Essential Mathematics for Games and Interactive Applications: A Programmer's Guide, Second Edition

By James M. Van Verth, Lars M. Bishop

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Essential Mathematics for Games and Interactive Applications, 2nd edition presents the core mathematics necessary for sophisticated 3D graphics and interactive physical simulations. The book begins with linear algebra and matrix multiplication and expands on this foundation to cover such topics as color and lighting, interpolation, animation and basic game physics. Essential Mathematics focuses on the issues of 3D game development important to programmers and includes optimization guidance throughout.

The new edition Windows code will now use Visual Studio.NET. There will also be DirectX support provided, along with OpenGL - due to its cross-platform nature. Programmers will find more concrete examples included in this edition, as well as additional information on tuning, optimization and robustness.

The book has a companion CD-ROM with exercises and a test bank for the academic secondary market, and for main market: code examples built around a shared code base, including a math library covering all the topics presented in the book, a core vector/matrix math engine, and libraries to support basic 3D rendering and interaction.

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Editorial Review

Review
"It's the book with all the math you need for games." -Neil Kirby, Researcher, Alcatel-Lucent

From the Back Cover
"Even though I've worked with these systems for years, I found new ways of looking at several topics that make them easier to remember and use. For someone new to 3D programming, it is extremely useful-it gives them a solid background in pretty much every area they need to understand." -Peter Lipson, Toys for Bob, Inc.

Based on the authors' popular tutorials at the Game Developers Conference, **Essential Mathematics for Games and Interactive Applications** presents the core mathematics necessary for sophisticated 3D graphics and interactive physical simulations. The book begins with linear algebra and matrix manipulation and expands on this foundation to cover such topics as texture filtering, interpolation, animation, and basic game physics. **Essential Mathematics** focuses on the issues of 3D game development important to programmers and includes optimization guidance throughout.

Features
*Covers concepts in sufficient detail for a programmer to understand the foundations of 3D without feeling overwhelmed by proofs and theory
*Companion CD-ROM with code examples built around a shared code base, including a math library covering all the topics presented in the book, a core vector/matrix math engine, and libraries to support basic 3D rendering and interaction
*Provides guidance for students trying to understand how games are actually developed, including optimization techniques

About the Authors
James M. Van Verth is a founding member of Red Storm Entertainment, a division of Ubi Soft, where he has been a lead engineer for six years. He has a B.A. in mathematics and computer science from Dartmouth College and M.S. degrees in computer science from the State University of New York at Buffalo and the University of North Carolina at Chapel Hill.

Lars M. Bishop is the CTO and software architect for Numerical Design Limited (NDL), where he has specialized in real-time 3D game rendering technologies for eight years. He holds a B.S. in mathematics and computer science from Brown University and an M.S. in computer science from the University of North Carolina at Chapel Hill.

About the Author
James M. Van Verth is a founding member of Red Storm Entertainment, a division of Ubisoft, where he has been a lead engineer for nine years. For the past eight years he has also been a regular speaker at the Game Developers Conferences, teaching the all-day tutorial "Math for Game Programmers," on which this book is based. He has a B.A. in mathematics and computer science from Dartmouth College and M.S. degrees in computer science from the State University of New York at Buffalo and the University of North Carolina at Chapel Hill.
Lars M. Bishop is an engineer in the Handheld Developer Technologies group at NVIDIA. Prior to joining

NVIDIA, Lars was the Chief Technology Officer at Numerical Design Limited, leading the development of the Gamebryo3D cross-platform game engine. He received a BS in Math/Computer Science from Brown University and an MS in Computer Science from the University of North Carolina at Chapel Hill. His outside interests include photography, drumming, and playing bass guitar.

Users Review

From reader reviews:

Ashley McKay:

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Lois Schooley:

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