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8CF - AMIYA CARLSON

Get ready to create killer apps for iPad and iPhone on the new iOS 7! With Apple's introduction of iOS 7, demand for developers who know the new iOS will be high. You need in-depth information about the new characteristics and capabilities of iOS 7, and that's what you'll find in this book. If you have experience with C or C++, this guide will show you how to create amazing apps for iPhone, iPad, and iPod touch. You'll also learn to maximize your programs for mobile devices using iPhone SDK 7.0. Advanced topics such as security services, running on multiple iPlatforms, and local networking with Core Bluetooth are also covered. Prepares experienced developers to create great apps for the

newest version of Apple's iOS Thoroughly covers the serious capabilities of iOS 7; information you need in order to make your apps stand out Delves into advanced topics including how to control multitasking, security services, running apps on multiple iPlatforms and iDevices, enabling in-app purchases, advanced text layout, and building a core foundation Also covers REST, advanced GCD, internationalization and localization, and local networking with Core Bluetooth iOS 7 Programming: Pushing the Limits will help you develop applications that take full advantage of everything iOS 7 has to offer.

Here's the scoop on building and marketing great games for the iPhone and iPad! The iPhone and iPad are the hottest techno-gadgets on the market today, and

games for it are even hotter. To help you cash in on the trend, this book shows what it takes to create a good iPhone and iPad game and how to get it into the App Store. Neal Goldstein, leader of an iPhone app startup company, and his co-authors show you how to build a game that will sell, include quality graphics, market your game through the App Store, and more. Whether you're a programming novice or an experienced developer looking to enter the game market, here's how to get going. Games for the iPhone are among the hottest apps in Apple's App Store Learn to build two game applications - from beginning to end Written by successful mobile app developers, this guide begins with how to get started, including downloading the SDK and filling your toolbox Covers pro-

programming with Objective-C and Cocoa, what makes a good game, graphics, and creating good mobile apps Explains how to market your game through the App Store iPhone and iPad Game Development For Dummies can start you on a fun hobby or a lucrative career. Note: Apple's iOS SDK tools are only accessible on Intel-powered Mac and MacBook devices.

OpenGL® ES™ is the industry's leading software interface and graphics library for rendering sophisticated 3D graphics on handheld and embedded devices. The newest version, OpenGL ES 3.0, makes it possible to create stunning visuals for new games and apps, without compromising device performance or battery life. In the OpenGL® ES™ 3.0 Programming Guide, Second Edition, the authors cover the entire API and Shading Language. They carefully introduce OpenGL ES 3.0 features such as shadow mapping, instancing, multiple render targets, uniform buffer objects, texture compression, program binaries, and transform feedback. Through detailed, downloadable C-based code examples, you'll learn how to set up and program every aspect of the graphics pipeline. Step by step, you'll move from introductory

techniques all the way to advanced per-pixel lighting and particle systems. Throughout, you'll find cutting-edge tips for optimizing performance, maximizing efficiency with both the API and hardware, and fully leveraging OpenGL ES 3.0 in a wide spectrum of applications. All code has been built and tested on iOS 7, Android 4.3, Windows (OpenGL ES 3.0 Emulation), and Ubuntu Linux, and the authors demonstrate how to build OpenGL ES code for each platform. Coverage includes EGL API: communicating with the native windowing system, choosing configurations, and creating rendering contexts and surfaces Shaders: creating and attaching shader objects; compiling shaders; checking for compile errors; creating, linking, and querying program objects; and using source shaders and program binaries OpenGL ES Shading Language: variables, types, constructors, structures, arrays, attributes, uniform blocks, I/O variables, precision qualifiers, and invariance Geometry, vertices, and primitives: inputting geometry into the pipeline, and assembling it into primitives 2D/3D, Cubemap, Array texturing: creation, loading, and rendering; texture wrap modes, filtering, and formats;

compressed textures, sampler objects, immutable textures, pixel unpack buffer objects, and mipmapping Fragment shaders: multitexturing, fog, alpha test, and user clip planes Fragment operations: scissor, stencil, and depth tests; multisampling, blending, and dithering Framebuffer objects: rendering to offscreen surfaces for advanced effects Advanced rendering: per-pixel lighting, environment mapping, particle systems, image post-processing, procedural textures, shadow mapping, terrain, and projective texturing Sync objects and fences: synchronizing within host application and GPU execution This edition of the book includes a color insert of the OpenGL ES 3.0 API and OpenGL ES Shading Language 3.0 Reference Cards created by Khronos. The reference cards contain a complete list of all of the functions in OpenGL ES 3.0 along with all of the types, operators, qualifiers, built-ins, and functions in the OpenGL ES Shading Language. What does it take to build an iPhone app with stunning 3D graphics? This book will show you how to apply OpenGL graphics programming techniques to any device running the iPhone OS -- including the iPad and iPod Touch -- with no iPhone develop-

ment or 3D graphics experience required. iPhone 3D Programming provides clear step-by-step instructions, as well as lots of practical advice, for using the iPhone SDK and OpenGL. You'll build several graphics programs -- progressing from simple to more complex examples -- that focus on lighting, textures, blending, augmented reality, optimization for performance and speed, and much more. All you need to get started is a solid understanding of C++ and a great idea for an app. Learn fundamental graphics concepts, including transformation matrices, quaternions, and more Get set up for iPhone development with the Xcode environment Become familiar with versions 1.1 and 2.0 of the OpenGL ES API, and learn to use vertex buffer objects, lighting, texturing, and shaders Use the iPhone's touch screen, compass, and accelerometer to build interactivity into graphics applications Build iPhone graphics applications such as a 3D wireframe viewer, a simple augmented reality application, a spring system simulation, and more

Open the door to endless new app development possibilities Pushing the Limits with

iOS 5 Programming is an expert guide for developers aiming to create unique applications for Apple's iPad 2, iPhone, and the iPod Touch, which includes the latest version of the Apple iPhone SDK, iOS 5. This text goes beyond the basics to keep you ahead of the technology curve and spark your innovative nature to create seamless, functional, and fun apps. With a focus on advanced techniques for app development, you will learn to differentiate your apps from all the rest. With this must-have book, you'll explore advanced coverage of a variety of development topics, such as developing with deep Objective-C, while you learn to create amazing applications for Apple's iPad 2, iPhone, and iPod touch. Veteran mobile developers and authors guide you through maximizing your programs as they delve into topics not commonly found elsewhere. Provides a solid foundation in the patterns of iOS Shares tips for running on multiple platforms and best using security services Discusses topics such as controlling multitasking, advanced text layout and more Demonstrates how to think differently with blocks and functional programming Teaches table view, performance, and money-making op-

timization Eliminates common challenges with memory management and iOS information flow Pushing the Limits with iOS 5 Programming allows you to take on the future with confidence in your new, stand-out app design skills.

Build and Distribute Your Game Using an HTML5 Game Engine As mobile hardware improves, HTML5 is gradually being used for gaming apps and a growing industry of game engines has begun to support it. HTML5 Game Engines: App Development and Distribution presents an introduction to development with HTML5 game engines as well as an in-depth look at popular engines. Along with downloadable example projects for each engine, the book provides techniques for packaging and distributing the final app to all the major platforms. Get Hands-On Guidance through Practical Techniques and Examples The book is divided into three parts. The first one covers the essentials of HTML5, discusses development strategies and techniques, and takes you through a basic pong game running in the browser with no dependencies. The second part implements four games using the Crafty, EaselJS, Impact, and Turbulenz game en-

gines. In the third part, the author describes how several of these games are distributed on platforms, such as the Chrome Web Store, Apple iOS App Store, Google Play Store, and Facebook.

Explaining how graphics programs using Release 1.1, the latest release of OpenGL, this book presents the overall structure of OpenGL and discusses in detail every OpenGL feature including the new features introduced in Release 1.1. Numerous programming examples in C show how to use OpenGL functions. Also includes 16 pages of full-color examples.

Get a solid grounding in all the fundamentals of Cocoa Touch, and avoid problems during iPhone and iPad app development. With *Programming iOS 4*, you'll dig into Cocoa and learn how to work effectively with Objective-C and Xcode. This book covers iOS 4 in a rigorous, orderly fashion—ideal whether you're approaching iOS for the first time or need a reference to bolster existing skills. Learn Objective-C language details and object-oriented programming concepts. Understand the anatomy of an Xcode project and all the stages of its life-cycle. Grasp key Cocoa concepts such as relationships between classes, receiving

events, and model-view-controller architecture. Know how views are managed, drawn, composited, and animated. Delve into Cocoa frameworks for sound, video, sensors, maps, and more. Touch on advanced topics such as threading and networking. Obtain a thorough grounding for exploring advanced iOS features on your own.

Covers iOS 6, Xcode 4.5+, iPhone, iPad, and More! Figures and code appear as they do in Xcode 4.5+. In just 24 sessions of one hour each, learn how to build powerful applications for today's hottest handheld devices: the iPhone and iPad! Using this book's straightforward, step-by-step approach, you'll master every skill and technology you need, from setting up your iOS development environment to building great responsive user interfaces, from sensing motion to writing multitasking applications. Each lesson builds on what you've already learned, giving you a rock-solid foundation for real-world success! Step-by-step instructions carefully walk you through the most common iOS development tasks. Activities at the end of each chapter help you test your knowledge. Notes present interesting information relat-

ed to the discussion. Tips offer advice or show you easier ways to perform tasks. Cautions alert you to possible problems and give you advice on how to avoid them.

- Printed in full color
- Covers iOS 6.0 and up
- Use the new Objective-C NSArray, NSDictionary, and NSNumber Data Type shortcuts introduced in Xcode 4.5.2
- Learn to navigate the Xcode 4.5+ development environment
- Prepare your system and iDevice for efficient development
- Get started quickly with Apple's Objective-C and Cocoa Touch
- Understand the Model-View-Controller (MVC) development paradigm
- Visually design and code interfaces using Xcode storyboards, segues, exits, and the iOS Object Library
- Use Auto Layout to adapt to different screen sizes and orientations
- Build advanced UIs with tables, split views, navigation controllers, and more
- Read and write preferences and data, and create System Settings plug-ins
- Use the iOS media playback and recording capabilities
- Take photos and manipulate graphics with Core Image
- Sense motion, orientation, and location with the accelerometer, gyroscope, and GPS
- Integrate online services using Twitter, Facebook, Email, Web Views, and Ap-

- Create universal applications that run on both the iPhone and iPad
- Write background-aware multitasking applications
- Trace and debug your applications as they run

In *Pro OpenGL ES for iOS*, you'll find out how to harness the full power of OpenGL ES, and design your own 3D applications by building a fully-functional 3D solar system model using OpenGL ES! OpenGL has set the standard for 3D computer graphics, and is an essential aspect of iPhone, iPad, and iOS development. This book offers everything you need to know, from basic mathematical concepts to advanced coding techniques. You'll learn by building this fascinating 3D solar system simulator! After introducing OpenGL ES, *Pro OpenGL ES for iOS* explains the basics of 3D math and then orients you to the iOS-native 3D libraries you'll be using in your own 3D games and the solar system project you'll build using this book. Through the solar system example project, you'll learn how to incorporate a variety of graphic and animation techniques into your applications. You will also discover how the full spectrum of 3D development that awaits, with topics such as lighting, texture-mapping,

modeling, shaders, blending modes, and several more advanced concepts. By the time you finish *Pro OpenGL ES for iOS*, you'll have learned all the skills you'll need to build your own incredible 3D applications, based on one of the most powerful 3D libraries available.

In just 24 sessions of one hour each, learn how to build powerful applications for today's hottest handheld devices: the iPhone and iPad! Using this book's straightforward, step-by-step approach, you'll master every skill and technology you need, from setting up your iOS development environment to building great user interfaces, sensing motion to writing multitasking applications. Each lesson builds on what you've already learned, giving you a rock-solid foundation for real-world success! Step-by-step instructions carefully walk you through the most common iOS development tasks. Quizzes and Exercises help you test your knowledge. By the Way notes present interesting information related to the discussion. Did You Know? tips show you easier ways to perform tasks. Watch Out! cautions alert you to possible problems and give you advice on how to avoid them. John Ray is currently serving

as the Director of the Office of Research Information Systems at the Ohio State University. His many books include *Using TCP/IP: Special Edition*, *Maximum Mac OS X Security*, *Mac OS X Unleashed*, *Teach Yourself Dreamweaver MX in 21 Days*, and *Sams Teach Yourself iOS 7 Application Development in 24 Hours*. Printed in full color—figures and code appear as they do in Xcode Covers iOS 8 and up Learn to navigate the Xcode 6.x development environment Prepare your system and iDevice for efficient development Get started quickly with Apple's new language: Swift Test code using the new iOS Playground Understand the Model-View-Controller (MVC) development pattern Visually design and code interfaces using Xcode Storyboards, Segues, Exits, Image Slicing, and the iOS Object Library Use Auto Layout and Size Classes to adapt to different screen sizes and orientations Build advanced UIs with Tables, Split Views, Navigation Controllers, and more Read and write preferences and data, and create System Settings plug-ins Use the iOS media playback and recording capabilities Take photos and manipulate graphics with Core Image Sense motion, orientation, and location with the ac-

celerometer, gyroscope, and GPS Integrate online services using Twitter, Facebook, Email, Web Views, and Apple Maps Create universal applications that run on both the iPhone and iPad Write background-aware multitasking applications Trace, debug, and monitor your applications as they run

Start building apps for iOS 8 with Apple's Swift programming language. If you're grounded in the basics of Xcode and the Cocoa framework, this book provides a structured explanation of all essential real-world iOS app components. Through deep exploration and copious code examples, you'll learn how to create views, manipulate view controllers, and use iOS frameworks for adding features such as audio and video, access to user calendars and photos, and tracking the device's location. Example code is available on GitHub in the form of full projects that you can download, study, and run. Build iOS apps with Swift Create, arrange, draw, layer, and animate views that respond to touch Use view controllers to manage multiple screens in a way that's understandable to users Explore UIKit interface objects, such as scroll views, table views, popovers, web

views, and maps Work with Cocoa frameworks for sensors, location, sound, and video Access user libraries: music, photos, address book, and calendar Examine additional topics including data storage, file sharing, networking, and threading Topics new to iOS 8 include: Major changes in app coordinate space and interface rotation Trait collections and size classes View margins, visual effect views, and major animation changes Changes to presented view controllers, popovers and split view controllers, alert and action sheet architecture Table view automatic variable row heights and sliding cells Classes for search results display, web view, video display, and audio mixing and effects Today extensions, Actions extensions, Photo Editing extensions Xcode 6 features: conditional constraints, view debugging, designable views, inspectable properties, new segue types

This text details the entire OpenGL ES 3.0 pipeline with detailed examples in order to provide a guide for developing a wide range of high performance 3D applications for embedded devices.

The iOS Game Programming Collection con-

sists of two bestselling eBooks: Learning iOS Game Programming: A Hands-On Guide to Building Your First iPhone Game Learning Cocos2D: A Hands-on Guide to Building iOS Games with Cocos2D, Box2D, and Chipmunk Since the launch of the App Store, games have been the hottest category of apps for the iPhone, iPod touch, and iPad. That means your best chance of tapping into the iPhone/iPad "Gold Rush" is to put out a killer game that everyone wants to play (and talk about). While many people think games are hard to build, they actually can be quite easy, and this collection is your perfect beginner's guide. Learning iOS Game Programming walks you through every step as you build a 2D tile map game, Sir Lamorak's Quest: The Spell of Release (which is free in the App Store). You can download and play the game you're going to build while you learn about the code. You learn the key characteristics of a successful iPhone game and important terminology and tools you will use. Learning Cocos2D walks you through the process of building Space Viking (which is free on the App Store), a 2D scrolling game that leverages Cocos2D, Box2D, and Chipmunk. As you build Space Viking,

you'll learn everything you need to know about Cocos2D so you can create the next killer iOS game. This collection helps you Plan high-level game design, components, and difficulty levels Use game loops to make sure the right events happen at the right time Render images, create sprite sheets, and build animations Use tile maps to build large game worlds from small reusable images Create fire, explosions, smoke, sparks, and other organic effects Deliver great sound via OpenAL and the iPhone's media player Provide game control via iPhone's touch and accelerometer features Craft an effective, intuitive game interface Build game objects and entities and making them work properly Detect collisions and ensuring the right response to them Polish, test, debug, and performance-tune your game Install and configure Cocos2D so it works with Xcode 4 Build a complete 2D action adventure game with Cocos2D Build your game's main menu screen for accessing levels Use Cocos2D's Scheduler to make sure the right events happen at the right times Use tile maps to build scrolling game levels from reusable images Add audio and sound effects with CocosDenshion--Co-

cos2D's sound engine Add gravity, realistic collisions, and ragdoll effects with Box2D and Chipmunk physics engines Add amazing effects to your games with particle systems Leverage Game Center in your game for achievements and leader boards Squeeze the most performance from your games

Since the launch of the App Store, games have been the hottest category of apps for the iPhone, iPod touch, and iPad. That means your best chance of tapping into the iPhone/iPad "Gold Rush" is to put out a killer game that everyone wants to play (and talk about). While many people think games are hard to build, they can actually be quite easy, and Learning iOS Game Programming is your perfect beginner's guide. Michael Daley walks you through every step as you build a killer 2D game for the iPhone. In Learning iOS Game Programming, you'll learn how to build a 2D tile map game, Sir Lamorak's Quest: The Spell of Release (which is free in the App Store). You can download and play the game you're going to build while you learn about the code and everything behind the scenes. Daley identifies the key characteristics of a successful iPhone game and

introduces the technologies, terminology, and tools you will use. Then, he carefully guides you through the whole development process: from planning storylines and game play all the way through testing and tuning. Download the free version of Sir Lamorak's Quest from the App Store today, while you learn how to build the game in this book. Coverage includes Planning high-level game design, components, and difficulty levels Using game loops to make sure the right events happen at the right time Rendering images, creating sprite sheets, and building basic animations Using tile maps to build large game worlds from small reusable images Creating fire, explosions, smoke, sparks, and other organic effects Delivering great sound via OpenAL and the iPhone's media player Providing game control via iPhone's touch and accelerometer features Crafting an effective, intuitive game interface Building game objects and entities and making them work properly Detecting collisions and ensuring the right response to them Polishing, testing, debugging, and performance-tuning your game Learning iOS Game Programming focuses on the features, concepts, and techniques you'll use

most often—and helps you master them in a real-world context. This book is 100% useful and 100% practical; there's never been an iPhone game development book like it!

In GPU Pro5: Advanced Rendering Techniques, section editors Wolfgang Engel, Christopher Oat, Carsten Dachsbacher, Michal Valient, Wessam Bahnassi, and Marius Bjorge have once again assembled a high-quality collection of cutting-edge techniques for advanced graphics processing unit (GPU) programming. Divided into six sections, the book covers rendering, lighting, effects in image space, mobile devices, 3D engine design, and compute. It explores rasterization of liquids, ray tracing of art assets that would otherwise be used in a rasterized engine, physically based area lights, volumetric light effects, screen-space grass, the usage of quaternions, and a quadtree implementation on the GPU. It also addresses the latest developments in deferred lighting on mobile devices, OpenCL optimizations for mobile devices, morph targets, and tiled deferred blending methods. In color throughout, GPU Pro5 is the only book that incorporates contributions from more than 50 ex-

perts who cover the latest developments in graphics programming for games and movies. It presents ready-to-use ideas and procedures that can help solve many of your daily graphics programming challenges. Example programs with source code are provided on the book's CRC Press web page.

The Mac has fully embraced OpenGL throughout its visual systems. In fact, Apple's highly efficient, modern OpenGL implementation makes Mac OS X one of today's best platforms for OpenGL development. OpenGL® Programming on Mac OS® X is the first comprehensive resource for every graphics programmer who wants to create, port, or optimize OpenGL applications for this high-volume platform. Leading OpenGL experts Robert Kuehne and J. D. Sullivan thoroughly explain the Mac's diverse OpenGL APIs, both old and new. They illuminate crucial OpenGL setup, configuration, and performance issues that are unique to the Mac platform. Next, they offer practical, start-to-finish guidance for integrating key Mac-native APIs with OpenGL, and leveraging the full power of the Mac platform in your graphics applica-

tions. Coverage includes A thorough review of Mac hardware and software architectures and their performance implications In-depth, expert guidance for accessing OpenGL from each of the Mac's core APIs: CGL, AGL, and Cocoa Interoperating with other Mac APIs: incorporating video with QuickTime, performing image effects with Core Image, and processing Core-Video data Analyzing Mac OpenGL application performance, resolving bottlenecks, and leveraging optimizations only available on the Mac Detecting, integrating, and using OpenGL extensions An accompanying Web site (www.macopenglbook.com) contains the book's example code, plus additional OpenGL-related resources. OpenGL® Programming on Mac OS® X will be valuable to Mac programmers seeking to leverage OpenGL's power, OpenGL developers porting their applications to the Mac platform, and cross-platform graphics developers who want to take advantage of the Mac platform's uniquely intuitive style and efficiency.

Using the new OpenCL (Open Computing Language) standard, you can write applications that access all available programming resources: CPUs, GPUs, and other

processors such as DSPs and the Cell/B.E. processor. Already implemented by Apple, AMD, Intel, IBM, NVIDIA, and other leaders, OpenCL has outstanding potential for PCs, servers, handheld/embedded devices, high performance computing, and even cloud systems. This is the first comprehensive, authoritative, and practical guide to OpenCL 1.1 specifically for working developers and software architects. Written by five leading OpenCL authorities, *OpenCL Programming Guide* covers the entire specification. It reviews key use cases, shows how OpenCL can express a wide range of parallel algorithms, and offers complete reference material on both the API and OpenCL C programming language. Through complete case studies and downloadable code examples, the authors show how to write complex parallel programs that decompose workloads across many different devices. They also present all the essentials of OpenCL software performance optimization, including probing and adapting to hardware. Coverage includes Understanding OpenCL's architecture, concepts, terminology, goals, and rationale Programming with OpenCL C and the runtime API Using buffers, sub-buffers, im-

ages, samplers, and events Sharing and synchronizing data with OpenGL and Microsoft's Direct3D Simplifying development with the C++ Wrapper API Using OpenCL Embedded Profiles to support devices ranging from cellphones to supercomputer nodes Case studies dealing with physics simulation; image and signal processing, such as image histograms, edge detection filters, Fast Fourier Transforms, and optical flow; math libraries, such as matrix multiplication and high-performance sparse matrix multiplication; and more Source code for this book is available at <https://code.google.com/p/opengl-book-samples/> Figures and code appear as they do in Xcode 5.x Covers iOS 7, Xcode 5.x, iPhone, iPad, and More! Additional files and updates available online In just 24 sessions of one hour each, learn how to build powerful applications for today's hottest handheld devices: the iPhone and iPad! Using this book's straightforward, step-by-step approach, you'll master every skill and technology you need, from setting up your iOS development environment to building great user interfaces, sensing motion to writing multitasking applications. Each les-

son builds on what you've already learned, giving you a rock-solid foundation for real-world success! Step-by-step instructions carefully walk you through the most common iOS development tasks. Quizzes and Exercises at the end of each chapter help you test your knowledge. By the Way notes present interesting information related to the discussion. Did You Know? tips offer advice or show you easier ways to perform tasks. Watch Out! cautions alert you to possible problems and give you advice on how to avoid them. Printed in full color—figures and code appear as they do in Xcode Covers iOS 7 and up Learn to navigate the Xcode 5.x development environment Prepare your system and iDevice for efficient development Get started quickly with Apple's Objective-C and Cocoa Touch Understand the Model-View-Controller (MVC) development pattern Visually design and code interfaces using Xcode Storyboards, Segues, Exits, Image Slicing, and the iOS Object Library Use Auto Layout to adapt to different screen sizes, orientations, and iOS versions Build advanced UIs with Tables, Split Views, Navigation Controllers, and more Read and write preferences and data, and create

System Settings plug-ins Use the iOS media playback and recording capabilities Take photos and manipulate graphics with Core Image Sense motion, orientation, and location with the accelerometer, gyroscope, and GPS Integrate online services using Twitter, Facebook, Email, Web Views, and Apple Maps Create universal applications that run on both the iPhone and iPad Write background-aware multitasking applications using the latest iOS 7 techniques Trace, debug, and monitor your applications as they run

Start building apps for iOS 9 with Apple's Swift programming language. If you're grounded in the basics of Xcode and the Cocoa framework, this book provides a structured explanation of all essential real-world iOS app components. Through deep exploration and copious code examples, you'll learn how to create views, manipulate view controllers, and use iOS frameworks for adding features such as audio and video, access to user calendars and photos, and tracking the device's location.

Using WebGL®, you can create sophisticated interactive 3D graphics inside web browsers, without plug-ins. WebGL makes

it possible to build a new generation of 3D web games, user interfaces, and information visualization solutions that will run on any standard web browser, and on PCs, smartphones, tablets, game consoles, or other devices. WebGL Programming Guide will help you get started quickly with interactive WebGL 3D programming, even if you have no prior knowledge of HTML5, JavaScript, 3D graphics, mathematics, or OpenGL. You'll learn step-by-step, through realistic examples, building your skills as you move from simple to complex solutions for building visually appealing web pages and 3D applications with WebGL. Media, 3D graphics, and WebGL pioneers Dr. Kouichi Matsuda and Dr. Rodger Lea offer easy-to-understand tutorials on key aspects of WebGL, plus 100 downloadable sample programs, each demonstrating a specific WebGL topic. You'll move from basic techniques such as rendering, animating, and texturing triangles, all the way to advanced techniques such as fogging, shadowing, shader switching, and displaying 3D models generated by Blender or other authoring tools. This book won't just teach you WebGL best practices, it will give you a library of code to jumpstart your own pro-

jects. Coverage includes:

- WebGL's origin, core concepts, features, advantages, and integration with other web standards
- How and basic WebGL functions work together to deliver 3D graphics
- Shader development with OpenGL ES Shading Language (GLSL ES)
- 3D scene drawing: representing user views, controlling space volume, clipping, object creation, and perspective
- Achieving greater realism through lighting and hierarchical objects
- Advanced techniques: object manipulation, heads-up displays, alpha blending, shader switching, and more
- Valuable reference appendixes covering key issues ranging from coordinate systems to matrices and shader loading to web browser settings

This is the newest text in the OpenGL Technical Library, Addison-Wesley's definitive collection of programming guides and reference manuals for OpenGL and its related technologies. The Library enables programmers to gain a practical understanding of OpenGL and the other Khronos application-programming libraries including OpenGL ES and OpenCL. All of the technologies in the OpenGL Technical Library evolve under the auspices of the Khronos Group, the industry consortium

guiding the evolution of modern, open-standards media APIs.

This book gathers all the content from the GPU Pro series (Vols 1-7; 2010-2016) into a convenient single source anthology covering rendering techniques in computer graphics. It covers ready-to-use ideas and procedures that can help solve many computer graphics programming challenges. The articles by leading programmers contained in this volume reflect the methods and techniques used to sample real-world phenomenon or to model special effects using these methods and techniques in their work.

Want to create sophisticated games and graphics-intensive apps? Learn OpenGL ES gets you started immediately with OpenGL ES. After mastering the basics of OpenGL ES itself, you will quickly find yourself writing and building game apps, without having to learn about object oriented programming techniques. This book demonstrates the use of a powerful open-source modeling tool, Blender. You will be guided, step by step, through the development of Tank Fence, a dynamic, interactive 3D game. Along the way you'll gain skills in building apps with Eclipse and the Android SDK or

NDK, rendering graphics using hardware acceleration, and multithreading for performance and responsiveness. iOS developers will also find this book's information invaluable when writing their apps. You'll learn everything you need to know about: Creating simple, efficient game UIs Designing the basic building blocks of an exciting, interactive 3D game Pulling all the elements together with Blender, a powerful open-source tool for modeling, animation, rendering, compositing, video editing, and game creation Taking the next big step using custom and inbuilt functions, texturing, shading, light sources, and more Refining your mobile game app through collision detection, player-room-obstacle classes, and storage classes Doing all this efficiently on mobile devices with limited resources and processing

OpenGL ES 2.0 is the industry's leading software interface and graphics library for rendering sophisticated 3D graphics on handheld and embedded devices. With OpenGL ES 2.0, the full programmability of shaders is now available on small and portable devices—including cell phones, PDAs, consoles, appliances, and vehicles. However, OpenGL ES differs significantly

from OpenGL. Graphics programmers and mobile developers have had very little information about it—until now. In the OpenGL® ES 2.0 Programming Guide, three leading authorities on the OpenGL ES 2.0 interface—including the specification's editor—provide start-to-finish guidance for maximizing the interface's value in a wide range of high-performance applications. The authors cover the entire API, including Khronos-ratified extensions. Using detailed C-based code examples, they demonstrate how to set up and program every aspect of the graphics pipeline. You'll move from introductory techniques all the way to advanced per-pixel lighting, particle systems, and performance optimization. Coverage includes: Shaders in depth: creating shader objects, compiling shaders, checking for compile errors, attaching shader objects to program objects, and linking final program objects The OpenGL ES Shading Language: variables, types, constructors, structures, arrays, attributes, uniforms, varyings, precision qualifiers, and invariance Inputting geometry into the graphics pipeline, and assembling geometry into primitives Vertex shaders, their special variables, and their use in

per-vertex lighting, skinning, and other applications Using fragment shaders—including examples of multitexturing, fog, alpha test, and user clip planes Fragment operations: scissor test, stencil test, depth test, multisampling, blending, and dithering Advanced rendering: per-pixel lighting with normal maps, environment mapping, particle systems, image post-processing, and projective texturing Real-world programming challenges: platform diversity, C++ portability, OpenKODE, and platform-specific shader binaries

Printed in full color. Android is booming like never before, with millions of devices shipping every day. It's never been a better time to learn how to create your own 3D games and live wallpaper for Android. You'll find out all about shaders and the OpenGL pipeline, and discover the power of OpenGL ES 2.0, which is much more feature-rich than its predecessor. If you can program in Java and you have a creative vision that you'd like to share with the world, then this is the book for you. This book will teach you everything you need to know to create compelling graphics on Android. You'll learn the basics of OpenGL

by building a simple game of air hockey, and along the way, you'll see how to initialize OpenGL and program the graphics pipeline using shaders. Each lesson builds upon the one before it, as you add colors, shading, 3D projections, touch interaction, and more. Then, you'll find out how to turn your idea into a live wallpaper that can run on the home screen. You'll learn about more advanced effects involving particles, lighting models, and the depth buffer. You'll understand what to look for when debugging your program, and what to watch out for when deploying to the market. OpenGL can be somewhat of a dark art to the uninitiated. As you read this book, you'll learn each new concept from first principles. You won't just learn about a feature; you'll also understand how it works, and why it works the way it does. Everything you learn is forward-compatible with the just-released OpenGL ES 3, and you can even apply these techniques to other platforms, such as iOS or HTML5 WebGL. If you're grounded in the basics of Swift, Xcode, and the Cocoa framework, this book provides a structured explanation of all essential real-world iOS app components. Through deep exploration and copi-

ous code examples, you'll learn how to create views, manipulate view controllers, and add features from iOS frameworks. Stay up-to-date on iOS 10 innovations, such as property animators, force touch, speech recognition, and the User Notification framework, as well as Xcode 8 improvements for autolayout and asset catalogs. All example code (now rewritten in Swift 3) is available on GitHub for you to download, study, and run. Create, arrange, draw, layer, and animate views that respond to touch Use view controllers to manage multiple screens of interface Master interface classes for scroll views, table views, text, popovers, split views, web views, and controls Dive into frameworks for sound, video, maps, and sensors Access user libraries: music, photos, contacts, and calendar Explore additional topics, including files, networking, and threads Want to brush up on the basics? Pick up *iOS 10 Programming Fundamentals with Swift* (978-1-491-97007-2) to learn about Swift, Xcode, and Cocoa. Together with *Programming iOS 10*, you'll gain a solid, rigorous, and practical understanding of iOS 10 development.

Get Started Fast with Modern OpenGL ES

Graphics Programming for iPhone, iPod touch, and iPad OpenGL ES technology underlies the user interface and graphical capabilities of Apple's iPhone, iPod touch, and iPad—as well as devices ranging from video-game consoles and aircraft-cockpit displays to non-Apple smartphones. In this friendly, thorough introduction, Erik M. Buck shows how to make the most of Open GL ES in Apple's iOS environment. This highly anticipated title focuses on modern, efficient approaches that use the newest versions of OpenGL ES, helping you avoid the irrelevant, obsolete, and misleading techniques that litter the Internet. Buck embraces Objective-C and Cocoa Touch, showing how to leverage Apple's powerful, elegant GLKit framework to maximize your productivity, achieve tight platform integration, and deliver exceptionally polished apps. If you've written C or C++ code and know object-oriented programming basics, this title brings together everything you need to fully master OpenGL ES graphics for iOS—including downloadable examples specifically designed to jumpstart your own projects. Coverage includes

- Understanding core OpenGL ES computer graphics concepts

- and iOS graphics architecture
- Integrating Cocoa Touch with OpenGL ES to leverage the power of Apple's platform
- Creating textures from start to finish: opacity, blending, multi-texturing, and compression
- Simulating ambient, diffuse, and specular light
- Using transformations to render 3D geometric objects from any point of view
- Animating scenes by controlling time through application logic
- Partitioning data to draw expansive outdoor scenes with rolling terrain
- Detecting and handling user interaction with 3D geometry
- Implementing special effects ranging from skyboxes to particles and billboards
- Systematically optimizing graphics performance
- Understanding the essential linear algebra concepts used in computer graphics
- Designing and constructing a complete simulation that incorporates everything you've learned

Presents twenty-four lessons on developing applications for the iPhone and iPad, and includes information on navigating the development environment, building advanced user interfaces, and integrating online services.

Offers step-by-step instructions for using

iOS to build applications for iPhone and iPad.

"Dive deep into views, view controllers, and frameworks"--Cover.

Master Metal: The Next-Generation Graphics and GPU Programming Platform for Apple Developers Metal enables Apple developers to maximize performance in demanding tasks like 3D graphics, games, scientific programming, visualization, and GPU-accelerated machine learning. Metal® Programming Guide is the authoritative, practical guide to Metal for all iOS programmers who are interested in graphics programming but don't know where to start. Pioneering Apple developer Janie Clayton covers everything from basic draw calls to advanced parallel computing, combining easy-to-understand conceptual explanations with well-tested Swift 4/Xcode 9 sample code (available for download at GitHub). Clayton introduces the essential Metal, graphics, and math concepts every graphics programmer needs to know. She also discusses key graphics-specific libraries, concepts, and Metal Classes, presenting techniques and examples you'll find valuable for both graphics and data processing. Clayton also provides cover-

age of the Metal Compute Pipeline, demonstrating practical GPU programming applications ranging from image processing to neural networking. Quickly get a basic Metal project running Work with Metal resources and memory management Learn how shaders are compiled and accessed by the CPU Program both 2D and 3D graphics with Metal Import 3D models and assets from Blender, Maya, and other programs Apply imported textures to model objects Use multipass rendering to efficiently implement computationally expensive techniques Leverage tessellation to reduce mesh detail Use the GPU for a wide spectrum of general-purpose computing applications Get started with the Metal Performance Shaders Framework

Get a solid grounding in the fundamentals of Cocoa Touch, and avoid problems during iPhone and iPad app development. With this revised and expanded edition, you'll dig into Cocoa and learn how to work effectively with Objective-C and Xcode. This book covers iOS 5 and Xcode 4.3 in a rigorous, orderly fashion—ideal whether you're approaching iOS for the first time or need a reference to bolster existing skills. Many discussions have been

expanded or improved. All code examples have been revised, and many new code examples have been added. The new memory management system—ARC—is thoroughly explained and all code examples have been revised to use it. New Objective-C features, such as declaration of instance variables in the class's implementation section, are described and incorporated into the revised example code. Discussion of how an app launches, and all code examples, are revised for project templates from Xcode 4.2 and later. Other new Xcode features, including the Simulator's Debug menu, are covered, with screen shots based on Xcode 4.2 and later. The discussion of Instruments is expanded, with screen shots—by popular request! Storyboards are explained and discussed. The explanation of view controllers is completely rewritten to include iOS 5 features, such as custom parent view controllers and UINavigationController. The Controls chapter now includes iOS 5 interface customizability and the appearance proxy. New features of interface classes are discussed, including tiling and animated images, new table view features, new alert view styles. Coverage of frame-

works such as Core Motion and AV Foundation is greatly expanded. New iOS 5 classes and frameworks are also discussed, including Core Image and UIDocument (and iCloud support). Important iOS 5 changes that can break existing code are explicitly called out in the text and listed in the index.

The Definitive Vulkan™ Developer's Guide and Reference: Master the Next-Generation Specification for Cross-Platform Graphics The next generation of the OpenGL specification, Vulkan, has been redesigned from the ground up, giving applications direct control over GPU acceleration for unprecedented performance and predictability. Vulkan™ Programming Guide is the essential, authoritative reference to this new standard for experienced graphics programmers in all Vulkan environments. Vulkan API lead Graham Sellers (with contributions from language lead John Kessenich) presents example-rich introductions to the portable Vulkan API and the new SPIR-V shading language. The author introduces Vulkan, its goals, and the key concepts framing its API, and presents a complex rendering system that demon-

trates both Vulkan's uniqueness and its exceptional power. You'll find authoritative coverage of topics ranging from drawing to memory, and threading to compute shaders. The author especially shows how to handle tasks such as synchronization, scheduling, and memory management that are now the developer's responsibility. Vulkan™ Programming Guide introduces powerful 3D development techniques for fields ranging from video games to medical imaging, and state-of-the-art approaches to solving challenging scientific compute problems. Whether you're upgrading from OpenGL or moving to open-standard graphics APIs for the first time, this guide will help you get the results and performance you're looking for. Coverage includes Extensively tested code examples to demonstrate Vulkan's capabilities and show how it differs from OpenGL Expert guidance on getting started and working with Vulkan's new memory system Thorough discussion of queues, commands, moving data, and presentation Full explanations of the SPIR-V binary shading language and compute/graphics pipelines Detailed discussions of drawing commands, geometry and fragment processing,

synchronization primitives, and reading Vulkan data into applications A complete case study application: deferred rendering using complex multi-pass architecture and multiple processing queues Appendixes presenting Vulkan functions and SPIR-V opcodes, as well as a complete Vulkan glossary Example code can be found here: <https://github.com/vulkanprogrammingguide/examples>

Please note that this title's color insert (referred to as "Plates" within the text) is not available for this digital product. OpenGL is a powerful software interface used to produce high-quality, computer-generated images and interactive applications using 2D and 3D objects, bitmaps, and color images. The OpenGL® Programming Guide, Seventh Edition, provides definitive and comprehensive information on OpenGL and the OpenGL Utility Library. The previous edition covered OpenGL through Version 2.1. This seventh edition of the best-selling "red book" describes the latest features of OpenGL Versions 3.0 and 3.1. You will find clear explanations of OpenGL functionality and many basic computer graphics techniques, such as building and ren-

dering 3D models; interactively viewing objects from different perspective points; and using shading, lighting, and texturing effects for greater realism. In addition, this book provides in-depth coverage of advanced techniques, including texture mapping, antialiasing, fog and atmospheric effects, NURBS, image processing, and more. The text also explores other key topics such as enhancing performance, OpenGL extensions, and cross-platform techniques. This seventh edition has been updated to include the newest features of OpenGL Versions 3.0 and 3.1, including Using framebuffer objects for off-screen rendering and texture updates Examples of the various new buffer object types, including uniform-buffer objects, transform feedback buffers, and vertex array objects Using texture arrays to increase performance when using numerous textures Efficient rendering using primitive restart and conditional rendering Discussion of OpenGL's deprecation mechanism and how to verify your programs for future versions of OpenGL This edition continues the discussion of the OpenGL Shading Language (GLSL) and explains the mechanics of using this language to create complex graphics

effects and boost the computational power of OpenGL. The OpenGL Technical Library provides tutorial and reference books for OpenGL. The Library enables programmers to gain a practical understanding of OpenGL and shows them how to unlock its full potential. Originally developed by SGI, the Library continues to evolve under the auspices of the Khronos OpenGL ARB Working Group, an industry consortium responsible for guiding the evolution of OpenGL and related technologies.

Learn to build extraordinary apps for iPhone, iPad, and iPod touch iOS is the hottest development platform around, and iOS 6 adds a new and deeper dimension to explore. This guide offers serious information for serious programmers who know the basics and are ready to dive into the advanced features of iOS. You'll learn to create killer apps for the iPad, iPhone, and iPod touch, including how to maximize performance and make more money from your apps with in-app purchases. Topics covered include security, multitasking, running on multiple platforms, blocks and functional programming, advanced text layout, and much more. App development for iPhones and iPads is a lucrative and

exciting venture; books on this topic are steady bestsellers This advanced guide helps experienced developers take full advantage of the latest platform upgrade, iOS 6 Provides in-depth background on maximizing your apps with Apple's iPhone SDK 6.0, including the major new APIs and building applications for the new iPad Covers keeping control of multitasking, increasing income with in-app purchases, key value observing with Cocoa, running on multiple platforms, advanced text layout, building a Core foundation, and more iOS 6 Programming: Pushing the Limits gives experienced mobile developers a wealth of knowledge for creating outstanding iPhone and iPad apps on the latest platform.

Develop graphically sophisticated apps and games today! The smart phone app market is progressively growing, and there is new market gap to fill that requires more graphically sophisticated applications and games. Game and Graphics Programming for iOS and Android with OpenGL ES 2.0 quickly gets you up to speed on understanding how powerful OpenGL ES 2.0 technology is in creating apps and games for amusement and effec-

tiveness. Leading you through the development of a real-world mobile app with live code, this text lets you work with all the best features and tools that Open GL ES 2.0 has to offer. Provides a project template for iOS and Android platforms Delves into OpenGL features including drawing canvas, geometry, lighting effects, character animation, and more Offers explanation of full-function 2D and 3D graphics on embedded systems Addresses the principal technology for hardware-accelerated graphical rendering Game and Graphics Programming for iOS and Android with OpenGL ES 2.0 offers important, need-to-know information if you're interested in striking a perfect balance between aesthetics and functionality in apps.

Includes Complete Coverage of the OpenGL® Shading Language! Today's OpenGL software interface enables programmers to produce extraordinarily high-quality computer-generated images and interactive applications using 2D and 3D objects, color images, and programmable shaders. OpenGL® Programming Guide: The Official Guide to Learning OpenGL®, Version 4.3, Eighth Edition, has been al-

most completely rewritten and provides definitive, comprehensive information on OpenGL and the OpenGL Shading Language. This edition of the best-selling “Red Book” describes the features through OpenGL version 4.3. It also includes updated information and techniques formerly covered in OpenGL® Shading Language (the “Orange Book”). For the first time, this guide completely integrates shader techniques, alongside classic, function-centric techniques. Extensive new text and code are presented, demonstrating the latest in OpenGL programming techniques. OpenGL® Programming Guide, Eighth Edition, provides clear explanations of OpenGL functionality and techniques, including processing geometric objects with vertex, tessellation, and geometry shaders using geometric transformations and viewing matrices; working with pixels and texture maps through fragment shaders; and advanced data techniques using framebuffer objects and compute shaders. New OpenGL features covered in this edition include Best practices and sample code for taking full advantage of shaders and the entire shading pipeline (including geometry and tessellation shaders) Integration of

general computation into the rendering pipeline via compute shaders Techniques for binding multiple shader programs at once during application execution Latest GLSL features for doing advanced shading techniques Additional new techniques for optimizing graphics program performance Apple's definitive guide to the powerful AppleScript scripting language, this book provides essential information for Macintosh power users and programmers who want to use AppleScript to write new scripts, modify existing scripts, or write scriptable applications.

Covers iOS 9.1 and up, Xcode 7.x, iPhone, iPad, and More! In just 24 sessions of one hour each, learn how to build powerful applications for today's hottest handheld devices: the iPhone and iPad! Using this book's straightforward, step-by-step approach, you'll master every skill and technology you need, from setting up your iOS development environment to building great user interfaces, sensing motion to writing multitasking applications. Each lesson builds on what you've already learned, giving you a rock-solid foundation for real-world success! Step-by-step instructions carefully walk you through the most com-

mon iOS development tasks. Quizzes and Exercises help you test your knowledge. Notes present interesting information related to the discussion. Tips show you easier ways to perform tasks. Cautions alert you to possible problems and give you advice on how to avoid them. Printed in full color—figures and code appear as they do in Xcode 7.x • Learn to navigate the Xcode 7.x development environment and install apps on your iDevice • Get started quickly with Apple's Open Source language: Swift 2.0 • Test code and application logic using the iOS Playground • Understand the Model-View-Controller (MVC) development pattern • Visually design and code interfaces using Xcode Storyboards, Segues, Exits, Image Slicing, and the iOS Object Library • Use Auto Layout and Size Classes to adapt to different screen sizes and orientations • Build advanced UIs with Tables, Split Views, Navigation Controllers, and more • Read and write preferences and data, and create System Settings plug-ins • Use iOS media playback and recording capabilities • Take photos and manipulate graphics with Core Image • Sense motion, orientation, and location with the accelerometer, gyroscope, and GPS • Use 3D touch to add

Peek, Pop, and Quick Actions to your apps

- Integrate online services using Twitter, Facebook, Email, Web Views, and Apple Maps
- Create universal applications that run on both the iPhone and iPad
- Write background-aware multitasking applications
- Trace, debug, and monitor applications as they run
- Additional files and updates available online

To create successful games for the iPhone family of mobile devices, developers need to know how touch-input, real-time graphics, and sound come together in the iOS environment. iOS Game Development: Developing Games for iPad, iPhone, and iPod

Touch takes you from the basics of app coding to releasing and marketing your game on the App Store. The book offers a wealth of previously unpublished information about the iOS platform. The text focuses on the concrete requirements of game developers, presenting in-depth details on each step in the mobile game development process. It explains the use of OpenGL ES for 2D/3D graphics and OpenAL for sound, both of which are recommended for game performance on the iOS platform. It also covers new APIs such as the GLKit, GameKit, and Box2D Physics Engine. To better understand the explanations, the author encourages you to access

more than 30 iOS example apps from his website. Each app represents a small piece of the complex field of game development in a straightforward manner. The apps can be run on any device in the iPhone family and have been extensively tested with various iOS versions. Suitable for both newcomers and more advanced developers, this color book helps you get started with iOS game development. By following the book's clear descriptions and example programs, you will understand how to implement the fundamentals in smaller game projects and be able to create your first game for the App Store.