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IIT Genova, Sala Hack

Host: Alessio Del Bue



ISTITUTO ITALIANO
DI TECNOLOGIA
VISUAL GEOMETRY
AND MODELLING

Material Appearance Modelling: Rendering and Acquisition

Material appearance is a combination of geometrical shape, optical properties, and lighting environment. While we have fairly standardized ways of specifying shape and lighting, using object files from computer aided design (CAD) for the former and high dynamic range environment maps for the latter, the specification of optical properties is not as well-established. This talk is on the part of appearance specification relating to the optical properties of materials. I will discuss how to compute optical properties from a description of the physical composition of a material, and how to measure optical properties using non-invasive computer vision.

The degree of photorealism of a computer graphics rendering is highly dependent on the accuracy of the optical properties provided as input. This in turn leads to the prospect of using comparison of photographs to renderings in order to estimate the optical properties of materials. In cases where we can do a realistic rendering, we can also use it to generate data for machine learning algorithms.

The advantage in this case is that reference data is readily available, as it was provided as input for the rendering tool, or it can easily be generated by the renderer as a byproduct.

Short bio:

Jeppe Revall Frisvad is an Associate Professor at the Technical University of Denmark (DTU). He received a M.Sc.(Eng.) degree in Applied Mathematics (2004) and a Ph.D. degree in Computer Graphics (2008) from DTU. His research interests are mainly material appearance modeling, realistic rendering, and light scattering. As a highlight his work includes the first directional dipole model for subsurface scattering and his research on material appearance includes photographic measurement of the optical properties of materials and appearance printing.

<http://people.compute.dtu.dk/ierf/>