SCATTERING 2007

In Conjunction with CVPR 2007

- ▶ Minneapolis, Minnesota

- ▶ June 18 2007

- ▶ IEEE and ONR International Symposium on Volumetric Scattering in Vision and Graphics
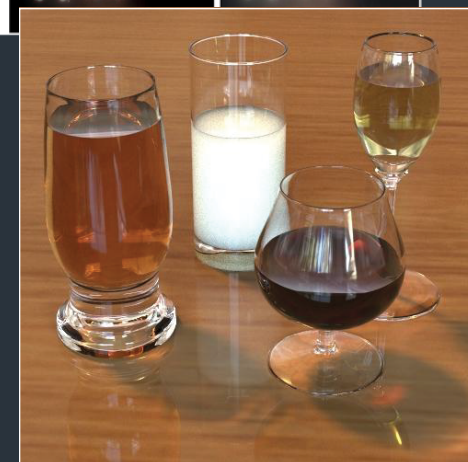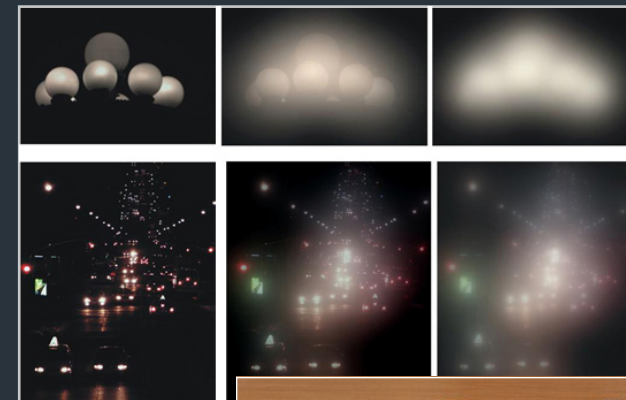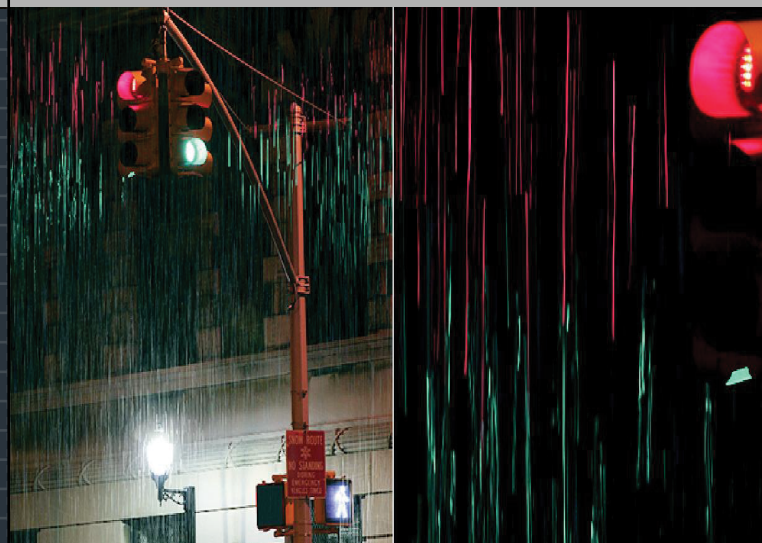
- ▶ http://vasc.ri.cmu.edu/Scattering07/

Why Volumetric Scattering?

Computer vision and graphics are multi-disciplinary fields of research with a wide spectrum of applications that impact our daily lives. Today, cameras and displays are ubiquitous and the amount of imagery generated is overwhelming. That said, most of computer generated imagery in video games, movies and scientific simulations are of scenes on clear days or nights. Volumetric scattering effects such as the beautiful fog rolling down the hills, the bluish haze of mountains, the eerie night mist, the brilliance of underwater effects, or the light streaming through clouds provide pure artistic and entertainment value. They are used in movies and paintings to portray different moods, and are captured in photographs to provide realism. Besides digital entertainment, scattering effects are also simulated for training human operators in safety, medical and hazardous situations --- pilots landing through fog, soldiers conducting reconnaissance in dusty desert terrain, divers exploring ocean depths, and doctors looking for cancerous tissue. In the absence of scattering effects, current renderings appear unnatural and cartoonish.

Analogously, most computer vision systems have not enjoyed success when deployed in uncontrolled outdoor environments. Today, modern vehicles have (semi-)automatic intelligent transportation systems that assist drivers in navigation. However, they fail to work in common bad weather conditions such as fog, snow and rain, indeed when they are most required. Similarly, field robots fail to navigate in hazardous environments such as smoke and dust, underwater exploration tasks are hindered by murky water, aerial and satellite imaging tasks are made difficult due to the presence of the atmosphere, and finally, medical image analysis is made hard due to the complex scattering properties of tissues. Unfortunately, however, most vision techniques are designed to only perform in clear air. Even with perfect performance, scattering effects are the one fundamental hurdle that can stop vision from having successful impact in these domains.

Speakers

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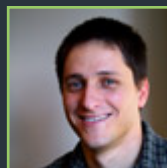School of Computer Science
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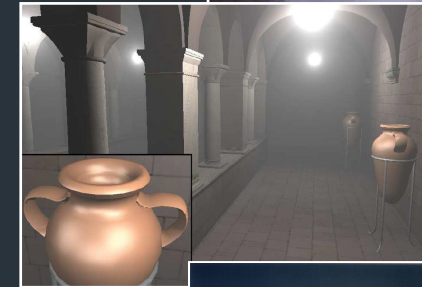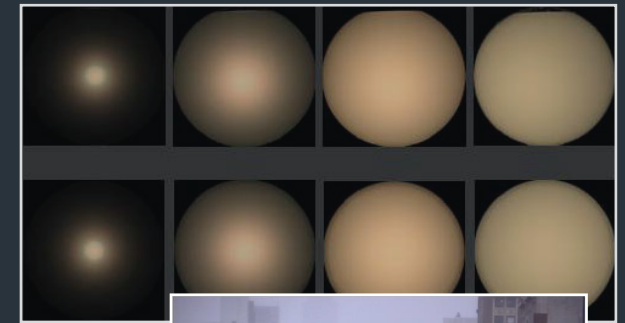Technion - Israel Institute of Technology

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