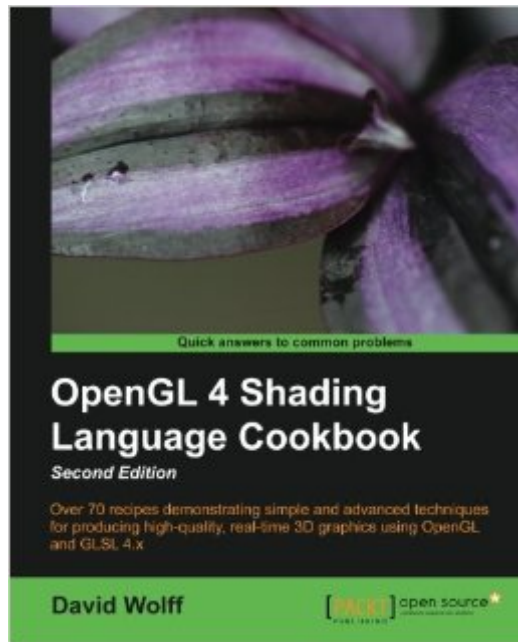# OpenGL 4 Shading Language Cookbook – Second Edition

Synopsis

Acquiring the skills of OpenGL Shading Language is so much easier with this cookbook. You'll be creating graphics rather than learning theory, gaining a high level of capability in modern 3D programming along the way. Overview Discover simple and advanced techniques for leveraging modern OpenGL and GLSL Learn how to use the newest features of GLSL including compute shaders, geometry, and tessellation shaders Get to grips with a wide range of techniques for implementing shadows using shadow maps, shadow volumes, and more Clear, easy-to-follow examples with detailed explanations and full, cross-platform source code available from GitHub In Detail OpenGL Shading Language (GLSL) is a programming language used for customizing parts of the OpenGL graphics pipeline that were formerly fixed-function, and are executed directly on the GPU. It provides programmers with unprecedented flexibility for implementing effects and optimizations utilizing the power of modern GPUs. With Version 4, the language has been further refined to provide programmers with greater power and flexibility, with new stages such as tessellation and compute. OpenGL 4 Shading Language Cookbook provides easy-to-follow examples that first walk you through the theory and background behind each technique, and then go on to provide and explain the GLSL and OpenGL code needed to implement it. Beginner level through to advanced techniques are presented including topics such as texturing, screen-space techniques, lighting, shading, tessellation shaders, geometry shaders, compute shaders, and shadows. OpenGL Shading Language 4 Cookbook is a practical guide that takes you from the fundamentals of programming with modern GLSL and OpenGL, through to advanced techniques. The recipes build upon each other and take you quickly from novice to advanced level code. You’ll see essential lighting and shading techniques; examples that demonstrate how to make use of textures for a wide variety of effects and as part of other techniques; examples of screen-space techniques including HDR rendering, bloom, and blur; shadowing techniques; tessellation, geometry, and compute shaders; how to use noise effectively; and animation with particle systems. OpenGL Shading Language 4 Cookbook provides examples of modern shading techniques that can be used as a starting point for programmers to expand upon to produce modern, interactive, 3D computer graphics applications. What you will learn from this book Compile, debug, and communicate with shader programs Use new features of GLSL 4 such as subroutines, sampler objects, and uniform blocks Implement core lighting and shading techniques such as diffuse and specular shading, per-fragment shading, and spotlights Use textures for a variety of effects including cube maps for reflection or refraction Implement screen-space techniques such as HDR, bloom, blur filters, order-independent transparency, and deferred shading

Utilize noise in shaders Use shaders for animation Make use of compute shaders for physics, animation, and general computing Learn how to use new OpenGL features such as shader storage buffer objects, and image load/store

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Customer Reviews

Awesome book. The author is very helpful in fixing source code problems on GitHub as well. Samples are compact, organized, and intuitive to understand if you have experience with C++ and platform-independent windowing systems such as SFML, SDL, or in this case GLFW.

This book should be the model for all programming-by-example books. Its examples are concrete, simple to understand, yet complex in their results and behavior. Users interested in learning how GLSL works by getting real, hands on, "learn by example" code segments will be satiated. Extremely advanced and very impressive techniques are utilized in simple language. Where necessary, 3D math is presented in a consumable and as-required methodology. I highly recommend it to anyone interested in the subject.

Some others reviews have claimed this book is good for an introduction to modern opengl. Although it could be used for a such a purpose, I wouldn't recommend using it that way. The introduction portion is entirely in the first chapter and is awkwardly organized with too much emphasis on largely redundant shader examples with not enough emphasis on the opengl code required to use the

shaders. Furthermore, the writing is super dry and suffers from some pacing issues (some minor things are explained in a drawn out matter while some more advanced items are glossed over).That being said, there is a lot of useful information in this book and a lot of interesting topics are covered. This would make an excellent second book in your collection. Get your introduction from another book like "Anton's OpenGL 4 Tutorials", and use this book in the manner the title suggests - a cookbook with recipes for handling various topics.

I taught a beginners (undergrad) course on OpenGL Shading and this book was instrumental in making the course possible. It has very little fluff, is written in a very clean, well structured manner, and is easy to approach. The assumption is that people already know a good bit of programming and have some familiarity with Graphics APIs. I would say this is THE book to read for someone who is already familiar with legacy OpenGL and wants to upgrade to shader programming and new APIs.

OpenGL 4 Shading Language Cookbook - Second Edition OpenGL 4.0 Shading Language Cookbook OpenGL(R) Programming Guide: The Official Guide to Learning OpenGL, Version 1.2 (3rd Edition) Opengl Programming Guide: The Official Guide to Learning Opengl, Release 1 Dual Language Development & Disorders: A Handbook on Bilingualism & Second Language Learning, Second Edition (CLI) OpenGL Development Cookbook OpenGL Data Visualization Cookbook OpenGL ES 3.0 Cookbook How to Draw Cool Stuff: Shading, Textures and Optical Illusions Silk Shading (Essential Stitch Guides) Rugs in Bloom: Shading Flowers in Hooked Rugs Nature's Patterns and Designs Coloring Books: Succulents and Cacti (S M Coloring and Shading Books) (Volume 13) How to Draw with Colored Pencils on Toned Paper: in Realistic Style, Colored Pencil Guides With Step-by-Step Instructions, Tips and Tricks (How to Draw, The Complete Guide for Sketching, Shading) Computer Graphics Using OpenGL (Hardcover, 2006) 3rd EDITION ShaderX3: Advanced Rendering with DirectX and OpenGL (Charles River Media Graphics) Python Graphics for Games 3: Working in 3 Dimensions: Object Creation and Animation with OpenGL and Blender (Volume 3) An Introduction to 3D Computer Graphics, Stereoscopic Image, and Animation in OpenGL and C/C++ More OpenGL Game Programming Game and Graphics Programming for iOS and Android with OpenGL ES 2.0 Learning Game Physics with Bullet Physics and OpenGL