Advances in Geometry and Reflectance Acquisition

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Abstract

This tutorial is focused on acquisition methods for geometry and reflectance as well as strategies towards an efficient acquisition pipeline to fulfill the demands of industry with respect to mass digitization of 3D contents. We provide a thorough overview of the standard methods for the acquisition of both geometry and reflectance of surfaces with different types of reflectance behavior ranging from diffuse over opaque to specular surfaces or even translucent and transparent surfaces as well as the necessary preliminaries of material appearance and setup calibration. As standard acquisition techniques are only well-suited for a limited range of surface materials, we will also discuss strategies on how an efficient, fully automatic acquisition can still be achieved when no prior information with respect to the surface reflectance behavior is available. In addition, a discussion of strategies regarding an acquisition in the wild, i.e. under uncontrolled conditions, is provided.

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