Digital Representations of the Real World: How to Capture, Model, and Render Visual Reality

From A K Peters/CRC Press

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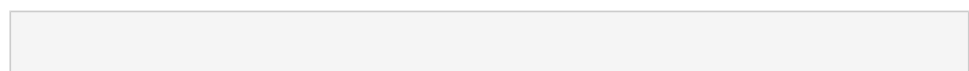*Create Genuine Visual Realism in Computer Graphics*

Digital Representations of the Real World: How to Capture, Model, and Render Visual Reality explains how to portray visual worlds with a high degree of realism using the latest video acquisition technology, computer graphics methods, and computer vision algorithms. It explores the integration of new capture modalities, reconstruction approaches, and visual perception into the computer graphics pipeline.

Understand the Entire Pipeline from Acquisition, Reconstruction, and Modeling to Realistic Rendering and Applications

The book covers sensors for capturing 3D scenes, including regular cameras, wide-angle omnidirectional cameras, active range scanners, and plenoptic (multi-viewpoint) cameras, as well as fundamental algorithms for processing the imagery, such as stereo correspondence and 3D structure and motion recovery. It describes 3D modeling techniques, from generic object models (such as 3D meshes) to more domain-specific models (such as human shape and motion models). The book also discusses how techniques, including image- and video-based rendering, meet speed and realism requirements.

Overcome Challenges in Your Own Research Experiments

This book is both an accessible introduction to the emerging research of real-world visual computing and a practical guide that shows you how to start implementing frequently encountered methods.

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Editorial Review

Review

"The scope and breadth of the techniques and systems used to capture, model, and render realistic simulacra of 3D scenes is quite daunting and can be a challenge for newcomers. This book provides an excellent introduction to and survey of this diverse field, written by some of the foremost researchers and practitioners in the field. Whether you are a novice or an experienced veteran, you are sure to discover a wealth of useful and inspiring information in these pages."
?From the Foreword by Richard Szeliski, Microsoft Research

Users Review

From reader reviews:

John Malcolm:

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Digital Representations of the Real World: How to Capture, Model, and Render Visual Reality can be one of your starter books that are good idea. Many of us recommend that straight away because this guide has good vocabulary which could increase your knowledge in terminology, easy to understand, bit entertaining but still delivering the information. The copy writer giving his/her effort to set every word into enjoyment arrangement in writing Digital Representations of the Real World: How to Capture, Model, and Render Visual Reality although doesn't forget the main point, giving the reader the hottest and also based confirm resource info that maybe you can be considered one of it. This great information can easily drawn you into brand-new stage of crucial thinking.

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