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- Friday, February 4, 2005

Image-based measurement for modeling in computer graphics

The goal of image-based measurement in Computer Graphics is to acquire highly realistic visual models of objects in our environment. I will present three applications of image-based measurement: modeling the appearance of object with significant subsurface light scattering, modeling the light reflectance of everyday objects, and modeling the visual and haptic deformation behavior of soft objects. The acquisition of models of objects which exhibit subsurface scattering is challenging because of the dependency of these objects' internal light transport on their subsurface structure. In this talk, I will present a method which captures the macroscopic visual appearance of these objects without explicitly modeling their subsurface structure. Reflectance is typically expressed on a macroscopic level by the Bidirectional Reflectance Distribution Function (BRDF) for which I will present an image-based measurement method. Macroscopic descriptions of real-world objects are also needed in deformation modeling. In this talk, I will briefly summarize a modeling method based on visual observations of object deformations including extensions to large-scale deformations as well as viscoelastic object behavior. I will conclude with an overview of some on-going projects and discuss possible directions for future work.

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