

Advanced Computer Graphics Using Opengl Sven Maerivoet

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Computer Graphics - F.S. Jr Hill 2001

This text combines the principles and major techniques in computer graphics with state-of-the-art examples that relate to things students and professionals see every day on the Internet and in computer-generated movies. The author has written a highly practical and exceptionally accessible text, thorough and integrated in approach. Concepts are carefully presented, underlying mathematics are explained, and the importance of each concept is highlighted. This book shows the reader how to translate the math into program code and shows the result. This new edition provides readers with the most current information in the field of computer graphics. *NEW-Uses OpenGL as the supporting software-An appendix explains how to obtain it (free downloads) and how to install it on a wide variety of platforms. *NEW-Uses C++ as the underlying programming language. Introduces useful classes for graphics but does not force a rigid object-oriented posture. *NEW-Earlier and more in-depth treatment of 3D graphics and the underlying mathematics. *NEW-Updates all content to reflect the advances in the field. *NEW-Extensive case studies at the end of each chapter. graphics. *NEW-A powerful Scene Design Language (SDL) is introduced and described; C++ code for the SDL interpreter is available on the book's Web site. *NEW-An Appendix on the PostScript language shows how this powerful page layout language operates. *Lays out the links between a concept, underlying mathematics, program coding, and the result. *Includes an abundance of state-of-the-art worked examples. *Provides a Companion Web site <http://www.prenhall.com/hil> *Realistic Image Synthesis Using Photon Mapping* - Henrik Wann Jensen 2009-01-05

Photon mapping, an extension of ray tracing, makes it possible to efficiently simulate global illumination in complex scenes. Photon mapping can simulate caustics (focused light, like shimmering waves at the bottom of a swimming pool), diffuse inter-reflections (e.g., the "bleeding" of colored light from a red wall onto a white floor, giving the floor a reddish tint), and participating media (such as clouds or smoke). This book is a practical guide to photon mapping; it provides the theory and practical insight necessary to implement photon mapping and simulate all types of direct and indirect illumination efficiently.

Advanced Global Illumination - Philip Dutre 2018-10-24

This book provides a fundamental understanding of global illumination algorithms. It discusses a broad class of algorithms for realistic image synthesis and introduces a theoretical basis for the algorithms presented. Topics include: physics of light transport, Monte Carlo methods, general strategies for solving the rendering equation, stochastic path-tracing algorithms such as ray tracing and light tracing, stochastic radiosity including photon density estimation and hierarchical Monte Carlo radiosity, hybrid algorithms, metropolis light transport, irradiance caching, photon mapping and instant radiosity, beyond the rendering equation, image display and human perception. If you want to design and implement a global illumination rendering system or need to use and modify an existing system for your specific purpose, this book will give you the tools and the understanding to do so.

Workshop on Traffic and Granular Flow - Dietrich E. Wolf 1996

Realistic Ray Tracing, Second Edition - Peter Shirley 2008-12-19

Concentrating on the "nuts and bolts" of writing ray tracing programs, this new and revised edition emphasizes practical and implementation issues and

takes the reader through all the details needed to write a modern rendering system. Most importantly, the book adds many C++ code segments, and adds new details to provide the reader with a better intuitive understanding of ray tracing algorithms.

Computer Graphics, C Version - Donald Hearn 1997

Reflecting the rapid expansion of the use of computer graphics and of C as a programming language of choice for implementation, this new version of the best-selling Hearn and Baker text converts all programming code into the C language. Assuming the reader has no prior familiarity with computer graphics, the authors present basic principles for design, use, and understanding of computer graphics systems. The authors are widely considered authorities in computer graphics, and are known for their accessible writing style.

C++ FAQs - Marshall P. Cline 1995

The best quick-reference source for answers to everyday C++ programming problems, invaluable for all C++ programmers. Includes information on C++FAQ, one of the most-accessed Internet files, extensive examples, and cross-referencing. Question-and-answer format covers a wide range of topics. Traffic and Granular Flow '03 - Serge P. Hoogendoorn 2007-08-15

These proceedings are the fifth in the series Traffic and Granular Flow, and we hope they will be as useful a reference as their predecessors. Both the realistic modelling of granular media and traffic flow present important challenges at the borderline between physics and engineering, and enormous progress has been made since 1995, when this series started. Still the research on these topics is thriving, so that this book again contains many new results. Some highlights addressed at this conference were the influence of long range electric and magnetic forces and ambient fluids on granular media, new precise traffic measurements, and experiments on the complex decision making of drivers. No doubt the "hot topics" addressed in granular matter research have diverged from those in traffic since the days when the obvious analogies between traffic jams on highways and dissipative clustering in granular flow intrigued both communities alike. However, now just this diversity became a stimulating feature of the conference. Many of us feel that our joint interest in complex systems, where many simple agents, be it vehicles or particles, give rise to surprising and fascinating phenomena, is ample justification for bringing these communities together: Traffic and Granular Flow has fostered cooperation and friendship across the scientific disciplines.

Transport Science and Technology - Konstadinos G. Goulias 2006-12-14

Offers a sample of the papers presented at the Transport Science and Technology Congress, Athens 2004. Organized into four parts, this book adopts a global perspective with papers from the Americas, Asia and Europe. It aims to demonstrate the developments in merging scientific and technological discoveries to solve transportation problems.

Computer Graphics Through OpenGL® - Sumanta Guha 2018-12-19

COMPREHENSIVE COVERAGE OF SHADERS AND THE PROGRAMMABLE PIPELINE From geometric primitives to animation to 3D modeling to lighting, shading and texturing, *Computer Graphics Through OpenGL®: From Theory to Experiments* is a comprehensive introduction to computer graphics which uses an active learning style to teach key concepts. Equally emphasizing theory and practice, the book provides an understanding not only of the principles of 3D computer graphics, but also the use of the

OpenGL® Application Programming Interface (API) to code 3D scenes and animation, including games and movies. The undergraduate core of the book takes the student from zero knowledge of computer graphics to a mastery of the fundamental concepts with the ability to code applications using fourth-generation OpenGL®. The remaining chapters explore more advanced topics, including the structure of curves and surfaces, applications of projective spaces and transformations and the implementation of graphics pipelines. This book can be used for introductory undergraduate computer graphics courses over one to two semesters. The careful exposition style attempting to explain each concept in the simplest terms possible should appeal to the self-study student as well. Features • Covers the foundations of 3D computer graphics, including animation, visual techniques and 3D modeling • Comprehensive coverage of OpenGL® 4.x, including the GLSL and vertex, fragment, tessellation and geometry shaders • Includes 180 programs with 270 experiments based on them • Contains 750 exercises, 110 worked examples, and 700 four-color illustrations • Requires no previous knowledge of computer graphics • Balances theory with programming practice using a hands-on interactive approach to explain the underlying concepts

3001 - Arthur C. Clarke 2012-11-30

The mysteries of the monoliths are revealed in this inspired conclusion to the Hugo Award–winning Space Odyssey series—“there are marvels aplenty” (The New York Times). On an ill-fated mission to Jupiter in 2001, the mutinous supercomputer HAL sent crewmembers David Bowman and Frank Poole into the frozen void of space. Bowman’s strange transformation into a Star Child is traced through the novels 2010 and 2061. But now, a thousand years after his death, Frank Poole is brought back to life—and thrust into a world far more technically advanced than the one he left behind. Poole discovers a world of human minds interfacing directly with computers, genetically engineered dinosaur servants, and massive space elevators built around the equator. He also discovers an impending threat to humanity lurking within the enigmatic monoliths. To fight it, Poole must join forces with Bowman and HAL, now fused into one corporeal consciousness—and the only being with the power to thwart the monoliths’ mysterious creators. “3001 is not just a page-turner, plugged in to the great icons of HAL and the monoliths, but a book of wisdom too, pithy and provocative.” —New Scientist