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KEY=REAL - LILLY KRAMER

The Morgan Kaufmann Series in Interactive 3D Technology Real-Time Collision Detection CRC Press *Written by an expert in the game industry, Christer Ericson's new book is a comprehensive guide to the components of efficient real-time collision detection systems. The book provides the tools and know-how needed to implement industrial-strength collision detection for the highly detailed dynamic environments of applications such as 3D games, virtual reality applications, and physical simulators. Of the many topics covered, a key focus is on spatial and object partitioning through a wide variety of grids, trees, and sorting methods. The author also presents a large collection of intersection and distance tests for both simple and complex geometric shapes. Sections on vector and matrix algebra provide the background for advanced topics such as Voronoi regions, Minkowski sums, and linear and quadratic programming. Of utmost importance to programmers but rarely discussed in this much detail in other books are the chapters covering numerical and geometric robustness, both essential topics for collision detection systems. Also unique are the chapters discussing how graphics hardware can assist in collision detection computations and on advanced optimization for modern computer architectures. All in all, this comprehensive book will become the industry standard for years to come.* **X3D Extensible 3D Graphics for Web Authors Elsevier** *In the early days of the Web a need was recognized for a language to display 3D objects through a browser. An HTML-like language, VRML, was proposed in 1994 and became the standard for describing interactive 3D objects and worlds on the Web. 3D Web courses were started, several best-selling books were published, and VRML continues to be used today. However VRML, because it was based on HTML, is a stodgy language that is not easy to incorporate with other applications and has been difficult to add features to. Meanwhile, applications for interactive 3D graphics have been exploding in areas such as medicine, science, industry, and entertainment. There is a strong need for a set of modern Web-based technologies, applied within a standard extensible framework, to enable a new generation of modeling & simulation applications to emerge, develop, and interoperate. X3D is the next generation open standard for 3D on the web. It is the result of several years of development by the Web 3D Consortium's X3D Task Group. Instead of a large monolithic specification (like VRML), which requires full adoption for compliance, X3D is a component-based architecture that can support applications ranging from a simple non-interactive animation to the latest streaming or rendering applications. X3D replaces VRML, but also provides compatibility with existing VRML content and browsers. Don Brutzman organized the first symposium on VRML and is playing a similar role with X3D; he is a founding member of the consortium. Len Daly is a professional member of the consortium and both Len and Don have been involved with the development of the standard from the start. The first book on the new way to present interactive 3D content over the Web, written by two of the designers of the standard Plentiful illustrations and screen shots in the full color text Companion website with extensive content, including the X3D specification, sample code and applications, content creation tools, and demos of compatible Web browsers* **Visualizing Quaternions Elsevier** *Introduced 160 years ago as an attempt to generalize complex numbers to higher dimensions, quaternions are now recognized as one of the most important concepts in modern computer graphics. They offer a powerful way to represent rotations and compared to rotation matrices they use less memory, compose faster, and are naturally suited for efficient interpolation of rotations. Despite this, many practitioners have avoided quaternions because of the mathematics used to understand them, hoping that some day a more intuitive description will be available. The wait is over. Andrew Hanson's new book is a fresh perspective on quaternions. The first part of the book focuses on visualizing quaternions to provide the intuition necessary to use them, and includes many illustrative examples to motivate why they are important—a beautiful introduction to those wanting to explore quaternions unencumbered by their mathematical aspects. The second part covers the all-important advanced applications, including quaternion curves, surfaces, and volumes. Finally, for those wanting the full story of the mathematics behind quaternions, there is a gentle introduction to their four-dimensional nature and to Clifford Algebras, the all-encompassing framework for vectors and quaternions. Richly illustrated introduction for the developer, scientist, engineer, or student in computer graphics, visualization, or entertainment computing. Covers both non-mathematical and mathematical approaches to quaternions.* **Game Physics Engine Development How to Build a Robust Commercial-Grade Physics Engine for your Game CRC Press** *Physics is really important to game programmers who need to know how to add physical realism to their games. They need to take into account the laws of physics when creating a simulation or game engine, particularly in 3D computer graphics, for the purpose of making the effects appear more real to the observer or player.The game engine needs to recognize the physical properties of objects that artists create, and combine them with realistic motion. The physics ENGINE is a computer program that you work into your game that simulates Newtonian physics and predict effects under different conditions. In video games, the physics engine uses real-time physics to improve realism. This is the only book in its category to take readers through the process of building a complete game-ready physics engine from scratch. The Cyclone game engine featured in the book was written specifically for this book and has been utilized in iPhone application development and Adobe Flash projects. There is a good deal of master-class level information available, but almost nothing in any format that teaches the basics in a practical way. The second edition includes NEW and/or revised material on collision detection, 2D physics, casual game physics for Flash games, more references, a glossary, and end-of-chapter exercises. The companion website will include the full source code of the Cyclone physics engine, along with example applications that show the physics system in operation.* **Artificial Intelligence for Games CRC Press** *Creating robust artificial intelligence is one of the greatest challenges for game developers, yet the commercial success of a game is often dependent upon the quality of the AI. In this book, Ian Millington brings extensive professional experience to the problem of improving the quality of AI in games. He describes numerous examples from real games and explores the underlying ideas through detailed case studies. He goes further to introduce many techniques little used by developers today. The book's associated web site contains a library of C++ source code and demonstration programs, and a complete commercial source code library of AI algorithms and techniques. "Artificial Intelligence for Games - 2nd edition" will be highly useful to academics teaching courses on game AI, in that it includes exercises with each chapter. It will also include new and expanded coverage of the following: AI-oriented gameplay; Behavior driven AI; Casual games (puzzle games). Key Features * The first comprehensive, professional tutorial and reference to implement true AI in games written by an engineer with extensive industry experience. * Walks through the entire development process from beginning to end. * Includes examples from over 100 real games, 10 in-depth case studies, and web site with sample code.* **3D Game Engine Design A Practical Approach to Real-Time Computer Graphics CRC Press** *A major revision of the international bestseller on game programming!Graphics hardware has evolved enormously in the last decade. Hardware can now be directly controlled through techniques such as shader programming, which requires an entirely new thought process of a programmer. 3D Game Engine Design, Second Edition shows step-by-step how to make* **Collision Detection in Interactive 3D Environments CRC Press** *The heart of any system that simulates the physical interaction between objects is collision detection-the ability to detect when two objects have come into contact. This system is also one of the most difficult aspects of a physical simulation to implement correctly, and invariably it is the main consumer of CPU cycles. Practitioners, new to the field or otherwise, quickly discover that the attempt to build a fast, accurate, and robust collision detection system takes them down a long path fraught with perils and pitfalls unlike most they have ever encountered. Without in-depth knowledge and understanding of the issues associated with engineering a collision detection system, the end of that path is an abyss that has swallowed many a good programmer! Gino van den Bergen's new book is the story of his successful journey down that path. The outcome is his well-known collision detection system, the SOftware Library for Interference Detection (SOLID). Along the way, he covers the topics of vector algebra and geometry, the various geometric primitives of interest in a collision system, the powerful method of separating axes for the purposes of intersection testing, and the equally powerful Gilbert-Johnson-Keerthi (GJK) algorithm for computing the distance between convex objects. But this book provides much more than a good compendium of the ideas that go into building a collision system. The curse of practical computational geometry is floating-point arithmetic. Algorithms with straightforward implementations when using exact arithmetic can have catastrophic failures in a floating-point system. Specifically, intersection and distance algorithms implemented in a floating-point system tend to fail exactly in the most important case in a collision system-when two objects are just touching. Great care must be taken to properly handle floating-point round off errors. Gino's ultimate accomplishment in this book is his presentation on how to correctly implement the GJK distance algorithm in the presence of single-precision floating-point arithmetic. And what better way to illustrate this than with a case study, the final chapter on the design and implementation of SOLID. About the CD-ROM The companion CD-ROM includes the full C++ source code of SOLID 3.5 as well as API documentation in HTML and PDF formats. Both single (32bit) and double (64bit) precision versions of the SOLID SDK plus example programs can be compiled for Linux platforms using GNU g++ version 2.95 to 3.3 and for Win32 platforms using Microsoft Visual C++ version 6.0 to 7.1. Use of the SOLID source code is governed by the terms of either the GNU GPL or the Trolltech QPL (see CD-ROM documentation for details). About the Author Gino van den Bergen is a game developer living and working in The Netherlands. He is the creator of SOLID and holds a Ph.D. in computing science from Eindhoven University of Technology. Gino implemented collision detection and physics in NaN Technologies' Blender, a creation suite for interactive 3D content.* **The Morgan Kaufmann Series in Interactive 3D Technology Visualizing Quaternions** *Introduced 160 years ago as an attempt to generalize complex numbers to higher dimensions, quaternions are now recognized as one of the most important concepts in modern computer graphics. They offer a powerful way to represent rotations and compared to rotation matrices they use less memory, compose faster, and are naturally suited for efficient interpolation of rotations. Despite this, many practitioners have avoided quaternions because of the mathematics used to understand them, hoping that some day a more intuitive description will be available. The wait is over. Andrew Hanson's new book is a fresh perspective on quaternions. The first part of the book focuses on visualizing quaternions to provide the intuition necessary to use them, and includes many illustrative examples to motivate why they are important-a beautiful introduction to those wanting to explore quaternions unencumbered by their mathematical aspects. The second part covers the all-important advanced applications, including quaternion curves, surfaces, and volumes. Finally, for those wanting the full story of the mathematics behind quaternions, there is a gentle introduction to their four-dimensional nature and to Clifford Algebras, the all-encompassing framework for vectors and quaternions. * Richly illustrated introduction for the developer, scientist, engineer, or student in computer graphics, visualization, or entertainment computing. * Covers both non-mathematical and mathematical approaches to quaternions. * Companion website with an assortment of quaternion utilities and sample code, data sets for the book's illustrations, and Mathematica notebooks with essential algebraic utilities.* **Level of Detail for 3D Graphics Morgan Kaufmann** *Written by recognized LOD leaders, this is a coherent, state-of-the-art account of cutting-edge LOD research and development. This complete resource enables programmers to incorporate LOD technology into their own systems.* **Artificial Intelligence for Games CRC Press** *Creating robust artificial intelligence is one of the greatest challenges for game developers, yet the commercial success of a game is often dependent upon the quality of the AI. In this book, Ian Millington brings extensive professional experience to the problem of improving the quality of AI in games. He describes numerous examples from real games and explores the underlying ideas through detailed case studies. He goes further to introduce many techniques little used by developers today. The book's associated web site contains a library of C++ source code and demonstration programs, and a complete commercial source code library of AI algorithms and techniques. "Artificial Intelligence for Games - 2nd edition" will be highly useful to academics teaching courses on game AI, in that it includes exercises with each chapter. It will also include new and expanded coverage of the following: AI-oriented gameplay; Behavior driven AI; Casual games (puzzle games).* **Essential Mathematics for Games and Interactive Applications A Programmer's Guide, Second Edition CRC Press** *Essential Mathematics for Games and Interactive Applications, 2nd edition presents the core mathematics necessary for sophisticated 3D graphics and interactive physical simulations. The book begins with linear algebra and matrix multiplication and expands on this foundation to cover such topics as color and lighting, interpolation, animation and basic game physics. Essential Mathematics focuses on the issues of 3D game development important to programmers and includes optimization guidance throughout. The new edition Windows code will now use Visual Studio.NET. There will also be DirectX support*

provided, along with OpenGL - due to its cross-platform nature. Programmers will find more concrete examples included in this edition, as well as additional information on tuning, optimization and robustness. The book has a companion CD-ROM with exercises and a test bank for the academic secondary market, and for main market: code examples built around a shared code base, including a math library covering all the topics presented in the book, a core vector/matrix math engine, and libraries to support basic 3D rendering and interaction. **Real-Time Collision Detection CRC Press** *Written by an expert in the game industry, Christer Ericson's new book is a comprehensive guide to the components of efficient real-time collision detection systems. The book provides the tools and know-how needed to implement industrial-strength collision detection for the highly detailed dynamic environments of applications such as 3D games, virt* **3D Graphics for Game Programming CRC Press** *Designed for advanced undergraduate and beginning graduate courses, 3D Graphics for Game Programming presents must-know information for success in interactive graphics. Assuming a minimal prerequisite understanding of vectors and matrices, it also provides sufficient mathematical background for game developers to combine their previous experience in graphics API and shader programming with the background theory of computer graphics. Well organized and logically presented, this book takes its organizational format from GPU programming and presents a variety of algorithms for programmable stages along with the knowledge required to configure hard-wired stages. Easily accessible, it offers a wealth of elaborate 3D visual presentations and includes additional theoretical and technical details in separate shaded boxes and optional sections. Maintaining API neutrality throughout to maximize applicability, the book gives sample programs to assist in understanding. Full PowerPoint files and additional material, including video clips and lecture notes with all of the figures in the book, are available on the book's website: http://media.korea.ac.kr/book* **3D Game Engine Architecture Engineering Real-time Applications with Wild Magic Learning Processing A Beginner's Guide to Programming Images, Animation, and Interaction Newnes** *Learning Processing, Second Edition, is a friendly start-up guide to Processing, a free, open-source alternative to expensive software and daunting programming languages. Requiring no previous experience, this book is for the true programming beginner. It teaches the basic building blocks of programming needed to create cutting-edge graphics applications including interactive art, live video processing, and data visualization. Step-by-step examples, thorough explanations, hands-on exercises, and sample code, supports your learning curve. A unique lab-style manual, the book gives graphic and web designers, artists, and illustrators of all stripes a jumpstart on working with the Processing programming environment by providing instruction on the basic principles of the language, followed by careful explanations of select advanced techniques. The book has been developed with a supportive learning experience at its core. From algorithms and data mining to rendering and debugging, it teaches object-oriented programming from the ground up within the fascinating context of interactive visual media. This book is ideal for graphic designers and visual artists without programming background who want to learn programming. It will also appeal to students taking college and graduate courses in interactive media or visual computing, and for self-study. A friendly start-up guide to Processing, a free, open-source alternative to expensive software and daunting programming languages No previous experience required—this book is for the true programming beginner! Step-by-step examples, thorough explanations, hands-on exercises, and sample code supports your learning curve* **Computer Graphics BoD – Books on Demand** *Computer graphics is now used in various fields; for industrial, educational, medical and entertainment purposes. The aim of computer graphics is to visualize real objects and imaginary or other abstract items. In order to visualize various things, many technologies are necessary and they are mainly divided into two types in computer graphics: modeling and rendering technologies. This book covers the most advanced technologies for both types. It also includes some visualization techniques and applications for motion blur, virtual agents and historical textiles. This book provides useful insights for researchers in computer graphics.* **3D Math Primer for Graphics and Game Development, 2nd Edition CRC Press** *This engaging book presents the essential mathematics needed to describe, simulate, and render a 3D world. Reflecting both academic and in-the-trenches practical experience, the authors teach you how to describe objects and their positions, orientations, and trajectories in 3D using mathematics. The text provides an introduction to mathematics for game designers, including the fundamentals of coordinate spaces, vectors, and matrices. It also covers orientation in three dimensions, calculus and dynamics, graphics, and parametric curves.* **Game Design Issues, Trend and Challenges (UTeM Press) UTeM Press** *Game Design Issues, Trend and Challenges is a book of chapter containing articles written by some authors who have been involved in research related to game design. The contents of this book begins with the presentation of issues in game design, in the game design trend and end up with challenges in game design in the future. This book is expected to be a reference to students, researchers and individuals involved directly in the game design industry or who are interested in the field of game development.* **Open World Collision Detection in Computer Games Development (UTeM Press) UTeM Press** *Open world games have tremendously become a demanding criterion for computer games development as user be able to freely roam through land and sea virtually. One of the elements involving computer games development is to bring applicable real-time collision detection for each object. Collision detection required sophisticated process of using hierarchical approach of Bounding-Volume Hierarchies (BVH) for detecting procedure. BVH is one of the most challenging issues in collision detection area that critically undergoing multiple splitting process. Splitting process requires an object with their set of triangles to be split into two parts using binary type tree. It is very crucial to make sure that the BVH tree construction is always in balanced as the speed of BVH tree traversal algorithm is dropped for unbalanced tree. In this thesis, we introduced Spatial Object Median Splitting (SOMS) to enhance the capability of BVH construction. Hence, SOMS creates an optimum level of BVH where most leaf nodes that was bounded with AABB contained one triangle compared to Spatial Median technique. From the BVH construction experiments, SOMS managed to perform faster as compared to other common technique. Furthermore, experiment to create one BV one triangle also showed that SOMS produced more nodes. As a conclusion, BVH can easily be constructed using SOMS approach together to create higher level of balanced tree for collision detection.* **Physically Based Rendering From Theory to Implementation Elsevier** *Rendering is a crucial component of computer graphics— the conversion of a description of a 3D scene into an image for display. Algorithms for animation, geometric modeling, and texturing all must feed their results through some sort of rendering process for the results to be visible in an image. Focusing on realistic images, physically based rendering incorporates ideas from a range of disciplines, including physics, biology, psychology, cognitive science, and mathematics. This book presents the algorithms of modern photorealistic rendering and follows step by step the creation of a complete rendering system. As each new rendering concept is introduced it is also shown implemented in code—there is no better way to understand the subtle and complex process of rendering. The code itself is highly readable, written in the literate programming style that mixes text describing the system with the code that implements it. The result is a stunning achievement in graphics education for students, professionals, and researchers. *CD-ROM with the source code for a complete rendering system for Windows, OS X, & Linux—with many examples of images created by the system throughout the 4 color text *The code and text are tightly woven together through the technique of literate programming with a unique indexing feature that lists all locations of functions, variables, and methods on the page they are first described *The most complete guide to understanding, designing, and building a rendering system* **Game Physics CRC Press** *CD ROM contains a snapshot of the full distribution of source code, documentation and supporting materials located at the Magic Software Inc. website. --Inside cover.* **3D Game Engine Architecture Engineering Real-time Applications with Wild Magic Mobile 3D Graphics with OpenGL ES and M3G Elsevier** *Graphics and game developers must learn to program for mobility. This book will teach you how. "This book - written by some of the key technical experts...provides a comprehensive but practical and easily understood introduction for any software engineer seeking to delight the consumer with rich 3D interactive experiences on their phone. Like the OpenGL ES and M3G standards it covers, this book is destined to become an enduring standard for many years to come." - Lincoln Wallen, CTO, Electronic Arts, Mobile "This book is an escalator, which takes the field to new levels. This is especially true because the text ensures that the topic is easily accessible to everyone with some background in computer science...The foundations of this book are clear, and the authors are extremely knowledgeable about the subject. - Tomas Akenine-Möller, bestselling author and Professor of Computer Science at Lund University "This book is an excellent introduction to M3G. The authors are all experienced M3G users and developers, and they do a great job of conveying that experience, as well as plenty of practical advice that has been proven in the field." - Sean Ellis, Consultant Graphics Engineer, ARM Ltd The exploding popularity of mobile computing is undeniable. From cell phones to portable gaming systems, the global demand for multifunctional mobile devices is driving amazing hardware and software developments. 3D graphics are becoming an integral part of these ubiquitous devices, and as a result, Mobile 3D Graphics is arguably the most rapidly advancing area of the computer graphics discipline. Mobile 3D Graphics is about writing real-time 3D graphics applications for mobile devices. The programming interfaces explained and demonstrated in this must-have reference enable dynamic 3D media on cell phones, GPS systems, portable gaming consoles and media players. The text begins by providing thorough coverage of background essentials, then presents detailed hands-on examples, including extensive working code in both of the dominant mobile APIs, OpenGL ES and M3G. C/C++ and Java Developers, graphic artists, students, and enthusiasts would do well to have a programmable mobile phone on hand to try out the techniques described in this book. The authors, industry experts who helped to develop the OpenGL ES and M3G standards, distill their years of accumulated knowledge within these pages, offering their insights into everything from sound mobile design principles and constraints, to efficient rendering, mixing 2D and 3D, lighting, texture mapping, skinning and morphing. Along the way, readers will benefit from the hundreds of included tips, tricks and caveats. Written by experts at Nokia whose workshops at industry conferences are blockbusters The programs used in the examples are featured in thousands of professional courses each year* **The British National Bibliography Better Game Characters by Design A Psychological Approach CRC Press** *Games are poised for a major evolution, driven by growth in technical sophistication and audience reach. Characters that create powerful social and emotional connections with players throughout the game-play itself (not just in cut scenes) will be essential to next-generation games. However, the principles of sophisticated character design and interaction are not widely understood within the game development community. Further complicating the situation are powerful gender and cultural issues that can influence perception of characters. Katherine Isbister has spent the last 10 years examining what makes interactions with computer characters useful and engaging to different audiences. This work has revealed that the key to good design is leveraging player psychology: understanding what's memorable, exciting, and useful to a person about real-life social interactions, and applying those insights to character design. Game designers who create great characters often make use of these psychological principles without realizing it. Better Game Characters by Design gives game design professionals and other interactive media designers a framework for understanding how social roles and perceptions affect players' reactions to characters, helping produce stronger designs and better results.* **Rendering ebook Collection Ultimate CD Elsevier** *Rendering ebook Collection contains 4 of our best-selling titles, providing the ultimate reference for every computer graphics and gaming professional's library. Get access to over 2500 pages of reference material, at a fraction of the price of the hard-copy books. This CD contains the complete ebooks of the following 4 titles: Raghavachary, Rendering for Beginners: Image synthesis using RenderMan, 9780240519357 Pharr and Humphreys, Physically Based Rendering, 9780125531801 Luebke, Level of Detail for 3D Graphics, 9781558608382 Strothotte, Non-photorealistic Computer Graphics, 9781558607873 *Four fully searchable titles on one CD providing instant access to the ULTIMATE library of engineering materials for graphics professionals *2500 pages of practical and theoretical animation information in one portable package. *Incredible value at a fraction of the cost of the print books* **Collision Detection in Interactive 3D Environments: CD-ROM Agent and Multi-Agent Systems: Technologies and Applications 5th KES International Conference, KES-AMSTA 2011, Manchester, UK, June 29 -- July 1, 2011, Proceedings Springer** *This book constitutes the refereed proceedings of the 5th KES International Conference on Agent and Multi-Agent Systems, KES-AMSTA 2011, held in Manchester, UK, in June/July 2011. The 69 revised papers presented were carefully reviewed and selected for inclusion in the book. In addition the volume contains one abstract and one full paper length keynote speech. The papers are organized in topical sections on conversational agents, dialogue systems and text processing; agents and online social networks; robotics and manufacturing; agent optimisation; negotiation and security; multi-agent systems; mining and profiling; agent-based optimization; doctoral track; computer-supported social intelligence for human interaction; digital economy; and intelligent workflow, cloud computing and systems.* **Visual Thinking for Information Design Morgan Kaufmann** *Visual Thinking for Information Design, Second Edition brings the science of perception to the art of design. The book takes what we now know about perception, cognition and attention and transforms it into concrete advice that students and designers can directly apply. It demonstrates how designs can be considered as tools for cognition and extensions of the viewer's brain in much the same way that a hammer is an extension of the user's hand. The book includes hundreds of examples, many in the form of integrated text and full-color diagrams. Renamed from the first edition, Visual Thinking for Design, to more accurately reflect its focus on infographics, this timely revision has been updated throughout and includes more content on pattern perception, the addition of new material illustrating color assimilation, and a new chapter devoted to communicating ideas through images. Presents visual thinking as a complex process that can be supported in every stage using specific design techniques Provides practical, task-oriented information for designers and software developers charged with design responsibilities Includes hundreds of examples, many in the form of integrated text and full-color diagrams Steeped in the principles of "active vision, which views graphic designs as cognitive tools Features a new chapter titled Communicating Ideas with Images that focuses on a new emerging theory of human cognition and how that theory, which deals with the construction and refinement of predictive mental models in the mind, provides a solid foundation for reasoning about what should go into a presentation* **Information Visualization Perception for Design Elsevier** "*This is a book about what the science of perception can tell us about visualization. There is a gold mine of information about how we see to be found in more than a century of work by vision researchers. The purpose of this book is to extract from that large body of research literature those design principles that apply to displaying information effectively*"-- **Methods and Applications for Advancing Distance Education Technologies: International Issues and Solutions International Issues and Solutions IGI Global** *Provides communication technologies, intelligent technologies, and quality educational pedagogy for advancing distance education for both teaching and learning.* **Intelligent Robotics and Applications 5th International Conference, ICIRA 2012, Montreal, Canada, October 3-5, 2012,**

Proceedings, Part III Springer *The three volume set LNAI 7506, LNAI 7507 and LNAI 7508 constitutes the refereed proceedings of the 5th International Conference on Intelligent Robotics and Applications, ICIRA 2012, held in Montreal, Canada, in October 2012. The 197 revised full papers presented were thoroughly reviewed and selected from 271 submissions. They present the state-of-the-art developments in robotics, automation and mechatronics. This volume covers the topics of robot actuators and sensors; robot design, development and control; robot intelligence, learning and linguistics; robot mechanism and design; robot motion analysis and planning; robotic vision, recognition and reconstruction; and planning and navigation.* **New Geometric Data Structures for Collision Detection and Haptics Springer Science & Business Media** *Starting with novel algorithms for optimally updating bounding volume hierarchies of objects undergoing arbitrary deformations, the author presents a new data structure that allows, for the first time, the computation of the penetration volume. The penetration volume is related to the water displacement of the overlapping region, and thus corresponds to a physically motivated and continuous force. The practicability of the approaches used is shown by realizing new applications in the field of robotics and haptics, including a user study that evaluates the influence of the degrees of freedom in complex haptic interactions. New Geometric Data Structures for Collision Detection and Haptics closes by proposing an open source benchmarking suite that evaluates both the performance and the quality of the collision response in order to guarantee a fair comparison of different collision detection algorithms. Required in the fields of computer graphics, physically-based simulations, computer animations, robotics and haptics, collision detection is a fundamental problem that arises every time we interact with virtual objects. Some of the open challenges associated with collision detection include the handling of deformable objects, the stable computation of physically-plausible contact information, and the extremely high frequencies that are required for haptic rendering. New Geometric Data Structures for Collision Detection and Haptics presents new solutions to all of these challenges, and will prove to be a valuable resource for researchers and practitioners of collision detection in the haptics, robotics and computer graphics and animation domains.* **Case-Based Reasoning Research and Development 20th International Conference, ICCBR 2012, Lyon, France, September 3-6, 2012, Proceedings Springer** *This book constitutes the thoroughly refereed post-conference proceedings of the 20th International Conference on Case-Based Reasoning Research and Development (ICCBR 2012) held in Lyon, France, September 3-6, 2012. The 34 revised full papers presented were carefully selected from 51 submissions. The presentations and posters covered a wide range of CBR topics of interest to both practitioners and researchers, including foundational issues covering case representation, similarity, retrieval, and adaptation; conversational CBR recommender systems; multi-agent collaborative systems; data mining; time series analysis; Web applications; knowledge management; legal reasoning; healthcare systems and planning and scheduling systems.* **Interactive Curves and Surfaces A Multimedia Tutorial on CAGD Morgan Kaufmann** *The growing importance of animation and 3D design has caused computer-aided geometric design (CAGD) to be of interest to a wide audience of programmers and designers. This interactive software/book tutorial teaches fundamental CAGD concepts and discusses the growing number of applications in such areas as geological modeling, molecular modeling, commercial advertising, and animation. Using interactive examples and animations to illustrate the mathematical concepts, this hands-on multimedia tutorial enables users without a substantial mathematical background to quickly gain intuition about CAGD. Interactive Curves and Surfaces guides you in Learning the uses of CAGD as it is applied in computer graphics and engineering. Creating curved lines and surfaces using Bezier curves, B-Splines, and parametric surface patches. Understanding the mathematical tools behind the generation of these objects, and the development of computer-based CAGD algorithms. Experimenting with powerful interactive test benches to explore the behavior and characteristics of the most popular CAGD curves. Application oriented readers will find this animated tutorial presentation more accessible than the standard formal texts on the subject.* **Vision, Modeling, and Visualization 2008 Proceedings, October 8-10, 2008, Konstanz, Germany Pro Universitate Real-time Shader Programming Covering DirectX 9.0 Morgan Kaufmann** *Beginning with the mathematical basics of vertex and pixel shaders, and building to detailed accounts of programmable shader operations, this title provides the foundation and techniques necessary for replicating popular cinema-style 3D graphics as well as creating your own real-time procedural shaders.* **Understanding and Improving the Student Experience in Higher Education Navigating the Third Space Taylor & Francis** *This book explores the challenges of improving the student experience in higher education through a 'third space' perspective. This key text studies a variety of approaches by drawing on higher education policy, interviews with academics working in third space roles in higher education in the UK, France, Germany, Holland, North America and Italy, as well as auto-ethnographic narratives. The chapters consider key topical areas affecting student experience including academic support, assessment and feedback, creative approaches to pedagogy, approaches to supporting international students and students as partners. This work offers further insights into the way in which the 'third space' roles are so important to the functioning of higher education institutions and the ways in which the improvement of the student experience is inexorably intertwined with those in such roles. With evaluative and practice-based insights into embedding institutional changes to improve student outcomes, this book bridges the gap between academia and administration and is ideal reading for anyone interested in improving the student experience within their institution.* **3D Research Challenges in Cultural Heritage II How to Manage Data and Knowledge Related to Interpretative Digital 3D Reconstructions of Cultural Heritage Springer** *This book reflects a current state of the art and future perspectives of Digital Heritage focusing on not interpretative reconstruction and including as well as bridging practical and theoretical perspectives, strategies and approaches. Comprehensive key challenges are related to knowledge transfer and management as well as data handling within a interpretative digital reconstruction of Cultural Heritage including aspects of digital object creation, sustainability, accessibility, documentation, presentation, preservation and more general scientific compatibility. The three parts of the book provide an overview of a scope of usage scenarios, a current state of infrastructures as digital libraries, information repositories for an interpretative reconstruction of Cultural Heritage; highlight strategies, practices and principles currently used to ensure compatibility, reusability and sustainability of data objects and related knowledge within a 3D reconstruction work process on a day to day work basis; and show innovative concepts for the exchange, publishing and management of 3D objects and for inherit knowledge about data, workflows and semantic structures.*