Foundations of Geometric Algebra Computing (Geometry and Computing)

By Dietmar Hildenbrand

Foundations of Geometric Algebra Computing (Geometry and Computing)
By Dietmar Hildenbrand

The author defines "Geometric Algebra Computing" as the geometrically intuitive development of algorithms using geometric algebra with a focus on their efficient implementation, and the goal of this book is to lay the foundations for the widespread use of geometric algebra as a powerful, intuitive mathematical language for engineering applications in academia and industry. The related technology is driven by the invention of conformal geometric algebra as a 5D extension of the 4D projective geometric algebra and by the recent progress in parallel processing, and with the specific conformal geometric algebra there is a growing community in recent years applying geometric algebra to applications in computer vision, computer graphics, and robotics.

This book is organized into three parts: in Part I the author focuses on the mathematical foundations; in Part II he explains the interactive handling of geometric algebra; and in Part III he deals with computing technology for high-performance implementations based on geometric algebra as a domain-specific language in standard programming languages such as C++ and OpenCL. The book is written in a tutorial style and readers should gain experience with the associated freely available software packages and applications.

The book is suitable for students, engineers, and researchers in computer science, computational engineering, and mathematics.

⬇ **Download** Foundations of Geometric Algebra Computing (Geomet ...pdf

▤ **Read Online** Foundations of Geometric Algebra Computing (Geom ...pdf

Foundations of Geometric Algebra Computing (Geometry and Computing)

By Dietmar Hildenbrand

Foundations of Geometric Algebra Computing (Geometry and Computing) By Dietmar Hildenbrand

The author defines "Geometric Algebra Computing" as the geometrically intuitive development of algorithms using geometric algebra with a focus on their efficient implementation, and the goal of this book is to lay the foundations for the widespread use of geometric algebra as a powerful, intuitive mathematical language for engineering applications in academia and industry. The related technology is driven by the invention of conformal geometric algebra as a 5D extension of the 4D projective geometric algebra and by the recent progress in parallel processing, and with the specific conformal geometric algebra there is a growing community in recent years applying geometric algebra to applications in computer vision, computer graphics, and robotics.

This book is organized into three parts: in Part I the author focuses on the mathematical foundations; in Part II he explains the interactive handling of geometric algebra; and in Part III he deals with computing technology for high-performance implementations based on geometric algebra as a domain-specific language in standard programming languages such as C++ and OpenCL. The book is written in a tutorial style and readers should gain experience with the associated freely available software packages and applications.

The book is suitable for students, engineers, and researchers in computer science, computational engineering, and mathematics.

Foundations of Geometric Algebra Computing (Geometry and Computing) By Dietmar Hildenbrand Bibliography

- Sales Rank: #2552828 in Books
- Published on: 2013-06-17
- Original language: English
- Number of items: 1
- Dimensions: 9.20" h x .80" w x 6.40" l, 1.00 pounds
- Binding: Hardcover
- 196 pages

⬇ **Download** Foundations of Geometric Algebra Computing (Geomet ...pdf

▤ **Read Online** Foundations of Geometric Algebra Computing (Geom ...pdf

Editorial Review

Review

From the book reviews:

"This textbook addresses students (undergraduate to postgraduate), scientists and engineers with an interest in intuitive and highly efficient computer programs based on W. K. Clifford's geometric algebras. The book greatly benefits from the original work of the author, and is very readable. … After a general introduction to the benefits of geometric algebra, geometric algebra computing and its historical development, the book is divided into three main parts." (Eckhard M. S. Hitzer, Mathematical Reviews, May, 2014)

From the Back Cover

The author defines "Geometric Algebra Computing" as the geometrically intuitive development of algorithms using geometric algebra with a focus on their efficient implementation, and the goal of this book is to lay the foundations for the widespread use of geometric algebra as a powerful, intuitive mathematical language for engineering applications in academia and industry. The related technology is driven by the invention of conformal geometric algebra as a 5D extension of the 4D projective geometric algebra and by the recent progress in parallel processing, and with the specific conformal geometric algebra there is a growing community in recent years applying geometric algebra to applications in computer vision, computer graphics, and robotics.

This book is organized into three parts: in Part I the author focuses on the mathematical foundations; in Part II he explains the interactive handling of geometric algebra; and in Part III he deals with computing technology for high-performance implementations based on geometric algebra as a domain-specific language in standard programming languages such as C++ and OpenCL. The book is written in a tutorial style and readers should gain experience with the associated freely available software packages and applications.

The book is suitable for students, engineers, and researchers in computer science, computational engineering, and mathematics.

About the Author

Dr.-Ing. Dietmar Hildenbrand is a member of the Mathematics Department of the Technische Universität Darmstadt. He is one of the codevelopers of Gaalop (Geometic Algebra Algorithms Optimizer) a software package used to optimize geometric algebra files, and his research interests include geometric algebra, robotics, game engines, computer graphics, and high-performance parallel computing.

Users Review

From reader reviews:

David Martin:

The book Foundations of Geometric Algebra Computing (Geometry and Computing) can give more

knowledge and information about everything you want. Why must we leave a very important thing like a book Foundations of Geometric Algebra Computing (Geometry and Computing)? Several of you have a different opinion about book. But one aim that book can give many data for us. It is absolutely proper. Right now, try to closer along with your book. Knowledge or data that you take for that, you could give for each other; you may share all of these. Book Foundations of Geometric Algebra Computing (Geometry and Computing) has simple shape but the truth is know: it has great and big function for you. You can search the enormous world by open and read a publication. So it is very wonderful.

Curtis Russell:

As people who live in often the modest era should be up-date about what going on or info even knowledge to make these individuals keep up with the era and that is always change and move ahead. Some of you maybe will update themselves by studying books. It is a good choice for yourself but the problems coming to you actually is you don't know which one you should start with. This Foundations of Geometric Algebra Computing (Geometry and Computing) is our recommendation so you keep up with the world. Why, because this book serves what you want and need in this era.

William Johnson:

A lot of people always spent their very own free time to vacation or even go to the outside with them friends and family or their friend. Are you aware? Many a lot of people spent that they free time just watching TV, or even playing video games all day long. In order to try to find a new activity honestly, that is look different you can read a new book. It is really fun for yourself. If you enjoy the book which you read you can spent the entire day to reading a book. The book Foundations of Geometric Algebra Computing (Geometry and Computing) it is rather good to read. There are a lot of those who recommended this book. They were enjoying reading this book. In the event you did not have enough space to develop this book you can buy often the e-book. You can m0ore simply to read this book through your smart phone. The price is not too expensive but this book features high quality.

Christina Pena:

Some individuals said that they feel uninterested when they reading a book. They are directly felt the item when they get a half areas of the book. You can choose the book Foundations of Geometric Algebra Computing (Geometry and Computing) to make your reading is interesting. Your own skill of reading talent is developing when you like reading. Try to choose straightforward book to make you enjoy to see it and mingle the opinion about book and studying especially. It is to be very first opinion for you to like to open up a book and examine it. Beside that the e-book Foundations of Geometric Algebra Computing (Geometry and Computing) can to be your brand new friend when you're feel alone and confuse with the information must you're doing of that time.

Download and Read Online Foundations of Geometric Algebra Computing (Geometry and Computing) By Dietmar Hildenbrand #DCIVHJO1FBK

Read Foundations of Geometric Algebra Computing (Geometry and Computing) By Dietmar Hildenbrand for online ebook

Foundations of Geometric Algebra Computing (Geometry and Computing) By Dietmar Hildenbrand 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 Foundations of Geometric Algebra Computing (Geometry and Computing) By Dietmar Hildenbrand books to read online.

Online Foundations of Geometric Algebra Computing (Geometry and Computing) By Dietmar Hildenbrand ebook PDF download

Foundations of Geometric Algebra Computing (Geometry and Computing) By Dietmar Hildenbrand Doc

Foundations of Geometric Algebra Computing (Geometry and Computing) By Dietmar Hildenbrand Mobipocket

Foundations of Geometric Algebra Computing (Geometry and Computing) By Dietmar Hildenbrand EPub

DCIVHJO1FBK: Foundations of Geometric Algebra Computing (Geometry and Computing) By Dietmar Hildenbrand