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Interactive Cloud Modeling and Animation Software for Visual Effects Applications

A new, physics-based system provides artists with an intuitive, interactive, and real-time method for creating and animating realistic volumetric cloud models using modern graphics hardware.

Amorphous phenomena, like clouds and dust, elude traditional modeling techniques with their peculiar patterns of intricate, ever-changing volume-filling microstructures. Modeling these structures has been a difficult task that has been addressed in many different ways. Current techniques can produce high quality images; however, the image generation tends to be slow.

Researchers at Purdue University have developed an intuitive, interactive, physics-based system to artistically model, animate, and render visually convincing volumetric clouds using modern consumer graphics hardware. The simulation is controlled using a set of intuitive, high-level primitives. The animation of the implicit skeletal structures and independent transformation of octaves of noise emulate various environmental conditions. The resulting interactive design, rendering, and animation system produces perceptually convincing volumetric cloud models that can be used in interactive systems.

Advantages:

-Intuitive user interface

-Interactive

-Real-time object rendering

-Increased productivity of artists

Potential Applications:

-Computer technology

TRL: 6

Technology ID

64019

Category

Artificial Intelligence & Machine Learning/Multimodal & Generative Visual AI

Robotics & Automation/3D Perception & Modeling for Automation

Authors

David Ebert

Joshua Schpok

View online

Intellectual Property:

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Keywords: volumetric clouds modeling, interactive animation, physics-based rendering, real-time object rendering, consumer graphics hardware, amorphous phenomena simulation, skeletal structures animation, high-level primitives, volumetric cloud models, interactive design system, 3D Visual Exploration, Algorithm, Computer Technology, Computing Methods, Imaging

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