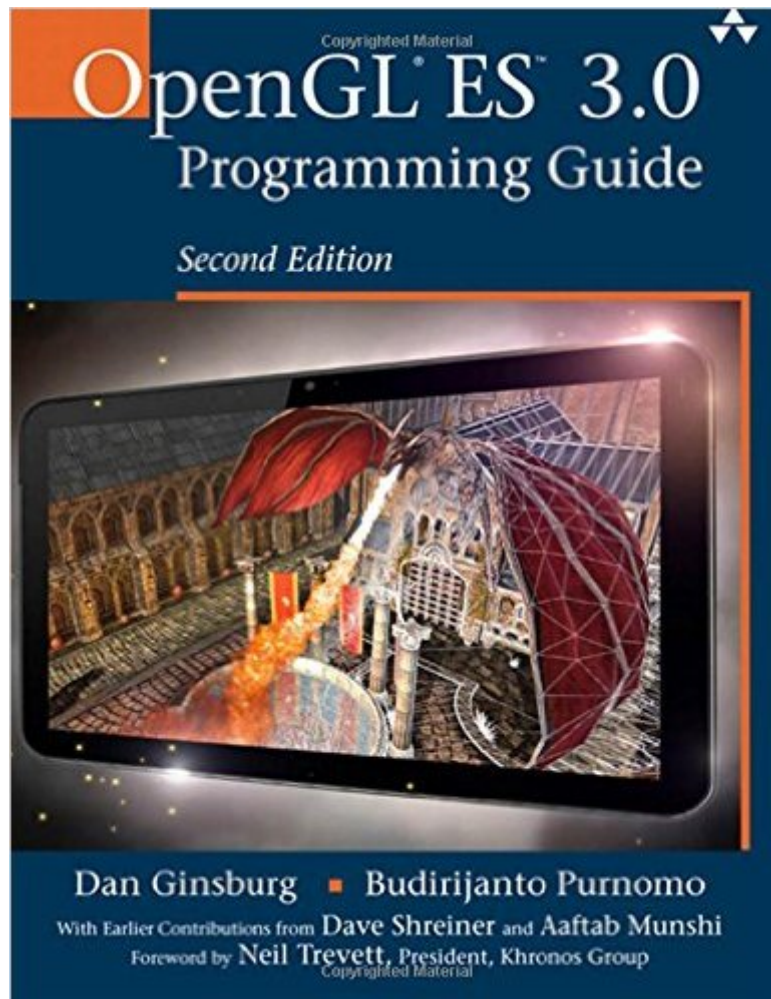# OpenGL ES 3.0 Programming Guide (2nd Edition)

## Synopsis

OpenGL® Â 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. Â In the OpenGL Â® ES Â„¢ 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. Â 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. Â 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. Â 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 Â 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. Â

## Book Information

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## Customer Reviews

This book is not a tutorial on OpenGL. You really need to already understand all the concepts of OpenGL, C style programming languages, and 3D programming in general before this book will be of any use to you. It is geared toward people who are ready to move from an older version to 3.0. We are not looking at a book that starts with a small sample and takes you to the end of a project. Instead the book takes each aspect of OpenGL 3.0 and covers it as a standalone topic.The back of the book covers what platforms support OpenGL 3.0 and have been tested with the contents of the book including Android 4.3, iOS 7+, Windows and Ubuntu Linux while setting up and using OpenGL on the platforms is not covered until chapter 16.Each chapter covers a small area and explains why things changed in the 3.0 version and why you would want to use the new way of doing things. A lot of areas have improved or have been optimized for 3.0 and doing things the old way will end up in subpar performance or a lot of extra code. If there are multiple ways to accomplish something in 3.0 the book covers them and tells you which way is the most common and why.While there is not a start to end project happening each section does have code examples to show real world usage of the example being presented. Since OpenGL is not simple it is handy to see the set up and tear down needed to use the feature being covered.The middle of the book is a full color quick reference section. There is no easy way to remove this section to use as a separate guide. It does have a link to a PDF you can download or you can purchase it as a laminated card from .This book contains very dense information. It explains how to get the most out of OpenGL ES 3.

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