different textures maps prepared and baked for 3D painting is time-consuming. RTX-accelerated bakers in Substance Painter deliver more than 10x faster performance than CPU for AO and 10 to 15x overall performance gain when baking all maps.

We believe NVIDIA RTX ray tracing performance is a game-changer, significantly reducing the time for baking, so artists can quickly iterate between modeling and painting, and bring better designs to life faster."

Sébastien Deguy, VP of 3D and Immersive at Adobe.