Physically Based Rendering: From Theory to Implementation

Von Matt Pharr, Greg Humphreys
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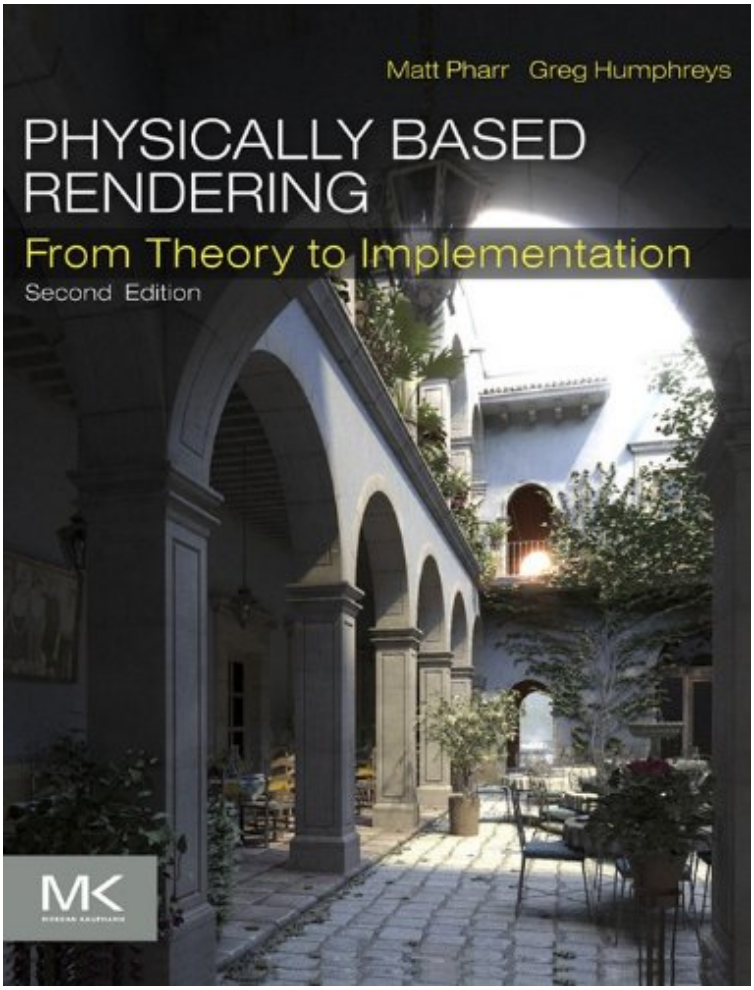

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Von Matt Pharr, Greg Humphreys : Physically Based Rendering: From Theory to Implementation before purchasing it in order to gage whether or not it would be worth my time, and all praised Physically Based Rendering: From Theory to Implementation:

KundenrezensionenHilfreichste Kundenrezensionen9 von 9 Kunden fanden die folgende Rezension hilfreich. Schnes Buch mit didaktische SchwchenVon NovoxWenn man "Physically based rendering" (2nd Edition) das erste mal aufschlgt, sticht einem zunchst das schne Layout mit der grtenteils gelungenen typographischen Gestaltung ins Auge. Das umfangreiche Inhaltsverzeichnis verheit einen umfassenden berblick ber moderne Techniken der Computergrafik. Allein, der didaktische Ansatz hinter diesem Werk scheitert leider klglich, wenn es darum geht, dem Leser echtes Verstndnis fr die behandelte Materie zu vermitteln.Das Buch ist im sogenannten Literate-Programming-Stil verfat, d.h. Code-Listings wechseln sich mit erklrenden Prosa-Texten ab. Die Code-Schnipsel stammen aus dem Raytracer pbrt der Autoren, dessen Quellcode auch auf der Website des Buches heruntergeladen werden kann. Nun mag sich Literate

Programming gut dazu eignen komplexen Quellcode zu dokumentieren und wenn man dem Buch von Anfang bis Ende folgt (und keine Fehler macht), kann man so auch eine eigene Version von pbrt selbst reimplementieren. Ob diese Version dann funktionstchtig ist, merkt man aber leider erst ganz zum Schlu.Sinnvoller wre es meiner Meinung nach gewesen, wenn die Autoren einen iterativen Weg gewhlt htten: Anstatt dem Leser vom ersten Kapitel an einen schwer zu durchblickenden, vergleichsweise komplexen State-of-the-Art-Raytracer um die Ohren zu hauen, htten sie mit einer einfachen, grundlegenden Variante beginnen sollen (Stichwort: Schwebende Kugel im Raum mit Ambient-Lighting), deren Fhigkeiten dann nach und nach ausgebaut werden wrde. So htte der CG-Neuling direkt laufenden Programmcode zur Hand den er noch dazu in allen Einzelheiten verstnde was der dauerhaften Motivation sicherlich zugute kme.Folglich kann man dieses, grundstzlich schn gemachte, Buch nur Lesern empfehlen, die bereits ber ein fundiertes Grundwissen verfgen und schon zwei, drei Raytracer selbst implementiert haben. Dann kann dieses Werk durchaus als Inspirationsquelle fr die eigene Arbeit dienen. Neulinge aber sollten besser die Finger von "Physically based rendering" lassen.0 von 0 Kunden fanden die folgende Rezension hilfreich. A great second computer graphics bookVon Martin TomasiThis is not an introductory text. A good familiarity with general computer graphics concepts, mathematical notation and C++ is assumed. That is necessary since this book has a very large scope and tries to do many things. I personally really like the way code and text are mixed in this book, it feels very natural. There is a lot of ground that is covered, from basics of ray tracing to sampling theory, transformations, shading, BRDFs and more advanced topics like Monte Carlo sampling, Metropolis light transport, subsurface scattering and so on. As for the code, the authors only use a subset of the C++ language (as I imagine everyone does, since the language is so massive) and the code is quite readable. There are some concessions made for performance, but those are generally well-explained in the accompanying text. The book has a very solid amount of illustrations that help visualize things like ray-object intersections, acceleration structures and a lot of other things. This book is a remarkable effort to make advanced computer graphics and its implementation in code accessible and It does a fantastic job at that.6 von 8 Kunden fanden die folgende Rezension hilfreich. besser geht nicht!Von freejackDieses Buch beschreibt ausfhrlich die Hintergrnde und die zweckmige Implementierung eines Renderers mit dem Ray Tracing Algorithmus. Biased Rendering wird kurz gestreift, der Schwerpunkt liegt jedoch auf physikalisch korrektem, unbiased Rendering.Es werden alle Bestandteile (Sampler, Integratoren, Metropolis Light Transport, BRDF, ...) eines Rendering Systems behandelt. Neben der Dardestellung im Buch gibt es auf der begleitenden Web-Site auch noch das komplette System im Quellcode samt zahlreichen Beispielszenen unter einer freien Lizenz. Selbst Grundlagen wie geometrische Datenstrukturen (Trees, Voxel, ...) zur effizienten Implementierung finden Platz.In einer englischen Rezension wurde folgender treffene Kommentar zu diesem Buch samt der kompletten, funktionierenden Implementierung des Renderers abgegeben: jeder, der schon mal auf Basis eines Papers etwas implementieren musste, dass auch funktioniert, wei wie sehr man dieses Werk schtzen muss!In allen Kapiteln gibt es auch noch bungen und Ideen fr Erweiterungen sowie Literaturhinweise (so gehrt es sich natrlich auch, ist jedoch leider nicht selbstvertndlich).Abschlieend sei noch das wunderschn gebundene Buch zum vergleichsweise gnstigen Preis fr so ein Spezialthema lobend erwhnt.Zu meckern gibt es also nichts wesentliches. Der pbrt-Renderer hat sich inzwischen auch als Basis fr zahlreiche Paper und Verffentlichungen etabliert. Das saubere, objektorientierte und dabei doch performante Design und die einfache Erweiterbarkeit drften die Hauptgrnde dafr sein.Nur ganz aktuelle Entwicklungen, wie z.B. Teile des Renderers mit OpenCL auf GPUs laufen lassen (die nchste Generation vom Blender Renderer wird dies nutzen, im luxrender gibt es auch erste Module dazu) oder auch SPPM ("Stochastic progressive photon mapping"), sind in diesem Grundlagenbuch noch nicht abgedeckt.

KurzbeschreibungPhysically Based Rendering, Second Edition, describes both the mathematical theory behind a modern photorealistic rendering system as well as its practical implementation. A method known as literate programming combines human-readable documentation and source code into a single reference that is specifically designed to aid comprehension. The result is a stunning achievement in graphics education. Through the ideas and software in this book, you will learn to design and employ a full-featured rendering system for creating stunning imagery. This new edition greatly refines its best-selling predecessor by streamlining all obsolete code as well as adding sections on parallel rendering and system design; animating transformations; multispectral rendering; realistic lens systems; blue noise and adaptive sampling patterns and reconstruction; measured BRDFs; and instant global illumination, as well as subsurface and multiple-scattering integrators. These updates reflect the current state-of-the-art technology, and along with the lucid pairing of text and code, ensure the book's leading position as a reference text for those working with images, whether it is for film, video, photography, digital design, visualization, or gaming.The book that won its authors a 2014 Academy Award for Scientific and Technical Achievement from the Academy of Motion Picture Arts and SciencesNew sections on subsurface scattering, Metropolis light transport, precomputed light transport, multispectral rendering, and much moreIncludes a companion site complete with source code for the rendering system described in the book, with support for Windows, OS X, and Linux: visit www.pbrt.orgCode and

text are tightly woven together through a unique indexing feature that lists each function, variable, and method on the page that they are first describedPressestimmen"Physically Based Rendering is a terrific book. It covers all the marvelous math, fascinating physics, practical software engineering, and clever tricks that are necessary to write a state-of-the-art photorealistic renderer. All of these topics are dealt with in a clear and pedagogical manner without omitting the all-important practical details."--Per Christensen Senior Software Developer, RenderMan Products Pixar Animation Studios "Intended for graduate or advanced undergraduate students in a computer graphics course, this large volume provides a comprehensive examination of complex rendering algorithms and demonstrates, through detailed examination of source code and example projects, the practical development and application of cutting edge image creation and processing software. This second edition is updated to reflect current technologies and contains updated information on relevant recent hardware improvements such as advanced multi-core processors as well as an increased focus on production graphics techniques. The text includes numerous illustrations, code examples, and formulas as well as recommendations for further reading and chapter exercises. Pharr is a principle engineer for Intel and Humphreys is an engineer for NVIDIA and a former professor of computer science at the University of Virginia."--SciTech Book News "Pharr and Humphreys' textbook is beautifully typeset, thoroughly indexed, unendingly cross-referenced, extensively illustrated, and printed in full color. Given its unconventional preparation style, this textbook stands out because of its descriptions of the tradeoffs involved in developing a complete working renderer. Although somewhat verbose at times, the discussions of design tradeoffs and performance considerations are an excellent complement to the more traditional coverage of the theory behind photorealistic rendering. C++ idioms sometimes get in the way of more elegant solutions, but their use is always reasonably justified. If you are just looking for a general introduction to image synthesis and rendering, standard graphics textbooks [2] might fit the bill; however, if you intend to develop your own renderer or try out new ideas, this textbook provides an excellent starting point."--Computing s.comPressestimmen"One can buy dozens of books on ray-tracing and physically based rendering, but when you actually sit down to write rendering code yourself, you may suddenly realize those books are only telling you half the story. At every turn you will face design and engineering decisions about everything from data structures to sampling patterns, any one of which can impact system performance drastically. Most people who have worked in the innards of rendering systems have learned this esoterica by hearsay and a lot of trial and error. Matt Pharr and Greg Humphreys have decided to tell the rest of the story, by publishing and annotating the breadth and depth of a fully functional, physically based renderer, using the literate programming approach. Applying this approach-which interleaves source code and descriptive text-to the construction and documentation of even a simple computer program can be a daunting task, but it's application here is Herculean and quite possibly historic. In spite of their attention to engineering detail, the authors haven't skimped on their coverage of the theoretical underpinnings of physically based rendering. Their chapters on sampling theory and material models are among the best in print. However, the inclusion of a working artifact that implements the theory using corresponding notation and structure is an incomparable learning and teaching tool." -Dan Goldman, computer graphics supervisor for visual effects "We have been using early versions of this book and its accompanying source code in our graduate courses and in our research for the past two semesters, and we've been thrilled with them. The book has an excellent blend of the theoretical and practical information needed to build an efficient physically based renderer. Much of the information contained in the book is not available in any other reference book; an example is the description of practical methods for anisotropic filtering. The code that accompanies the book satisfies at least as great a need-it's well written, well commented, and strikes a good balance between performance and extensibility. As a result, we have already adopted the code as the software infrastructure for two different research projects within our group. I enthusiastically recommend that any researcher or practioner who works on rendering systems buy a copy of this book." -Bill Mark, Assistant Professor, University of Texas at Austin "This book is the only place to my knowledge where the implementation details of several advanced global illumination algorithms are actually shown. Not only details, but code! That is a tremendous benefit to the community and a major strength of the book." -Timothy Purcell, Stanford University / NVIDIA "Designing and implementing a production-quality ray tracer that is based on the physical principles of light transport is difficult. Writing a book that clearly explains the underlying principles and algorithms, from radiative transfer theory to Loop subdivision and photon mapping, is hard. Combining these explanations with source code using Knuth's literate programming methodology to produce a beautifully-designed, full-featured, and wonderfully extensible rendering system might seem NP-hard, but this book proves that it can be done. Whether you are a computer science student or computer graphics researcher, there is simply no better book on the topic." -Ian Ashdown, President, byHeart Consultants Limited "A good textbook should inspire, and inform the reader and allow him or her to go beyond the covers of the book. Matt and Greg have done a yeoman's job of creating a very comprehensive source of knowledge on the topics of global illumination and physically based rendering. The book certainly informs the reader. It does not simplify the material and that is a good thing. Rather, through careful exposition and very useful illustrations it provides several learning aids. There are several chapters on several fundamental topics replete with examples, figures and illustrations. Also, the treatment of various algorithms is simultaneously both comprehensive and in great depth. Most importantly, the book relies on a carefully developed programming environment that allows the reader to

experiment. pbrt is easy to use and yet allows for rendition of complex scenes. As a result one can learn the material in a pedagogically sound way and also venture beyond the confines of the text. It is easy to be inspired by the effort. I have used a version of the book and software as a text for an advanced course in computer graphics. Both my students and I found the text very useful." -Raghu Machiraju, Associate Professor, Department of Computer Science and Engineering, The Ohio State University "This book is a great tool for anyone looking to get into advanced ray tracing techniques. It is the best guide to architecting a photorealistic renderer that I have seen." -Brian Budge, Ph.D. student, graphics and visualization research group, UC Davis