

# Complete Maya Programming Volume II Volume 2 An In Depth Guide To 3d Fundamentals Geometry And Modeling The Morgan Kaufmann Series In Computer Graphics

David Gould's acclaimed first book, *Complete Maya Programming: An Extensive Guide to MEL and the C++ API*, provides artists and programmers with a deep understanding of the way Maya works and how it can be enhanced and customized through programming. In his new book David offers a gentle, intuitive introduction to the core ideas of computer graphics. Each concept is explained progressively and is fully implemented in both MEL and C++ so that an artist or programmer can use the source code directly in their own programs. Geometry and modeling are covered in detail with progressively more complex examples demonstrating all of Maya's possible programming features. David Gould's first volume is widely regarded as the most authoritative reference on Maya programming. Volume II continues this tradition and provides an unmatched guide for the artist and programmer tackling complex tasks. Covers a spectrum of topics in computer graphics including points and vectors, rotations, transformations, curves and surfaces (polygonal, NURBS, subdivision), and modeling. Offers insights to Maya's inner workings so that an artist or programmer can design and develop customized tools and solutions. Discusses problem solving with MEL (Maya's scripting language) and the more powerful and versatile C++ API, with plenty of code examples for each.

Computer graphics systems are capable of generating stunningly realistic images of objects that have never physically existed. In order for computers to create these accurately detailed images, digital models of appearance must include robust data to give viewers a credible visual impression of the depicted materials. In particular, digital models demonstrating the nuances of how materials interact with light are essential to this capability. *Digital Modeling of Material Appearance* is the first comprehensive work on the digital modeling of material appearance: it explains how models from physics and engineering are combined with keen observation skills for use in computer graphics rendering. Written by the foremost experts in appearance modeling and rendering, this book is for practitioners who want a general framework for understanding material modeling tools, and also for researchers pursuing the development of new modeling techniques. The text is not a "how to" guide for a particular software system. Instead, it provides a thorough discussion of foundations and detailed coverage of key advances. Practitioners and researchers in applications such as architecture, theater, product development, cultural heritage documentation, visual simulation and training, as well as traditional digital application areas such as feature film, television, and computer games, will benefit from this much needed resource. ABOUT THE AUTHORS Julie Dorsey and Holly Rushmeier are professors in the Computer Science Department at Yale University and co-directors of the Yale Computer Graphics Group. François Sillion is a senior researcher with INRIA (Institut National de Recherche en Informatique et Automatique), and director of its Grenoble Rhône-Alpes research center. First comprehensive treatment of the digital modeling of material appearance Provides a foundation for modeling appearance, based on the physics of how light interacts with materials, how people perceive appearance, and the implications of rendering appearance on a digital computer An invaluable, one-stop resource for practitioners and researchers in a variety of fields dealing with the digital modeling of material appearance Explains how to create professional-looking, two- and three-dimensional computer generated characters.

## Publisher Description

The bible of all fundamental algorithms and the work that taught many of today's software developers most of what they know about computer programming. —Byte, September 1995 I can't begin to tell you how many pleasurable hours of study and recreation they have afforded me! I have pored over them in cars, restaurants, at work, at home... and even at a Little League game when my son wasn't in the line-up. —Charles Long If you think you're a really good programmer... read [Knuth's] *Art of Computer Programming*... You should definitely send me a resume if you can read the whole thing. —Bill Gates It's always a pleasure when a problem is hard enough that you have to get the Knuths off the shelf. I find that merely opening one has a very useful terrorizing effect on computers. —Jonathan Laventhol The second volume offers a complete introduction to the field of seminumerical algorithms, with separate chapters on random numbers and arithmetic. The book summarizes the major paradigms and basic theory of such algorithms, thereby providing a comprehensive interface between computer programming and numerical analysis. Particularly noteworthy in this third edition is Knuth's new treatment of random number generators, and his discussion of calculations with formal power series.

Trying to learn Maya programming from the documentation can be daunting whether or not you are a programmer. The first edition of *MEL Scripting for Maya Animators* earned the reputation as the best introductory book on MEL, Maya's scripting language. Now fully revised and updated, the second edition also includes new features, such as a discussion of global procedures, new chapters on fixing programming bottlenecks, advanced user interface techniques, and optimizing character rigs. New chapters on utility nodes and Maya's Web Panel feature provide new ideas on how to use MEL in applications. This new edition has kept the popular style of the first edition that offered very clear explanations of programming concepts to those without programming experience. A generous collection of code examples and Maya scene files is included on the companion Web site. This is a book for animators, artists, game developers, visual effects developers, and technical directors who want to learn the fundamentals of Maya, how to automate tasks, personalize user interfaces, build custom tools, and solve problems with MEL. Fully updated with several new chapters. Profusely illustrated and includes a companion Web site with numerous code examples and scene files. The authors bring their extensive experience in professional production studios to provide expert guidance.

The Internet Encyclopedia in a 3-volume reference work on the internet as a business tool, IT platform, and communications and commerce medium.

Lung diseases are leading causes of death and disability globally, with about 65 million people suffering from COPD, and 334 million from asthma. Each year, tens of millions of people develop and can die from lung infections such as pneumonia and TB. Systemic inflammation may induce and exacerbate local inflammatory diseases in the lungs, and local inflammation can in turn cause systemic inflammation. There is increasing evidence of the coexistence of systemic and local inflammation in patients suffering from asthma, COPD, and other lung diseases, and the co-morbidity of two or more local inflammatory diseases often occurs. For example, rheumatoid arthritis frequently occurs together with, and promotes the development of, pulmonary hypertension. This co-morbidity significantly impacts quality of life, and can result in death for some patients. Current treatment options for lung disease are neither always effective, nor condition-specific; there is a desperate need for novel therapeutics in the field. Additionally, the molecular and physiological significance of most major lung diseases is not well understood, which further impedes development of new treatments, especially in the case of coexistent lung diseases with other inflammatory diseases. Great progress has been made in recent years in many areas of the field, particularly in understanding the molecular geneses, regulatory mechanisms, signalling pathways, and cellular processes within lung disease, as well as basic and clinical technology, drug discovery, diagnoses, treatment options, and predictive prognoses. This is the first text to aggregate these developments. In two comprehensive volumes, experts from all over the world present state-of-the-art advances in the study of lung inflammation in health and disease. Contributing authors cover well-known as well as emerging topics in basic, translational, and clinical research, with the aim of providing researchers, clinicians, professionals, and students with new perspectives and concepts. The editors hope these books will also help to direct future research in lung disease and other inflammatory diseases, and result in the development of novel therapeutics.

*Visualization in Medicine* is the first book on visualization and its application to problems in medical diagnosis, education, and treatment. The book describes the algorithms, the applications and their validation (how reliable are the results?), and the clinical evaluation of the



with the ability to identify and implement solutions by category.

"David Gould is an expert at using, programming, and teaching Maya, and it shows. People who need to program Maya will find this book essential. Even Maya users who don't intend to do extensive programming should read this book for a better understanding of what's going on under the hood. Compact yet thorough, it covers both MEL and the C++ API, and is written to be informative for both novice and expert programmers. Highly recommended!" -Larry Gritz, Exluna/NVIDIA, co-author of *Advanced RenderMan: Creating CGI for Motion Pictures* "This book should be required reading for all Maya programmers, novice and expert alike. For the novice, it provides a thorough and wonderfully well thought-out hands-on tutorial and introduction to Maya. The book's greatest contribution, however, is that in it David shares his deep understanding of Maya's fundamental concepts and architecture, so that even the expert can learn to more effectively exploit Maya's rich and powerful programming interfaces." -Philip J. Schneider, Disney Feature Animation, co-author of *Geometric Tools for Computer Graphics* "Having provided a technical review of David Gould's *Complete Maya Programming*, I must say that this book is the definitive text for scripting and plug-in development for Maya. Never before has there been such a concise and clearly written guide to programming for Maya. Any user smart enough to pick up this book would be better off for it." -Chris Rock, a Technical Director at "a Large Animation Studio in Northern California" "If you ever wanted to open the Maya toolbox, this is your guide. With clear step-by-step instructions, you will soon be able to customize and improve the application, as well as create your own extensions, either through the MEL scripting language or the full C++ API." -Christophe Hery, Industrial Light & Magic Learning Maya, the world's leading 3D animation and effects package, is a challenge, especially for those who want to master Maya's versatile programming features in addition to its built-in tools. Finally, here is a practical, step-by-step guide that shows how to use Maya to its fullest potential, beginning with the basics. Readers of *Complete Maya Programming* will first gain a thorough understanding of Maya's inner workings, and then learn how to customize and extend Maya with scripts and plugins that take control and productivity to new levels. Users new to programming can apply Maya's easy scripting language MEL (Maya Embedded Language), while more advanced users can work with the C++ API (Application Programming Interface). Both a fundamental tutorial for Maya beginners and a solid reference for experienced developers, *Complete Maya Programming* is every user's guide to Maya mastery. FEATURES: \*Demonstrates how to use MEL to control Maya, customize its interface, automate procedures, and more \*Details how to use the C++ API to modify Maya functionality and develop tools and features to meet any need \*Explains when to use MEL, when to use the C++ API, and how to use them together \*Provides a multitude of real-world examples illustrating applications of Maya programming \*Ideal for technical directors, developers, or anyone wishing to master Maya \*Provides a storehouse of MEL scripts and C++ source code, glossary, and list of resources, available at [www.davidgould.com](http://www.davidgould.com)

Maya ebook Collection contains 4 of our best-selling titles, providing the ultimate reference for every computer graphics professional's library. Get access to over 2400 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: Gould, *Complete Maya Programming Vol.I*, 9781558608351 Gould, *Complete Maya Programming Vol.II*, 9780120884827 Wilkins, *MEL Scripting for Maya Animators*, 9780120887934 Patnode, *Character Modeling with Maya and ZBrush: Professional polygonal modeling techniques*, 9780240520346 \*Four fully searchable titles on one CD providing instant access to the ULTIMATE library of materials for computer graphics professionals \*2400 pages of practical and theoretical Maya information in one portable package. \*Incredible value at a fraction of the cost of the print books

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.

This book offers the latest research and new perspectives on Interactive Collaborative Learning and Engineering Pedagogy. We are currently witnessing a significant transformation in education, and in order to face today's real-world challenges, higher education has to find innovative ways to quickly respond to these new needs. Addressing these aspects was the chief aim of the 21st International Conference on Interactive Collaborative Learning (ICL2018), which was held on Kos Island, Greece from September 25 to 28, 2018. Since being founded in 1998, the conference has been devoted to new approaches in learning, with a special focus on collaborative learning. Today the ICL conferences offer a forum for exchanging information on relevant trends and research results, as well as sharing practical experiences in learning and engineering pedagogy. This book includes papers in the fields of: \* New Learning Models and Applications \* Pilot Projects: Applications \* Project-based Learning \* Real-world Experiences \* Remote and Virtual Laboratories \* Research in Engineering Pedagogy \* Technical Teacher Training It will benefit a broad readership, including policymakers, educators, researchers in pedagogy and learning theory, school teachers, the learning industry, further education lecturers, etc.

A definitive and wide-ranging overview of developments in behavioural finance over the past ten years. This second volume presents twenty recent papers by leading specialists that illustrate the abiding power of behavioural finance. Master complex workflows and conquer the world with Python and Maya About This Book- Improve your modelling skills and reduce your scripting problems using Python in Maya- Learn to communicate with web applications using Python for easier team development- A quick and practical answer to every problem you can have whilst scripting in Maya with Python Who This Book Is For This book is for Python developers who have just started scripting with Maya. What You Will Learn- Find out how to use Python scripting to automate tedious tasks- Create functional user interfaces to make scripts easy to share with others- Add new functionality to Maya via the power of scripting- Import and export arbitrary data into and out of Maya- Improve your workflow, and that of your team- Create custom create custom controls to make rigs that are easy to work with- Implement a system to render 3D assets for isometric games- Use script jobs to trigger actions

automatically in response to user interaction- Open a command port to allow other applications to communicate with Maya  
In Detail Maya is a 3D graphics and animation software, used to develop interactive 3D applications and games with stupendous visual effects. The Maya Programming with Python Cookbook is all about creating fast, powerful automation systems with minimum coding using Maya Python. With the help of insightful and essential recipes, this book will help you improve your modelling skills. Expand your development options and overcome scripting problems encountered whilst developing code in Maya. Right from the beginning, get solutions to complex development concerns faced when implementing as parts of build.  
Style and approach This book is comprised of a set of practical recipes, grouped under specific topics, which can be referred to independently or in sequence. These recipes provide quick solutions to common problems, and cover most of the real-world scenarios that developers are likely to face when working with Maya.

Mastering Unreal Technology, Volume II: Advanced Level Design Concepts with Unreal Engine 3 is your start-to-finish guide to state-of-the-art Unreal Tournament 3 modding and level design. Here's everything you need to know to take your game design skills to the next level, creating content with breakthrough depth and interactivity! Your authors aren't just the world's #1 Unreal game development trainers: They've built the training mods that shipped with Unreal Tournament. Now, working with the full cooperation of Unreal Engine 3's creators, Epic Games, they introduce innovative, pro-quality techniques you'll find nowhere else: outstanding solutions for everything from particle effects to physics, materials to cinematics. Packed with tips, hands-on tutorials, and expert insight, Mastering Unreal Technology, Volume II will help you take Unreal Tournament 3 and Unreal Engine 3 to the limit...and then blow right by it! You'll find expert tips on Creating advanced materials that leverage the full power of UnrealEd's Material Editor Bringing levels to life with objects affected by gravity, collisions, and player influence Creating fire, smoke, sparks, and more with Unreal Engine 3's particle effects system Building custom user interfaces, including Heads-Up Displays (HUDs) that update constantly Using SoundCues to mix, modulate, crossfade, and attenuate sounds Generating real-time camera-based effects, including depth of field, motion blur, and color adjustment Using post process effects to quickly transform a scene's look and feel without changing existing materials or textures Animating characters and vehicles that move with unprecedented realism Creating in-game cinematics that develop your characters and move your story forward

In Silico introduces Maya programming into one of the most fascinating application areas of 3D graphics: biological visualization. In five building-block tutorials, this book prepares animators to work with visualization problems in cell biology. The book assumes no deep knowledge of cell biology or 3D graphics programming. An accompanying DVD-ROM includes code derived from the tutorials, the working Maya computer files, and sample animated movies. \*Teaches artists and scientists to create realistic digital images of humans and nature with the popular CG program, Maya \*This self-contained study guide includes background, foundations, and practice \*Step-by-step example programs and end-result demonstrations help readers develop their own portfolios \*Gorgeous four-color screen shots throughout  
Autodesk Maya 2019 is a powerful, integrated 3D modeling, animation, visual effects, and rendering software developed by Autodesk Inc. This integrated node based 3D software finds its application in the development of films, games, and design projects. A wide range of 3D visual effects, computer graphics, and character animation tools make it an ideal platform for 3D artists. The intuitive user interface and workflow tools of Maya 2019 have made the job of design visualization specialists a lot easier. Autodesk Maya 2019: A Comprehensive Guide book covers all features of Autodesk Maya 2019 software in a simple, lucid, and comprehensive manner. It aims at harnessing the power of Autodesk Maya 2019 for 3D and visual effect artists, and designers. This Autodesk Maya 2019 book will help you transform your imagination into reality with ease. Also, it will unleash your creativity, thus helping you create realistic 3D models, animation, and visual effects. It caters to the needs of both the novice and advanced users of Maya 2019 and is ideally suited for learning at your convenience and at your pace. Salient Features: Consists of 17 chapters that are organized in a pedagogical sequence covering a wide range of topics such as Maya interface, Polygon modeling, NURBS modeling, texturing, lighting, cameras, animation, Paint Effects, Rendering, nHair, Fur, Fluids, Particles, nParticles and Bullet Physics in Autodesk Maya 2019. The first page of every chapter summarizes the topics that are covered in it. Consists of hundreds of illustrations and a comprehensive coverage of Autodesk Maya 2019 concepts & commands. Real-world 3D models and examples focusing on industry experience. Step-by-step instructions that guide the user through the learning process. Additional information is provided throughout the book in the form of tips and notes. Self-Evaluation test, Review Questions, and Exercises are given at the end of each chapter so that the users can assess their knowledge. Table of Contents Chapter 1: Exploring Maya Interface Chapter 2: Polygon Modeling Chapter 3: NURBS Curves and Surfaces Chapter 4: NURBS Modeling Chapter 5: UV Mapping Chapter 6: Shading and Texturing Chapter 7: Lighting Chapter 8: Animation Chapter 9: Rigging, Constraints, and Deformers Chapter 10: Paint Effects Chapter 11: Rendering Chapter 12: Particle System Chapter 13: Introduction to nParticles Chapter 14: Fluids Chapter 15: nHair Chapter 16: Bifrost Chapter 17: Bullet Physics Index

Learning Maya, the world's leading 3D animation and effects package, is a challenge, especially for those who want to master Maya's versatile programming features in addition to its built-in tools. Finally, here is a practical, step-by-step guide that shows how to use Maya to its fullest potential, beginning with the basics. Readers of Complete Maya Programming will first gain a thorough understanding of Maya's inner workings, and then learn how to customize and extend Maya with scripts and plugins that take control and productivity to new levels. Users new to programming can apply Maya's easy scripting language MEL (Maya Embedded Language), while more advanced users can work with the C++ API (Application Programming Interface). Both a fundamental tutorial for Maya beginners and a solid reference for experienced developers, Complete Maya Programming is every user's guide to Maya mastery. \* Provides a multitude of real-world examples illustrating applications of Maya programming. \* Demonstrates how to use MEL to control Maya, customize its interface, automate procedures, and more \* Details how to use the C++ API to modify Maya functionality and develop tools and features to meet any need \* Explains when to use MEL, when to use the C++ API, and how to use them together \* Ideal for technical directors, developers, or anyone wishing to master Maya \* Provides a storehouse of MEL scripts and C++ source code, glossary, and list of resources, available at [www.davidgould.com](http://www.davidgould.com).

This book covers the various aspects of designing a language translator in depth. It includes some exercises for practice.

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High dynamic range imaging produces images with a much greater range of light and color than conventional imaging. The effect is stunning, as great as the difference between black-and-white and color television. High Dynamic Range Imaging is the first book to describe this exciting new field that is transforming the media and entertainment industries. Written by the foremost researchers in HDRI, it will explain and define this new technology for anyone who works with images, whether it is for computer graphics, film, video, photography, or lighting design. \* Written by the leading researchers in HDRI \* Covers all the areas of high dynamic range imaging including capture devices, display devices, file formats, dynamic range reduction, and image-based lighting \* Includes a DVD with over 4 GB of HDR images as well as source code and binaries for numerous tone reproduction operators for Windows, Linux, and Mac OS X

