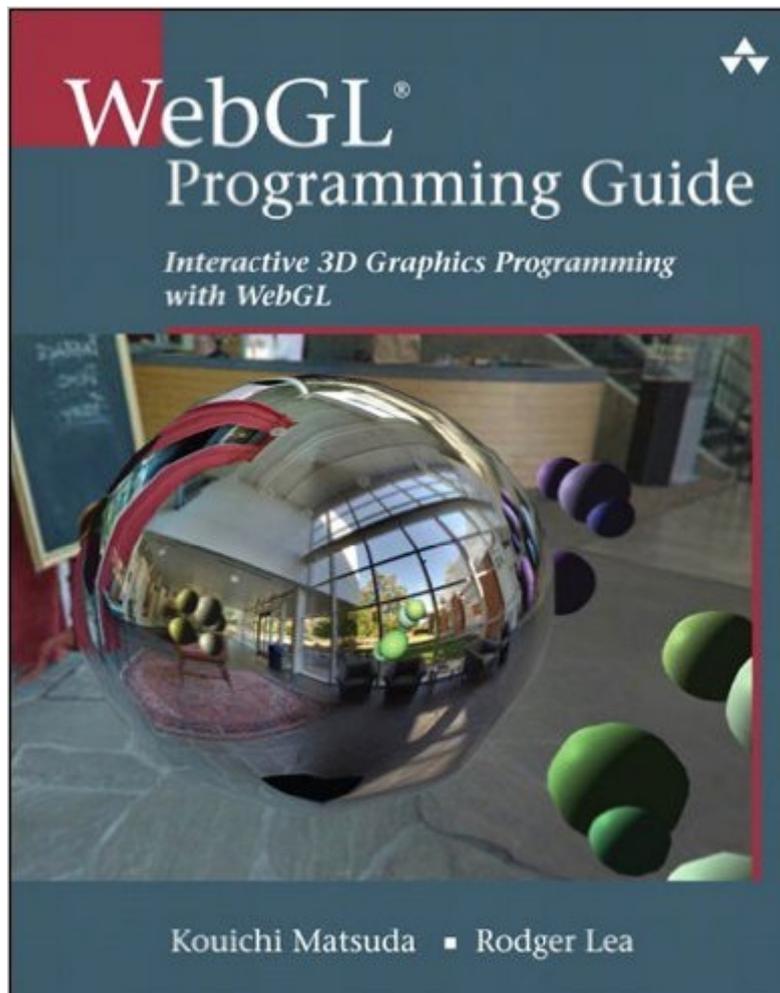# WebGL Programming Guide: Interactive 3D Graphics Programming With WebGL (OpenGL)

Synopsis

Using WebGLÂ®, 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. Â Youâ ™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. Â Youâ ™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 wonâ ™t just teach you WebGL best practices, it will give you a library of code to jumpstart your own projects. Â Coverage includes: â ¢ WebGLâ ™s origin, core concepts, features, advantages, and integration with other web standardsâ ¢ How and basic WebGL functions work together to deliver 3D graphicsâ ¢ Shader development with OpenGL ES Shading Language (GLSL ES)â ¢ 3D scene drawing: representing user views, controlling space volume, clipping, object creation, and perspectiveâ ¢ Achieving greater realism through lighting and hierarchical objectsâ ¢ Advanced techniques: object manipulation, heads-up displays, alpha blending, shader switching, and moreâ ¢ Valuable reference appendixes covering key issues ranging from coordinate systems to matrices and shader loading to web browser settings Â This is the newest text in the OpenGL Technical Library, Addison-Wesleyâ ™s definitive collection of programming guides an 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.

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Customer Reviews

WebGL is a strange place, with bits of DNA from OpenGL ES, GLSL, JavaScript, HTML5 and slight odor of past explorations like VRML and X3D. The runtime environment is strange, a powerful low-level language (GLSL) that runs inside of a high-level sandbox (browser JavaScript). Adding to the learning curve is the fact that WebGL is based on OpenGL ES, a lean, mean API that forgoes all the training wheels of legacy OpenGL like predefined modelview and projection matrices and fixed function pipelines. The result is a landscape both beautiful, and frightening for a beginner.In this far-off land, WebGL Programming Guide is going to be your map and survival manual. It starts by showing you the bridge between the safe realms of HTML5 and JavaScript and the wilds of WebGL, with simple 2D drawing examples that mimic the HTML5 Canvas. From there it leaps into the jungle, teaching shaders, uniforms and textures, browser event handling, buffer objects, matrices, transforms and animation, views and lighting.The number of disparate technologies to get under your belt to master WebGL is formidable (though they are C-style languages, JavaScript and GLSL couldn't be more dissimilar) and this book takes you firmly by the hand and leads you over the obstacles and away from the dead-ends to show you how to succeed with WebGL. The writing is good, neither too verbose or concise. The code is tight and elegant, relying on libraries and abstraction layers early on to not overwhelm you with a wall of code, and then peeling back the

layers in more advanced chapters to show how everything works and let you take the reins manually if you choose.At 516 pages, it's as big as it could reasonably be and not outgrow its purpose.

WebGL is here to stay, as its unique architecture (accessing the user's GPU (for its shader, for example) and running on the client side) makes it ideal for embedded chips and mobile, as well as browsers. Google Maps runs in WebGL, and both Autodesk's early support with Maya WebGL interfaces, and now their cloud servers which port all their applications to the cloud via WebGL portend well for learning this challenging language.If you're already an OpenGL Jock (both programs are from the Khronos Group, with a Mozilla pedigree), it will help a lot. Whenever an API accesses the GPU it doesn't bode well for user friendly programming! Since its beta debut in 2009 a lot of "easier" spins have appeared, most especially Three dot js. Both are obviously JavaScript API's, and there are about 20 others vying to help with the GPU coding. Since the technology doesn't require plug ins and bytecode, but uses the user's power, it is ideal for any device with a decent GPU platform, and nearly all browsers now support it natively (although IE's prior to Windows 8.1 do require a plug in).Although building and animating with WebGL's ide is a pain, the nice thing is that it supports Maya, Blender, etc. and you can seamlessly import your creations. With Flash no longer being supported, and HTML5/Canvas skyrocketing, WebGL is becoming a very hot "go to" platform for 3D. The "feel" is a lot like OpenGL (and in fact you need it to code in WebGL) and the commands sport a blend of imperative and functional. The forums say there is a lot of support for concurrent/parallel built in and coming, but I am skeptical at this writing.For a new book, the code is pretty clean, with only minor punctuation rather than syntax errors.

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