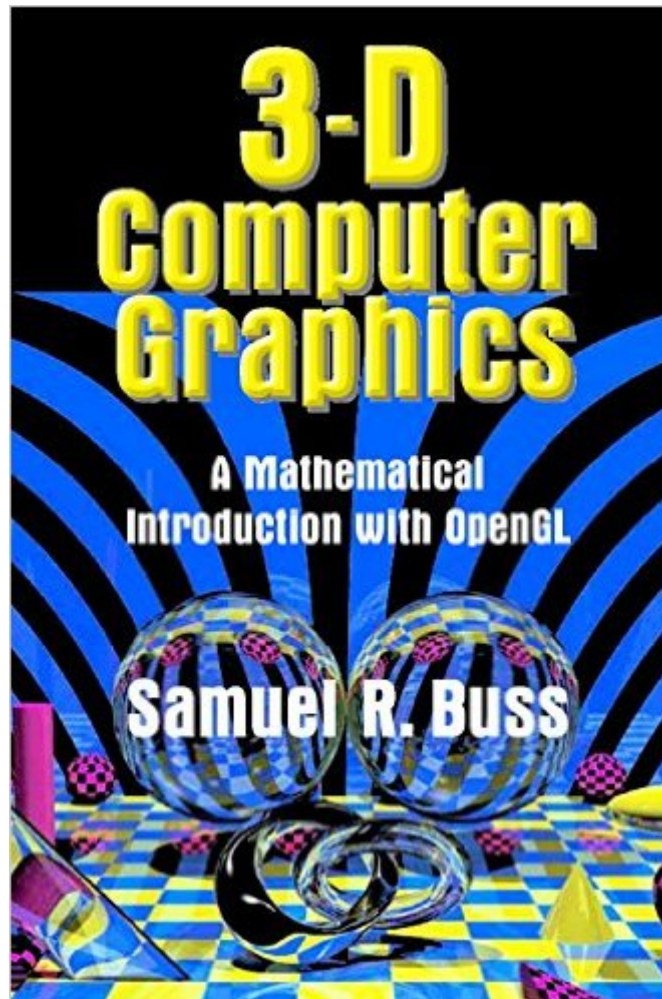# 3D Computer Graphics: A Mathematical Introduction With OpenGL

Synopsis

This textbook, first published in 2003, emphasises the fundamentals and the mathematics underlying computer graphics. The minimal prerequisites, a basic knowledge of calculus and vectors plus some programming experience in C or C++, make the book suitable for self study or for use as an advanced undergraduate or introductory graduate text. The author gives a thorough treatment of transformations and viewing, lighting and shading models, interpolation and averaging, Bézier curves and B-splines, ray tracing and radiosity, and intersection testing with rays. Additional topics, covered in less depth, include texture mapping and colour theory. The book covers some aspects of animation, including quaternions, orientation, and inverse kinematics, and includes source code for a Ray Tracing software package. The book is intended for use along with any OpenGL programming book, but the crucial features of OpenGL are briefly covered to help readers get up to speed. Accompanying software is available freely from the book's web site.

Book Information

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Customer Reviews

I have several graphics books and I find two are indespensible: The OpenGL Programming Guide and Dr. Buss' book. Dr. Buss' book has clear, elucidating language and good coverage for both the classroom and the practicing graphics software developer. Though the OpenGL Programming Guide covers many of the same topics, its coverage of the mathematics is thin. Hence, this text perfectly dovetails with it. Particularly well-written is the chapter covering the Phong and the Cook-Torrance lighting models.

I started with OpenGL The Red Book and OpenGL Superbible, none of these covers the mathematical background behind the scene. It makes you learn OpenGL by practicing a lot so that you are be able to be familiar with those concepts like modelview, transformation and projection. I even came to the point that I had to memorize some of the openGL basic routines such as set up projection or viewport. It was a terrible experience indeed. This book filled in that gap, it provide a clear and concise explanation from Dr. Samuel which help readers follows the material without questioning how this glxxx command works. Especially, there are many figures in the text which facilitates the steep learning curve of graphics programming. As a novice to openGL, I felt it's very difficult to visualize what was going wrong when debugging with openGL.Recommendation: use either the Red book and Superbible along with this book, you will be surprised how easy openGL would be. Apparently, I couldn't find any reason to take of one star. It's such a wonderful book. Thank you Dr. Samuel.

Great service!!The book is new and the deliver has been so fast!(3 days more or less) :)

My son borrowed this book from a friend and just had to get his own copy. He said it had all the information he had spent hours surfing the net for was there in one place.

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