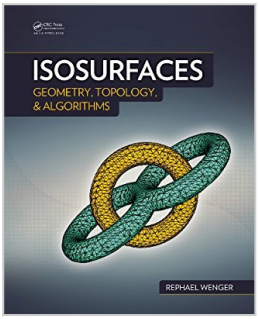

Isosurfaces: Geometry, Topology, and Algorithms

By Rephael Wenger

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Ever since Lorensen and Cline published their paper on the Marching Cubes algorithm, isosurfaces have been a standard technique for the visualization of 3D volumetric data. Yet there is no book exclusively devoted to isosurfaces. **Isosurfaces: Geometry, Topology, and Algorithms** represents the first book to focus on basic algorithms for isosurface construction. It also gives a rigorous mathematical perspective on some of the algorithms and results.

In color throughout, the book covers the Marching Cubes algorithm and variants, dual contouring algorithms, multilinear interpolation, multiresolution isosurface extraction, isosurfaces in four dimensions, interval volumes, and contour trees. It also describes data structures for faster isosurface extraction as well as methods for selecting significant isovalues.

For designers of visualization software, the book presents an organized overview of the various algorithms associated with isosurfaces. For graduate students, it provides a solid introduction to research in this area. For visualization researchers, the book serves as a reference to the vast literature on isosurfaces.

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Isosurfaces: Geometry, Topology, and Algorithms By Rephael Wenger Bibliography

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Editorial Review

Review

"Visualization has long needed a solid, standard and detailed text on the algorithmic aspects of isosurface construction and use. This text will become the standard entry point into this vast literature for at least the next decade, even for researchers already accustomed to working with isosurfaces. It belongs on every professional’s shelf."
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?Torsten Möller, University of Vienna (Universität Wien)

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?Lyuba S. Alboul, *Mathematical Reviews Clippings*, January 2015

About the Author

Rephael Wenger is an associate professor in the Department of Computer Science and Engineering at the Ohio State University. He earned a Ph.D. from McGill University. He has published over fifty papers in computational geometry, computational topology, combinatorics, geometric modeling, and visualization.

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