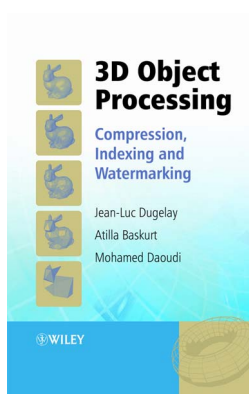

BOOK REVIEW

3D Object Processing: Compression, Indexing and Watermarking

Jean-Luc Dugelay, Atilla Baskurt, and Mohamed Daoudi, Editors, 210 pp., ISBN 978-0-470-06542-6, Wiley (2008), \$130.00 paperback.

Reviewed by Edward Delp, Purdue University, West Lafayette, Indiana



This book describes recent state-of-the-art work in 3D object processing. As indicated in the introduction, “a 3D object is more complex to handle than other multimedia data such as audio, images or videos.”

With the availability of new hardware systems for acquiring, processing, and displaying 3D objects, this book is timely. The book addresses many of the important aspects of 3D object processing: data

compression, object retrieval, and security/watermarking. One should note that subjects such as 3D object recognition or computer vision are not covered in this book.

To set up the main topics covered by the book, Chapter 1 begins with a very basic introduction to 3D object models. Topics such as polygonal meshes and parametric surfaces are introduced. Sources of 3D data are also described.

Chapter 2 addresses aspects of object compression, including direct methods using meshes, geometric approaches, and the use of wavelets. The description of methods using approximation is very interesting. The chapter ends with a short discussion of the standard methods determined by the Moving Picture Experts Group (MPEG).

Chapter 3 addresses the problem of 3D object retrieval by shape descriptors. This topic of course requires a discussion of how one can compare various shape descriptors. There is an excellent description of applications of retrieval systems in this chapter. Statistical and structural methods are very nicely described. This is perhaps the best written chapter in the book.

Finally, Chapter 4 describes security methods, particularly the watermarking of 3D objects. The chapter does a good job of

motivating users to protect 3D objects and provides a very good introduction to watermarking principles and attacks. The chapter ends by providing a catalog of 45 3D object watermarking methods. One criticism is that none of these methods are described in detail; however, references are provided for further research.

The editors and contributors to this book are well-known experts in signal processing and analysis. The book is an excellent resource for researchers, graduate students, and practitioners interested in 3D object processing. The book is well written with a very nice set of references to the literature. I recommend it.



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