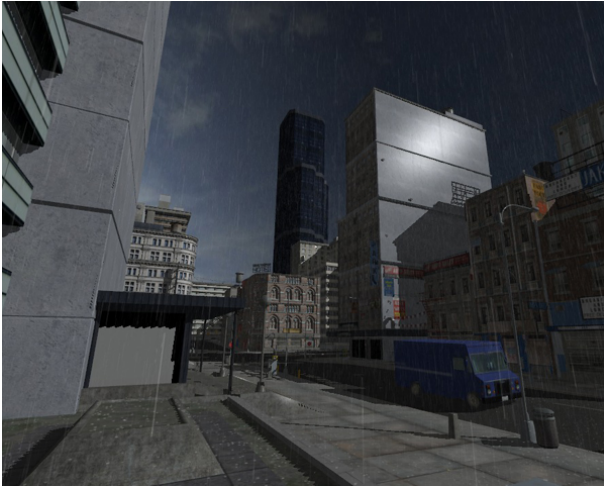


R4: Realistic Rain Rendering in Realtime

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Realistic rain simulation is a challenging problem due to the variety of different phenomena to consider. In this paper we propose a new rain rendering algorithm that extends present state of the art in the field, achieving real-time rendering of rain streaks and splashes with complex illumination effects, along with fog, halos and light glows as hints of the participating media. Our algorithm creates particles in the scene using an artist-defined storm distribution (e.g., provided as a 2D cloud distribution). Unlike previous algorithms, no restrictions are imposed on the rain area dimension or shape. Our technique adaptively samples

the storm area to simulate rain particles only in the relevant regions and only around the observer. Particle simulation is executed entirely in the graphics hardware, by placing the particles at their updated coordinates at each time-step, also checking for collisions with the scene. To render the rain streaks, we use precomputed images and combine them to achieve complex illumination effects. Several optimizations are introduced to render realistic rain with virtually millions of falling rain droplets.