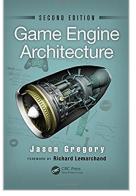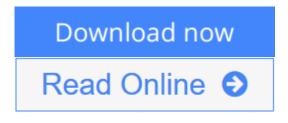# Game Engine Architecture, Second Edition

By Jason Gregory

Game Engine Architecture, Second Edition By Jason Gregory

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.

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Editorial Review

Review

"… this book is the best of its kind, and you're lucky to have found it. It covers the huge field of game engine architecture in a succinct, clear way, and expertly balances the breadth and depth of its coverage, offering enough detail that even a beginner can easily understand the concepts it presents. The author, Jason Gregory, is not only a world expert in his field; he's a working programmer with production-quality knowledge and many shipped game projects under his belt. … Jason is also an experienced educator who has taught in the top-ranked university game program in North America. … the many detailed code samples and implementation examples in this book will help you understand just how the pieces come together in a great game. By helping you in this way, Jason's book might just empower you to outstrip even the most audacious dreams of history's best game designers and developers."
?From the Foreword by Richard Lemarchand

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A 2010 *CHOICE* Outstanding Academic Title
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?A. Chen, *CHOICE*, January 2010

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?Eric Haines, www.realtimerendering.com/blog/, July 2009

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?*The Midwest Book Review*, September 2009

"The book contains a huge amount of data on specifics to consider when developing a game engine."
?Gamasutra.com, November 2009

"**Game Engine Architecture** by Jason Gregory has been named a finalist for the Game Developer's 2009 Front Line Award."
?PR Newswire, December 2009

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