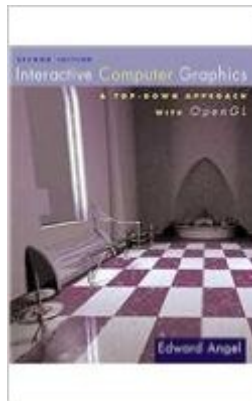


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# Interactive Computer Graphics: A Top-Down Approach With OpenGL (2nd Edition)



## Synopsis

This introductory text features a top-down, programming-oriented approach to computer graphics. Capitalizing upon this top-down and hands-on approach, the text quickly gets students writing interesting 3D graphics programs. Angel uses OpenGL, a graphics library supported by most workstations, and the C programming language (which, like OpenGL, is not object-oriented), allowing students to be aware of what is happening at the lowest levels of computer-graphics programming. Each chapter is built around an application, with key principles and techniques explained as needed and in increasing detail, teaching students by example and by practice. While emphasizing applications programming, the book covers all topics required for a fundamental course in computer graphics, such as light-material interactions, shading, modeling, curves and surfaces, antialiasing, texture mapping, and compositing, as well as hardware issues. The top-down approach taken in this book enables students of computer science and engineering to generate complex interactive applications by the end of their first course, and will give them a solid background for future work or study in computer graphics.

## Book Information

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## Customer Reviews

You shouldn't buy this book if ALL you want to do is learn the commands of the OpenGL API. You shouldn't buy this book if you don't have a strong mathematical background. You shouldn't buy this book if you need the author to hold your hand on the exercises or the explanations, because that's not what this book is about. This is a computer graphics book, not an OpenGL API book. It uses the

OpenGL API to aid in an in-depth study of Computer Graphics principles, much like Computer Graphics: Principles and Practice uses SPHIGS to aid in a more in-depth study of Computer Graphics principles. This book is highly mathematically oriented and the problems and exercises are practical and challenging, much like in the real world. You don't get silly exercises like "Draw a triangle on the screen" (except in maybe the first or second chapter). Instead you get exercises like "Write a program to simulate a bouncing ball taking into account gravity and elastic collisions". I like this book, but your primary goal should be Computer Graphics, not OpenGL. This book does go great, however, with the official OpenGL programmer's guide (forget the exact name).

Don't let some of the negative reviews fool you- those folks were looking for an in depth discussion of OpenGL, period, which this book doesn't give or promise to give. What it does do, however, is discuss first rate graphics theory with plenty of mathematical discussion and well-written explanation, something that's very rare these days in most graphics texts. If you really want to learn computer graphics, this is a great book to go with, all the more so because it uses OpenGL for its examples, thereby giving you hints on which OpenGL functions to use and when. You don't need a PhD in math to learn from this book, either- really all you need is a semester of Linear Algebra, and the appendix reviews the math needed in a clear, concise fashion. In short, for those who want to see how computer graphics theory works, they should look closely at this book before buying anything else.

having read many books and articles on 3d graphics, as well as general programming, i believe this book is certainly better than most. while this book is aimed most certainly at an academic audience, it covers the fundamentals clearly and solidly. and while i still think Foley is the standard, this book covers a lot more of the modern issues as well as providing a practical grounding using OpenGL. (the lack of which was the \*major\* downside of Foley) there are also some good introductions to more advanced issues in the latter third of the book, which makes for interesting reading. perhaps my only concern with this book is the obsessive use of mathematics to explain simple concepts. often, the mathematical formulae provided offer no further explanation to the text, and simply serves to distract readers without strong mathematical backgrounds. to quote one of my 3rd year math profs : "mathematics should be used as mathematicians intended - succinctly!" (i can only imagine that the authors believed the formulae would "lend credibility" to the text.) overall, i would recommend!

I'm puzzled by the bad ratings that this book has received. I felt it has been grossly under-rated. I got

this book because I needed two things - computer graphics math and how the computer graphics concepts relate to opengl. I found both in this book. We can't do non-trivial computer graphics without math. APIs are great, but there will be times when we have to stretch our imaginations and apply our math knowledge to solve tough computer graphics problems. The author has placed great emphasis on the math to do computer graphics and I applaud his approach. After the math foundation is laid, he would proceed to explain how opengl uses those math to do stuff under the hood. That, I thought, is the right approach to learn computer graphics. If you can only buy 1 computer graphics book in your entire life, buy the cg bible - "Computer Graphics: Principles and Practice" by Foley and gang. If you can buy 2, then get this one too.

For an amateur UNIX/Linux C programmer like me, this book is a very good introduction to OpenGL. I have bought several graphics books, but Angel is the only author I have come across who has taken the trouble to provide a makefile to ensure his readers can actually compile any program. Once you can do that, you should be able to teach yourself with the guidance from the book. If you have trouble understanding dot products then you cannot blame this book if you find it hard. Ultimately you will only learn OpenGL (or any programming) by experimentation. Don't expect to read any single book and become an expert overnight.

First of all the concept and design of this is perfect: a study of computer graphics covering the fundamentals but using a modern full featured easy-to-use API, OpenGL. For the most part the title lives up to this with a few serious exceptions that force me to rate it 3 stars. First of all are the typos. There are several and unfortunately they mostly appear in equations, which can make things very confusing, and they aren't totally cataloged on the authors web site. Another very serious problem is with Chapter 4 which covers the math of graphics. Given that this is generally a junior level CS course, and that matrices were covered in Algebra 2, which is generally taken sophomore year in HS, many of us haven't looked at a dot product in 5 years. So the chapter should really contain a few pages to dust off those cobwebs. The author also works through his equations without much commentary on the why. He also makes a point of explicitly defining his notation, and then doesn't stick to it. At one point he begins using a variable without ever having stated what it was supposed to represent. Unfortunately this comes in the key chapter covering the mathematical principles, so it will have to be supplemented with some other source covering the same material. Not good when you're talking about the fundamentals, and there is a lack of well written instruction of this topic.

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