

# Pushing Photorealism in "A Boy and His Kite"

Real-Time Live!

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The 100-square-mile setting for "A Boy and His Kite" is based on the Isle of Skye in Scotland and populated using photogrammetric assets: photographs of real-world objects are used to reconstruct textured 3D models. The challenge of rendering a large, photorealistic world led to development of several new rendering features and tools. A distance field representation of the scene provides efficient visibility queries on the GPU in the form of cone traces. Efficient cone tracing enables a number of high-quality dynamic-lighting features used in the demo: detailed soft shadows for the sun up to one kilometer from the camera, ambient occlusion to shadow the sky, and single-bounce global illumination from the terrain. Because the lighting is dynamic, the time-of-day can be changed at runtime, and artists can modify the scene and see the results instantly. Physically based depth-of-field and motion-blur effects help to create images that more closely resemble photographs. New foliage tools to procedurally populate the world allow artists to quickly create a natural landscape filled with millions of trees, bushes, rocks, and grass.

The interactive demo and cinematic are rendered at 30Hz in Unreal Engine 4 on a desktop PC.