



Polygon Mesh Processing

By Mario Botsch, Leif Kobbelt, Mark Pauly, Pierre Alliez, Bruno Levy

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Geometry processing, or mesh processing, is a fast-growing area of research that uses concepts from applied mathematics, computer science, and engineering to design efficient algorithms for the acquisition, reconstruction, analysis, manipulation, simulation, and transmission of complex 3D models. Applications of geometry processing algorithms already cover a wide range of areas from multimedia, entertainment, and classical computer-aided design, to biomedical computing, reverse engineering, and scientific computing.

Over the last several years, triangle meshes have become increasingly popular, as irregular triangle meshes have developed into a valuable alternative to traditional spline surfaces. This book discusses the whole geometry processing pipeline based on triangle meshes. The pipeline starts with data input, for example, a model acquired by 3D scanning techniques. This data can then go through processes of error removal, mesh creation, smoothing, conversion, morphing, and more. The authors detail techniques for those processes using triangle meshes.

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Editorial Review

Review

College-level collections strong in engineering and modeling science will find this [book] covers the entire geometry processing pipeline, covering all kinds of models acquired by 3D scanning techniques. The latest techniques using triangle meshes receive powerful, in-depth analysis in a pick for any college-level engineering collection.

?*Midwest Book Review*, January 2011

About the Author

Leif Kobbelt is a professor of Computer Graphics & Multimedia at RWTH Aachen University in Germany. Mario Botsch is a professor of Computer Science at Bielefeld University and leads the Computer Graphics & Geometry Processing Group. Mark Pauly is an assistant professor in the computer science department of ETH Zurich, Switzerland. Pierre Alliez is a researcher in Computer Science at INRIA Sophia-Antipolis, in the GEOMETRICA group. Bruno Lvy is a senior researcher in INRIA-NGE, and a member of the LORIA lab. He is the scientific head of the ALICE project team.

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