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Measuring, Modeling, and Reproducing Material Appearance

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Introduction

The rapid and continuous development of rendering devices such as displays and printers offers interesting challenges related to how materials are understood. Over the years, researchers from different disciplines have studied the interaction of incident light with the texture and surface geometry of a given object, as well as the optical properties of distinct materials. Thanks to those efforts, we have been able to render with high accuracy 2.5D and 3D objects and scenes. But given the day-to-day technological improvements of materials and devices along with the advances in the areas of visual and tactile perception, modeling how light interacts with materials, and techniques for measuring material properties, the field of material appearance is in constant evolution. This conference offers the possibility to share research results and establish new collaborations among academic and industrial researchers from these related fields.

The main topics encountered on the papers of this document correspond to any of the following categories:

Methods for measuring material properties: measurement of Bidirectional Reflectance Distribution Functions (BRDF), Bidirectional Texture Functions (BTF) and Bidirectional Surface Scattering Reflectance Distribution Function (BSSRDF); estimation of material difference perception; evaluation of metallic coatings/inks; measurement of glossiness; estimation of texture perception; data acquisition methods for different types of materials.

Models for distinct characteristics of materials: modeling of Bidirectional Reflectance Distribution Functions (BRDF), Bidirectional Texture Functions (BTF) and Bidirectional Surface Scattering Reflectance Distribution Function (BSSRDF); modeling material difference perception; appearance modeling of glossiness and texture; modeling of varnish and special effects inks; softproofing methods for 2.5D and 3D printing.

Material reproduction aspects: quality evaluation of 2.5D and 3D soft- and hard-copy reproductions (display and printing); estimation of effects of environmental aspects in material perception (lighting, observers' position, printing media); estimation of sensory input (visual, touch, audio) effect in material perception; evaluation of aesthetic aspects of 2.5D and 3D soft- and hard-copy reproductions (display and printing); saliency of 2.5D and 3D soft- and hard-copy reproductions (display and printing); imaging and perception of metallic and effect coatings/inks; saliency, quality, and aesthetics in appearance reproduction; spectral reproduction.

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