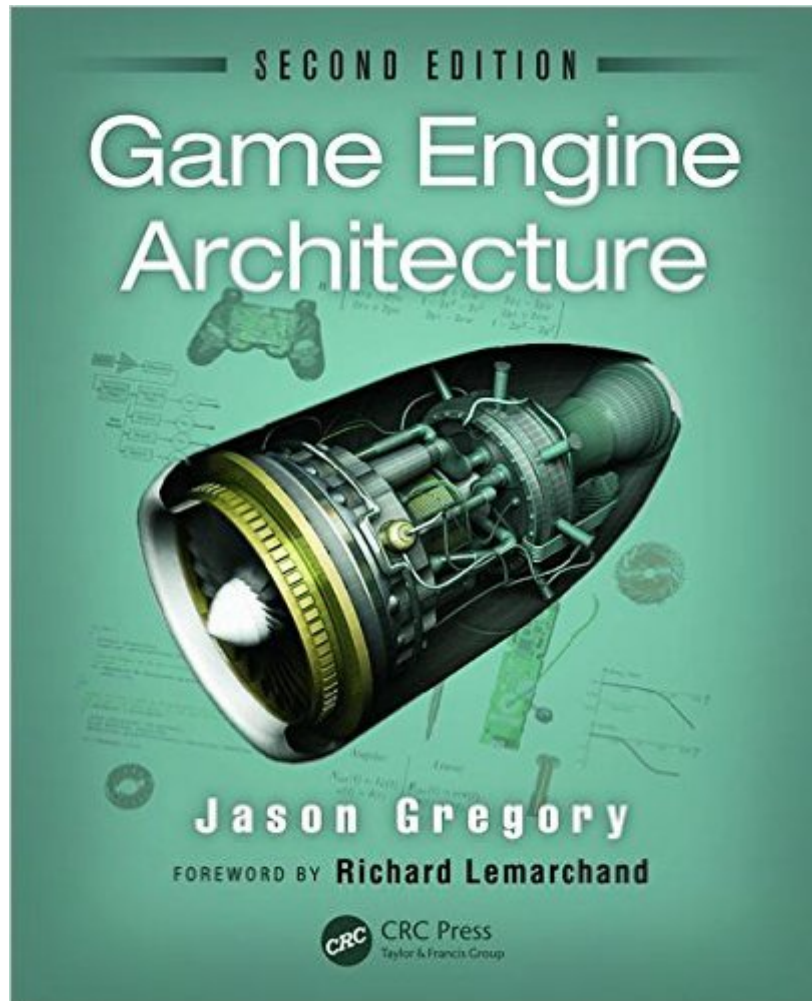


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# Game Engine Architecture, Second Edition



## Synopsis

Hailed as a "must-have textbook" (CHOICE, January 2010), the first edition of Game Engine Architecture provided readers with a complete guide to the theory and practice of game engine software development. Updating the content to match today's landscape of game engine architecture, this second edition continues to thoroughly cover the major components that make up a typical commercial game engine. New to the Second Edition Information on new topics, including the latest variant of the C++ programming language, C++11, and the architecture of the eighth generation of gaming consoles, the Xbox One and PlayStation 4 New chapter on audio technology covering the fundamentals of the physics, mathematics, and technology that go into creating an AAA game audio engine Updated sections on multicore programming, pipelined CPU architecture and optimization, localization, pseudovectors and Grassman algebra, dual quaternions, SIMD vector math, memory alignment, and anti-aliasing Insight into the making of Naughty Dog's latest hit, The Last of Us The book presents the theory underlying various subsystems that comprise a commercial game engine as well as the data structures, algorithms, and software interfaces that are typically used to implement them. It primarily focuses on the engine itself, including a host of low-level foundation systems, the rendering engine, the collision system, the physics simulation, character animation, and audio. An in-depth discussion on the "gameplay foundation layer" delves into the game's object model, world editor, event system, and scripting system. The text also touches on some aspects of gameplay programming, including player mechanics, cameras, and AI. An awareness-building tool and a jumping-off point for further learning, Game Engine Architecture, Second Edition gives readers a solid understanding of both the theory and common practices employed within each of the engineering disciplines covered. The book will help readers on their journey through this fascinating and multifaceted field.

## Book Information

Hardcover: 1052 pages

Publisher: A K Peters/CRC Press; 2 edition (August 15, 2014)

Language: English

ISBN-10: 1466560010

ISBN-13: 978-1466560017

Product Dimensions: 2.2 x 8 x 9.8 inches

Shipping Weight: 4.3 pounds (View shipping rates and policies)

Average Customer Review: 4.7 out of 5 stars See all reviews (50 customer reviews)

Best Sellers Rank: #29,243 in Books (See Top 100 in Books) #14 in Books > Computers & Technology > Games & Strategy Guides > Game Programming #23 in Books > Textbooks > Computer Science > Graphics & Visualization #24 in Books > Computers & Technology > Programming > Graphics & Multimedia

## Customer Reviews

Jason Gregory's "Game Engine Architecture, Second Edition" is one of the BEST book on those who want to program games! It's important to note that this is not a beginner book, you will need to have experience with C++ before you delve into this book as it can be used as a course text for a two or three course college-level series in intermediate game programming. It's also an excellent book for those learning about self-programming of games, especially as this touches upon the architecture of the eighth generation of gaming consoles - the Xbox One and PlayStation 4. For those wondering what the second edition has vs. the first, Jason goes into the latest variant of the C++ programming language, C++ 11 and the architecture of the current next gen consoles. He also fills some gaps in the content of the original book, a new chapter on audio technology and his wanting to cover the fundamentals of the physics, mathematics and technology of the creation of major AAA games. Also, fixing errors from the first book. Here is the break down of Jason Gregory's "Game Engine Architecture, Second Edition":

1. Foundations  
1. Introduction - Structure of a typical game team, what is a game?, what is a game engine?, engine differences across genres, game engine survey, runtime engine architecture, tools and the asset pipeline
2. Tools of the Trade - Version Control, Microsoft Visual Studio, Profiling Tools, Memory Leak and Corruption Detection
3. Fundamentals of Software Engineering for Games - C++ Review and Best Practices, Data, Code and Memory, Catching and Handling Errors, Pipelines, Caches and Optimization
- 4.

I've wanted to get my hands on Jason Gregory's second edition of Game Engine Architecture since I saw it pop up on my coming soon to list. I was lucky to be given the opportunity to review the book because it was something I really wanted and would have purchased shortly thereafter had I not been given this opportunity. I'm a software engineer by day working in Ruby on Rails for web development but I do casual development with the Unreal Engine and I have experience working with Ogre3d and Bullet Physics for my own little sandbox (I think that the best way to really learn the stuff is to get neck deep in it despite the benefits of a 3rd party engine). Comparing the books physically the second edition has a slightly nicer binding on it. Both are massive in size but the second edition definitely is a bit bigger. There were 860 pages in the 1st edition and 1014 in the 2nd

counting the indexes. Like the origin the book does a great job covering a massive amount of subjects from physics packages, graphic engines, and the like to even covering the deadzone of analog input controllers. It's all really a basic introduction to a series of complex subjects that warrant further reading to really gain a full grasp on. I have plenty of books alone related to rendering (Real Time Rendering is a nice gem) and even 3d mathematics with vectors. You just can't pick it all up in one book and anyone thinking this is going to cover things at that level hasn't grasped the size of the material involved. The book is over 1000 pages and it's just scratching the surface, game development is a lifetime chore/pleasure.

The book is comprehensive in its coverage, everything from game physics, graphics, and audio to how to set up code repositories like Visual Source Safe and Subversion. As a result, you will need additional resources to deep dive into many of these areas, but after reading this book, you will know exactly what your options are, and where to deep dive. It covers all the generation 7 and 8 hardware, including the PlayStation Eye, the PlayStation Camera, both versions of Kinect, and the WiiMote, and for that it does go into a great deal of detail. The balance seems to be that the book will skim over topics that would be well covered elsewhere or would show up in other types of software design, and go into greater detail on the areas where other resources are sparse, and it strikes a very good balance in doing so. It is arguably the best first book on the subject. The tone is serious. You won't get the cartoon people of the "For Dummies" or "Head First" series. You won't get the hand-holding of the "in 24 Hours"/"in 21 Days" series. It is far closer to a graduate school level textbook. It isn't dry, however, and the tone isn't as pretentious as most grad school textbooks. It's clear. It's engaging. Even someone who does not have a background in computer science and software development should be able to follow it. I would have preferred more code samples, but for a book that mostly provides a view from 10,000 feet, that would be asking a bit much. The ones provided are clear and concise.

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