
Autodesk Maya Api White Paper

A Definitive Guide to Character Technical
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An In-depth Guide to 3D Fundamentals,
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An Extensive Guide to MEL and C++ API
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How 45 Successful Companies Used Big Data
Analytics to Deliver Extraordinary Results
Maya Python for Games and Film
Programming Object-oriented 3D Graphics with
Open Inventor, Release 2
Game Engine Architecture, Second Edition
Learn Modern OpenGL Graphics Programming in
a Step-by-step Fashion.
Maya Animation Rigging Concepts
Advanced Design for Virtual Environments
The Art of Maya
A Complete Reference for Maya Python and the
Maya Python API
BIM Handbook
Creating 3-D Models in Ruby

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[A Definitive Guide to
Character Technical
Direction with Alias](#)

Maya Springer Nature
Google SketchUp has
become one of the
most popular tools
available for three-
dimensional modeling.
Its users include
architects, engineers,

woodworkers, and hobbyists from all across the world. Most designers rely on the toolbar and menus, but SketchUp provides a programming interface that makes it possible to construct designs with scripts coded in the Ruby language.

[Learning Robotics Using Python](#) CRC Press

Written as the successor to *Virtual World Design: Creating Immersive Virtual Environments*, this book carries the ideas brought forward in its predecessor to new levels of virtual world design exploration and experimentation.

Written by an Emmy award-winning designer with 22 years of experience creating virtual environments for television and online communities,

Extending Virtual Worlds: Advanced Design for Virtual Environments explores advanced topics such as multi-regional design, game-based sims, and narrative structure for environments. The book provides bedrock knowledge and practical examples of how to leverage design concepts within the intertwined structures of physics engines, level of detail (LOD) systems, and advanced material editors. It also shows designers new ways to influence the experience of virtual world visitors through immersive narrative and storytelling. With over 150 illustrations and 10 step-by-step projects that include the necessary 3D models and modular components, it delivers

hours of stimulating creative challenges for people working in public virtual worlds or on private grids. By using this book, novices and advanced users will deepen their understanding of game design and how it can be applied to creating game-based virtual environments. It also serves as a foundational text for class work in distance learning, simulation, and other learning technologies that use virtual environments.

3D Animation for the Raw Beginner Using Maya Addison-Wesley Professional

This new edition provides step-by-step instruction on modern 3D graphics shader programming in OpenGL with C++, along with its theoretical

foundations. It is appropriate both for computer science graphics courses and for professionals interested in mastering 3D graphics skills. It has been designed in a 4-color, “teach-yourself” format with numerous examples that the reader can run just as presented.

Every shader stage is explored, from the basics of modeling, textures, lighting, shadows, etc., through advanced techniques such as tessellation, normal mapping, noise maps, as well as new chapters on simulating water, stereoscopy, and ray tracing.

FEATURES: Covers modern OpenGL 4.0+ shader programming in C++, with instructions for both PC/Windows and Macintosh Adds new chapters on

simulating water, stereoscopy, and ray tracing Includes companion files with code, object models, figures, and more (also available for downloading by writing to the publisher) Illustrates every technique with running code examples. Everything needed to install the libraries, and complete source code for each example Includes step-by-step instruction for using each GLSL programmable pipeline stage (vertex, tessellation, geometry, and fragment) Explores practical examples for modeling, lighting, and shadows (including soft shadows), terrain, water, and 3D materials such as wood and marble Explains how to optimize code for tools such as

Nvidia's Nsight debugger. [Creating Visual Effects in Maya](#) Morgan Kaufmann Advanced Guide to Python 3 Programming delves deeply into a host of subjects that you need to understand if you are to develop sophisticated real-world programs. Each topic is preceded by an introduction followed by more advanced topics, along with numerous examples, that take you to an advanced level. There are nine different sections within the book covering Computer Graphics (including GUIs), Games, Testing, File Input and Output, Databases Access, Logging, Concurrency and Parallelism, Reactive programming,

and Networking. Each section is self-contained and can either be read on its own or as part of the book as a whole. This book is aimed at the those who have learnt the basics of the Python 3 language but want to delve deeper into Python's ecosystem of additional libraries and modules, to explore concurrency and parallelism, to create impressive looking graphical interfaces, to work with databases and files and to provide professional logging facilities.

The Art of Rigging John Wiley & Sons

This unique, full-color visual exploration of the theory of Maya is rich with diagrams and illustrations that demonstrate the critical concepts of 3D

time and space, and helps explain the principles of 3D modeling, animation, dynamics and rendering. The book also includes a series of production notes detailing how skilled Maya artists have worked with the software to create production quality films, games, visualizations, and animations. The accompanying CD-ROM includes Maya Personal Learning Edition.

Computer Graphics Programming in OpenGL with C++

Routledge
API Design for C++ provides a comprehensive discussion of Application Programming Interface (API) development, from initial design through

implementation, testing, documentation, release, versioning, maintenance, and deprecation. It is the only book that teaches the strategies of C++ API development, including interface design, versioning, scripting, and plug-in extensibility. Drawing from the author's experience on large scale, collaborative software projects, the text offers practical techniques of API design that produce robust code for the long term. It presents patterns and practices that provide real value to individual developers as well as organizations. API Design for C++ explores often overlooked issues, both technical and non-technical, contributing

to successful design decisions that produce high quality, robust, and long-lived APIs. It focuses on various API styles and patterns that will allow you to produce elegant and durable libraries. A discussion on testing strategies concentrates on automated API testing techniques rather than attempting to include end-user application testing techniques such as GUI testing, system testing, or manual testing. Each concept is illustrated with extensive C++ code examples, and fully functional examples and working source code for experimentation are available online. This book will be helpful to new programmers who understand the fundamentals of C++

and who want to advance their design skills, as well as to senior engineers and software architects seeking to gain new expertise to complement their existing talents. Three specific groups of readers are targeted: practicing software engineers and architects, technical managers, and students and educators. The only book that teaches the strategies of C++ API development, including design, versioning, documentation, testing, scripting, and extensibility. Extensive code examples illustrate each concept, with fully functional examples and working source code for experimentation available online. Covers various API

styles and patterns with a focus on practical and efficient designs for large-scale long-term projects. **Think Julia** Elsevier "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

[API Design for C++](#)
Taylor & Francis
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

Design Modelling Symposium Paris 2017
CRC Press

"Imagine, design, create offers a wide-ranging look at how the creative process and the tools of design are dramatically changing - and where design is headed in the coming years. Bringing

together stories of good design happening around the world, the book shows how people are using fresh design approaches and new capabilities to solve problems, create opportunities, and improve the way we live and work"-- Book jacket.

Game Coding

Complete CRC Press
Build your own low-level game engine in Metal! This book introduces you to graphics programming in Metal - Apple's framework for programming on the GPU. You'll build your own game engine in Metal where you can create 3D scenes and build your own 3D games. Who This Book Is For This book is for intermediate Swift developers interested in learning 3D graphics

or gaining a deeper understanding of how game engines work.

Topics Covered in Metal by Tutorials The Rendering Pipeline: Take a deep dive through the graphics pipeline. 3D Models: Import 3D models with Model I/O and discover what makes up a 3D model. Coordinate Spaces: Learn the math behind 3D rendering. Lighting: Make your models look more realistic with simple lighting techniques. Textures & Materials: Design textures and surfaces for micro detail. Character Animation: Bring your 3D models to life with joints and animation. Tessellation: Discover how to use tessellation to add a greater level of detail using fewer resources.

Environment: Add a sky to your scenes and use the sky image for lighting. Instancing & Procedural Generation: Save resources with instancing, and generate scenes algorithmically. Multipass & Deferred Rendering: Add shadows with advanced lighting effects. And more! After reading this book, you'll be prepared to take full advantage of graphics rendering with the Metal framework.

The Inventor Mentor
Springer

This updated bestseller provides an introduction to programming interactive computer graphics, with an emphasis on game development using DirectX 12. The book is divided into three main

parts: basic mathematical tools, fundamental tasks in Direct3D, and techniques and special effects. It shows how to use new Direct12 features such as command lists, pipeline state objects, descriptor heaps and tables, and explicit resource management to reduce CPU overhead and increase scalability across multiple CPU cores. The book covers modern special effects and techniques such as hardware tessellation, writing compute shaders, ambient occlusion, reflections, normal and displacement mapping, shadow rendering, and character animation. Includes a companion DVD with code and figures. eBook
Customers: Companion

files are available for downloading with order number/proof of purchase by writing to the publisher at info@merclearning.com. FEATURES: • Provides an introduction to programming interactive computer graphics, with an emphasis on game development using DirectX 12 • Uses new Direct3D 12 features to reduce CPU overhead and take advantage of multiple CPU cores • Contains detailed explanations of popular real-time game effects • Includes a DVD with source code and all the images (including 4-color) from the book • Learn advance rendering techniques such as ambient occlusion, real-time reflections, normal and displacement mapping,

shadow rendering, programming the geometry shader, and character animation • Covers a mathematics review and 3D rendering fundamentals such as lighting, texturing, blending and stenciling • Use the end-of-chapter exercises to test understanding and provide experience with DirectX 12

Freecad [How-To]

Roberto Ierusalimschy Rig it Right! breaks down rigging so that you can achieve a fundamental understanding of the concept. The author will get you up and rigging with step-by-step tutorials covering multiple animation control types, connection methods, interactive skinning, BlendShapes, edgeloops, and joint

placement, to name a few. The concept of a bi-ped is explored as a human compared to a bird character allowing you to see that a bi-ped is a bi-ped and how to problem solve for the limbs at hand. Rig it Right! will take you to a more advanced level where you will learn how to create stretchy rigs with invisible control systems and use that to create your own types of rigs. Key Features Hone your skills every step of the way with short tutorials and editable rigs that accompany each chapter. (17+ rigs!!). Read "Tina's 10 Rules of Rigging" and build the foundational knowledge needed to successfully rig your characters. Visit the companion website and expand your

newfound knowledge with editable rigs, exercises, and videos that elaborate on techniques covered in the book. Companion data filled with example files at http://routledgetextbooks.com/textbooks/_author/ohailey/ AR(Augmented Reality) enabled images throughout the book! Coffee is not required – but encouraged.

A Guide to Building Information Modeling for Owners, Managers, Designers, Engineers and Contractors CRC Press

Thoroughly revised, this third edition focuses on modern techniques used to generate synthetic three-dimensional images in a fraction of a second. With the advent of programmable

shaders, a wide variety of new algorithms have arisen and evolved over the past few years. This edition discusses current, practical rendering methods used in games and other applications. It also presents a solid theoretical framework and relevant mathematics for the field of interactive computer graphics, all in an approachable style. The authors have made the figures used in the book available for download for fair use.:Download Figures. Reviews Rendering has been a required reference for professional graphics practitioners for nearly a decade. This latest edition is as relevant as ever, covering topics from essential mathematical

foundations to advanced techniques used by today's cutting edge games. -- Gabe Newell, President, Valve, May 2008

Rendering ... has been completely revised and revamped for its updated third edition, which focuses on modern techniques used to generate three-dimensional images in a fraction of the time old processes took. From practical rendering for games to math and details for better interactive applications, it's not to be missed. -- The Bookwatch, November 2008

You'll get brilliantly lucid explanations of concepts like vertex morphing and variance shadow mapping—as well as a new respect for the incredible craftsmanship that

goes into today's PC games. -- Logan Decker, PC Gamer Magazine , February 2009

History, Theory, and Application Routledge

Whittle's *Gait Analysis* – formerly known as *Gait Analysis: an introduction* – is now in its fifth edition with a new team of authors led by David Levine and Jim Richards. Working closely with Michael Whittle, the team maintains a clear and accessible approach to basic gait analysis. It will assist both students and clinicians in the diagnosis of and treatment plans for patients suffering from medical conditions that affect the way they walk. Highly readable, the book builds upon the basics of anatomy, physiology and

biomechanics
 Describes both normal and pathological gait
 Covers the range of methods available to perform gait analysis, from the very simple to the very complex.
 Emphasizes the clinical applications of gait analysis
 Chapters on gait assessment of neurological diseases and musculoskeletal conditions and prosthetics and orthotics
 Methods of gait analysis
 Design features including key points
 A team of specialist contributors led by two internationally-renowned expert editors
 60 illustrations, taking the total number to over 180
 Evolve Resources containing video clips and animated skeletons of normal gait supported by

MCQs, an image bank, online glossary and sources of further information. Log on to <http://evolve.elsevier.com/Whittle/gait> to register and start using these resources today!

Introduction to 3D Game Programming with DirectX 11 CRC Press

Aesthetic 3D Lighting: History, Theory, and Application delves into the history, the theory, and the practical and aesthetic application of lighting in the fine arts and 3D animation. In this book, animation industry veteran and lighting expert Lee Lanier examines the importance of lighting and its ability to communicate information to the viewer. Lee examines the history of lighting as applied to the fine arts, film, photography,

and 3D animation. He discusses the use of light color, light location and direction, and light shadow types to recreate specific locations and to generate moods. He includes guides for successful lighting in 3D animation.

Software-agnostic examples lead you through useful 3D lighting set-ups. Chapter-long case studies step you through more complex 3D lighting projects in Autodesk Maya. An accompanying eResource (www.routledge.com/9781138737570) features 3D model files, scene files, and texture bitmaps, allowing you to practice the discussed techniques in Autodesk Maya and many other 3D programs. The

lighting techniques covered in this book include: History of lighting as used in the fine arts The scientific mechanisms of light Light types and light application in 3D programs Light qualities including shadows variations Basic and advanced 3D lighting approaches 1-, 2-, 3-point, naturalistic, and stylistic lighting techniques Replication of real-world lighting scenarios and locations Overview of advanced 3D lighting and rendering systems

Learn OpenGL 3D

Animation for the Raw Beginner Using Autodesk Maya 2e Authored by Roberto Ierusalimsky, the chief architect of the language, this volume covers all aspects of Lua 5---from the basics to its API with C---

explaining how to make good use of its features and giving numerous code examples. (Computer Books)

Practical Maya Programming with Python CRC Press

If you are an engineer, a researcher, or a hobbyist, and you are interested in robotics and want to build your own robot, this book is for you. Readers are assumed to be new to robotics but should have experience with Python.

Humanizing Digital Reality Packt

Publishing Ltd
Hailed as a "must-have textbook" (CHOICE, January 2010), the first edition of *Game Engine Architecture* provided readers with a complete guide to the theory and practice of game engine software

development. Updating the content to match today's landscape of game engine architecture, this second edition continues to thoroughly cover the major components that make up a typical commercial game engine. New to the Second Edition
Information on new topics, including the latest variant of the C++ programming language, C++11, and the architecture of the eighth generation of gaming consoles, the Xbox One and PlayStation 4
New chapter on audio technology covering the fundamentals of the physics, mathematics, and technology that go into creating an AAA game audio engine
Updated sections on multicore

programming, pipelined CPU architecture and optimization, localization, pseudovectors and Grassman algebra, dual quaternions, SIMD vector math, memory alignment, and anti-aliasing Insight into the making of Naughty Dog's latest hit, The Last of Us The book presents the theory underlying various subsystems that comprise a commercial game engine as well as the data structures, algorithms, and software interfaces that are typically used to implement them. It primarily focuses on the engine itself, including a host of low-level foundation systems, the rendering engine, the collision system, the physics simulation, character

animation, and audio. An in-depth discussion on the "gameplay foundation layer" delves into the game's object model, world editor, event system, and scripting system. The text also touches on some aspects of gameplay programming, including player mechanics, cameras, and AI. An awareness-building tool and a jumping-off point for further learning, Game Engine Architecture, Second Edition gives readers a solid understanding of both the theory and common practices employed within each of the engineering disciplines covered. The book will help readers on their journey through this fascinating and multifaceted field.

An In-depth Guide to
3D Fundamentals,
Geometry, and
Modeling CRC Press

A hands-on guided introduction to the most powerful and flexible open-source CAD application.

Imagine Design Create
Mercury Learning and
Information

Fluid simulation is a computer graphic used to develop realistic animation of liquids in modern games. *The Art of Fluid Animation* describes visually rich techniques for creating fluid-like animations that do not require advanced physics or mathematical skills. It explains how to create fluid animations like water, smoke, fire, and explosions through computer code in a fun manner. The book

presents concepts that drive fluid animation and gives a historical background of the computation of fluids. It covers many research areas that include stable fluid simulation, flows on surfaces, and control of flows. It also gives one-paragraph summaries of the material after each section for reinforcement. This book includes computer code that readers can download and run on several platforms so they can extend their work beyond what is described in the book. The material provided here is designed to serve as a starting point for aspiring programmers to begin creating their own programs using fluid animation.

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- Jurassic Park Video Worksheet : [click here](#)