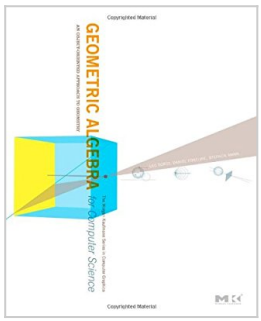

Geometric Algebra for Computer Science (Revised Edition): An Object-Oriented Approach to Geometry (The Morgan Kaufmann Series in Computer Graphics)

By Leo Dorst, Daniel Fontijne, Stephen Mann

Geometric Algebra for Computer Science (Revised Edition): An Object-Oriented Approach to Geometry (The Morgan Kaufmann Series in Computer Graphics) By Leo Dorst, Daniel Fontijne, Stephen Mann

Geometric Algebra for Computer Science (Revised Edition) presents a compelling alternative to the limitations of linear algebra.

Geometric algebra (GA) is a compact, time-effective, and performance-enhancing way to represent the geometry of 3D objects in computer programs. This book explains GA as a natural extension of linear algebra and conveys its significance for 3D programming of geometry in graphics, vision, and robotics. It systematically explores the concepts and techniques that are key to representing elementary objects and geometric operators using GA. It covers in detail the conformal model, a convenient way to implement 3D geometry using a 5D representation space. Numerous drills and programming exercises are helpful for both students and practitioners. A companion web site includes links to GAViewer, a program that will allow you to interact with many of the 3D figures in the book; and Gaigen 2, the platform for the instructive programming exercises that conclude each chapter.

The book will be of interest to professionals working in fields requiring complex geometric computation such as robotics, computer graphics, and computer games. It is also be ideal for students in graduate or advanced undergraduate programs in computer science.

- Explains GA as a natural extension of linear algebra and conveys its significance for 3D programming of geometry in graphics, vision, and robotics.
- Systematically explores the concepts and techniques that are key to representing elementary objects and geometric operators using GA.
- Covers in detail the conformal model, a convenient way to implement 3D geometry using a 5D representation space.
- Presents effective approaches to making GA an integral part of your programming.

- Includes numerous drills and programming exercises helpful for both students and practitioners.
- Companion web site includes links to GAViewer, a program that will allow you to interact with many of the 3D figures in the book, and Gaigen 2, the platform for the instructive programming exercises that conclude each chapter.

Geometric Algebra for Computer Science (Revised Edition): An Object-Oriented Approach to Geometry (The Morgan Kaufmann Series in Computer Graphics)

By Leo Dorst, Daniel Fontijne, Stephen Mann

Geometric Algebra for Computer Science (Revised Edition): An Object-Oriented Approach to Geometry (The Morgan Kaufmann Series in Computer Graphics) By Leo Dorst, Daniel Fontijne, Stephen Mann

Geometric Algebra for Computer Science (Revised Edition) presents a compelling alternative to the limitations of linear algebra.

Geometric algebra (GA) is a compact, time-effective, and performance-enhancing way to represent the geometry of 3D objects in computer programs. This book explains GA as a natural extension of linear algebra and conveys its significance for 3D programming of geometry in graphics, vision, and robotics. It systematically explores the concepts and techniques that are key to representing elementary objects and geometric operators using GA. It covers in detail the conformal model, a convenient way to implement 3D geometry using a 5D representation space. Numerous drills and programming exercises are helpful for both students and practitioners. A companion web site includes links to GAViewer, a program that will allow you to interact with many of the 3D figures in the book; and Gaigen 2, the platform for the instructive programming exercises that conclude each chapter.

The book will be of interest to professionals working in fields requiring complex geometric computation such as robotics, computer graphics, and computer games. It is also be ideal for students in graduate or advanced undergraduate programs in computer science.

- Explains GA as a natural extension of linear algebra and conveys its significance for 3D programming of geometry in graphics, vision, and robotics.
- Systematically explores the concepts and techniques that are key to representing elementary objects and geometric operators using GA.
- Covers in detail the conformal model, a convenient way to implement 3D geometry using a 5D representation space.
- Presents effective approaches to making GA an integral part of your programming.
- Includes numerous drills and programming exercises helpful for both students and practitioners.
- Companion web site includes links to GAViewer, a program that will allow you to interact with many of the 3D figures in the book, and Gaigen 2, the platform for the instructive programming exercises that conclude each chapter.

Geometric Algebra for Computer Science (Revised Edition): An Object-Oriented Approach to Geometry (The Morgan Kaufmann Series in Computer Graphics) By Leo Dorst, Daniel Fontijne, Stephen Mann Bibliography

- Sales Rank: #110464 in Books

- Brand: imusti
- Published on: 2007-04-06
- Original language: English
- Number of items: 1
- Dimensions: 9.40" h x 1.60" w x 7.70" l, 3.90 pounds
- Binding: Hardcover
- 664 pages

Editorial Review

Review

Within the last decade, Geometric Algebra (GA) has emerged as a powerful alternative to classical matrix algebra as a comprehensive conceptual language and computational system for computer science. This book will serve as a standard introduction and reference to the subject for students and experts alike. As a textbook, it provides a thorough grounding in the fundamentals of GA, with many illustrations, exercises and applications. Experts will delight in the refreshing perspective GA gives to every topic, large and small. -David Hestenes, Distinguished research Professor, Department of Physics, Arizona State University
Geometric Algebra is becoming increasingly important in computer science. This book is a comprehensive introduction to Geometric Algebra with detailed descriptions of important applications. While requiring serious study, it has deep and powerful insights into GA’s usage. It has excellent discussions of how to actually implement GA on the computer. -Dr. Alyn Rockwood, CTO, FreeDesign, Inc. Longmont, Colorado

From the Back Cover
Within the last decade, Geometric Algebra (GA) has emerged as a powerful alternative to classical matrix algebra as a comprehensive conceptual language and computational system for computer science. This book will serve as a standard introduction and reference to the subject for students and experts alike. As a textbook, it provides a thorough grounding in the fundamentals of GA, with many illustrations, exercises and applications. Experts will delight in the refreshing perspective GA gives to every topic, large and small.
-David Hestenes, Distinguished research Professor, Department of Physics, Arizona State University

Geometric Algebra is becoming increasingly important in computer science. This book is a comprehensive introduction to Geometric Algebra with detailed descriptions of important applications. While requiring serious study, it has deep and powerful insights into GA’s usage. It has excellent discussions of how to actually implement GA on the computer.
-Dr. Alyn Rockwood, CTO, FreeDesign, Inc. Longmont, Colorado

Until recently, almost all of the interactions between objects in virtual 3D worlds have been based on calculations performed using linear algebra. Linear algebra relies heavily on coordinates, however, which can make many geometric programming tasks very specific and complex-often a lot of effort is required to bring about even modest performance enhancements. Although linear algebra is an efficient way to specify low-level computations, it is not a suitable high-level language for geometric programming.

Geometric Algebra for Computer Science presents a compelling alternative to the limitations of linear algebra. Geometric algebra, or GA, is a compact, time-effective, and performance-enhancing way to represent the geometry of 3D objects in computer programs. In this book you will find an introduction to GA that will give you a strong grasp of its relationship to linear algebra and its significance for your work. You will learn how to use GA to represent objects and perform geometric operations on them. And you will begin mastering proven techniques for making GA an integral part of your applications in a way that simplifies your code without slowing it down.

Features

-Explains GA as a natural extension of linear algebra and conveys its significance for 3D programming of geometry in graphics, vision, and robotics.

-Systematically explores the concepts and techniques that are key to representing elementary objects and geometric operators using GA.

-Covers in detail the conformal model, a convenient way to implement 3D geometry using a 5D representation space.

-Presents effective approaches to making GA an integral part of your programming.

-Includes numerous drills and programming exercises helpful for both students and practitioners.

-Companion web site includes links to GAViewer, a program that will allow you to interact with many of the 3D figures in the book, and Gaigen 2, the platform for the instructive programming exercises that conclude each chapter.

About the Authors

Leo Dorst is Assistant Professor of Computer Science at the University of Amsterdam, where his research focuses on geometrical issues in robotics and computer vision. He earned M.Sc. and Ph.D. degrees from Delft University of Technology and received a NYIPLA Inventor of the Year award in 2005 for his work in robot path planning.

Daniel Fontijne holds a Master’s degree in artificial Intelligence and is a Ph.D. candidate in Computer Science at the University of Amsterdam. His main professional interests are computer graphics, motion capture, and computer vision.

Stephen Mann is Associate Professor in the David R. Cheriton School of Computer Science at the University of Waterloo, where his research focuses on geometric modeling and computer graphics. He has a B.A. in Computer Science and Pure Mathematics from the University of California, Berkeley, and a Ph.D. in Computer Science and Engineering from the University of Washington.

About the Author
Daniel Fontijne holds a Master’s degree in artificial Intelligence and a Ph.D. in Computer Science, both from the University of Amsterdam. His main professional interests are computer graphics, motion capture, and computer vision.

Users Review

From reader reviews:

Roderick Olin:

The book Geometric Algebra for Computer Science (Revised Edition): An Object-Oriented Approach to Geometry (The Morgan Kaufmann Series in Computer Graphics) give you a sense of feeling enjoy for your spare time. You need to use to make your capable considerably more increase. Book can to get your best friend when you getting stress or having big problem using your subject. If you can make reading a book Geometric Algebra for Computer Science (Revised Edition): An Object-Oriented Approach to Geometry (The Morgan Kaufmann Series in Computer Graphics) being your habit, you can get more advantages, like

add your own capable, increase your knowledge about a number of or all subjects. You can know everything if you like start and read a e-book Geometric Algebra for Computer Science (Revised Edition): An Object-Oriented Approach to Geometry (The Morgan Kaufmann Series in Computer Graphics). Kinds of book are a lot of. It means that, science guide or encyclopedia or some others. So , how do you think about this publication?

Robert Auclair:

This book untitled Geometric Algebra for Computer Science (Revised Edition): An Object-Oriented Approach to Geometry (The Morgan Kaufmann Series in Computer Graphics) to be one of several books in which best seller in this year, here is because when you read this e-book you can get a lot of benefit on it. You will easily to buy that book in the book store or you can order it by means of online. The publisher of the book sells the e-book too. It makes you more readily to read this book, because you can read this book in your Touch screen phone. So there is no reason for you to past this reserve from your list.

Paula Adame:

Reading a book can be one of a lot of exercise that everyone in the world adores. Do you like reading book and so. There are a lot of reasons why people love it. First reading a book will give you a lot of new facts. When you read a book you will get new information since book is one of a number of ways to share the information or their idea. Second, reading through a book will make you more imaginative. When you examining a book especially hype book the author will bring someone to imagine the story how the character types do it anything. Third, it is possible to share your knowledge to others. When you read this Geometric Algebra for Computer Science (Revised Edition): An Object-Oriented Approach to Geometry (The Morgan Kaufmann Series in Computer Graphics), it is possible to tells your family, friends in addition to soon about yours e-book. Your knowledge can inspire the mediocre, make them reading a publication.

John Keaney:

You will get this Geometric Algebra for Computer Science (Revised Edition): An Object-Oriented Approach to Geometry (The Morgan Kaufmann Series in Computer Graphics) by go to the bookstore or Mall. Just viewing or reviewing it could possibly to be your solve difficulty if you get difficulties to your knowledge. Kinds of this e-book are various. Not only simply by written or printed but in addition can you enjoy this book simply by e-book. In the modern era including now, you just looking by your mobile phone and searching what their problem. Right now, choose your current ways to get more information about your reserve. It is most important to arrange you to ultimately make your knowledge are still update. Let's try to choose correct ways for you.

Geometry (The Morgan Kaufmann Series in Computer Graphics) By Leo Dorst, Daniel Fontijne, Stephen Mann #4SBG9N18HEL

Read Geometric Algebra for Computer Science (Revised Edition): An Object-Oriented Approach to Geometry (The Morgan Kaufmann Series in Computer Graphics) By Leo Dorst, Daniel Fontijne, Stephen Mann for online ebook

Geometric Algebra for Computer Science (Revised Edition): An Object-Oriented Approach to Geometry (The Morgan Kaufmann Series in Computer Graphics) By Leo Dorst, Daniel Fontijne, Stephen Mann Free PDF d0wnl0ad, audio books, books to read, good books to read, cheap books, good books, online books, books online, book reviews epub, read books online, books to read online, online library, greatbooks to read, PDF best books to read, top books to read Geometric Algebra for Computer Science (Revised Edition): An Object-Oriented Approach to Geometry (The Morgan Kaufmann Series in Computer Graphics) By Leo Dorst, Daniel Fontijne, Stephen Mann books to read online.

Online Geometric Algebra for Computer Science (Revised Edition): An Object-Oriented Approach to Geometry (The Morgan Kaufmann Series in Computer Graphics) By Leo Dorst, Daniel Fontijne, Stephen Mann ebook PDF download

Geometric Algebra for Computer Science (Revised Edition): An Object-Oriented Approach to Geometry (The Morgan Kaufmann Series in Computer Graphics) By Leo Dorst, Daniel Fontijne, Stephen Mann Doc

Geometric Algebra for Computer Science (Revised Edition): An Object-Oriented Approach to Geometry (The Morgan Kaufmann Series in Computer Graphics) By Leo Dorst, Daniel Fontijne, Stephen Mann Mobipocket

Geometric Algebra for Computer Science (Revised Edition): An Object-Oriented Approach to Geometry (The Morgan Kaufmann Series in Computer Graphics) By Leo Dorst, Daniel Fontijne, Stephen Mann EPub