Feature Articles

30 A Flexible Pinhole Camera Model for Coherent Nonuniform Sampling
Voicu Popescu, Bedrich Benes, Paul Rosen, Jian Cui, and Lili Wang

The flexible pinhole camera allows modulating the sampling rate over the field of view with fine granularity. It inexpensively renders complex datasets by projection followed by rasterization. The resulting image is a coherent nonuniform sampling of the dataset that matches the local variation of the dataset’s importance.

42 The Colloidal Metamorphosis: Time Division Multiplexing of the Reflectance State
Yoichi Ochiai, Alexis Oyama, Takayuki Hoshi, and Jun Rekimoto

A display system projects ultrasound waves to change the reflection state of a screen made of a colloidal substance—soap film. The system uses time division multiplexing of the diffuse and specular states to produce realistic appearances. It employs an optical illusion that exploits the characteristics of human sight.

52 Asteroid Modeling for Testing Spacecraft Approach and Landing
Iain Martin, Steve Parkes, Martin Dunstan, and Nick Rowell

Researchers have extended and applied graphics techniques to create high-resolution asteroid models to simulate cameras and other spacecraft sensors approaching and descending toward asteroids. Scalable asteroid models are created with terrain modeling and crater simulation. They’re evaluated in comparison to real asteroids and the response to a feature-tracking algorithm.

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