Digital Video and HD, Second Edition: Algorithms and Interfaces (The Morgan Kaufmann Series in Computer Graphics)

By Charles Poynton

Digital Video and HD, Second Edition: Algorithms and Interfaces (The Morgan Kaufmann Series in Computer Graphics) By Charles Poynton

Digital Video and HD: Algorithms and Interfaces provides a one-stop shop for the theory and engineering of digital video systems. Equally accessible to video engineers and those working in computer graphics, Charles Poynton's revision to his classic text covers emergent compression systems, including H.264 and VP8/WebM, and augments detailed information on JPEG, DVC, and MPEG-2 systems. This edition also introduces the technical aspects of file-based workflows and outlines the emerging domain of metadata, placing it in the context of digital video processing.

- Basic concepts of digitization, sampling, quantization, gamma, and filtering
- Principles of color science as applied to image capture and display
- Scanning and coding of SDTV and HDTV
- Video color coding: luma, chroma (4:2:2 component video, 4fSC composite video)
- Analog NTSC and PAL
- Studio systems and interfaces
- Compression technology, including M-JPEG and MPEG-2
- Broadcast standards and consumer video equipment

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Editorial Review

From the Back Cover
"This is the "Gamma Sutra" ? a guide to the pleasures of understanding electronic pictures. It's like having the world's best teacher giving you a private seminar on whatever you need to know."
?Mark Schubin, multiple Emmy Award-winning Fellow of the Society of
Motion Picture and Television Engineers

"We are all looking forward to the benefits that will result from the convergence/collision between digital television and computers. This book is an invaluable reference in how digital video is done, both for TV people and for computer graphics people, and it will go a long way toward accelerating the convergence and in minimizing the damage it may cause to either party."
?From the Foreword by Jim Blinn, Microsoft Research

Rapidly evolving computer and communications technologies have achieved data transmission rates and data storage capacities high enough for digital video. But video involves much more than just pushing bits! Achieving accurate color, smooth motion, and the best possible image quality requires understanding many aspects of image acquisition, coding, processing, and display that are outside the usual realm of computer graphics. At the same time, video system designers are facing increasing demands to interface with film and computer systems, and they therefore need to understand many of the techniques of computer graphics.

Digital Video and HDTV Algorithms and Interfaces covers the theory and engineering of digital video systems in a manner that is equally accessible to video engineers and computer graphics practitioners. It provides succinct and accurate treatment of standard-definition television (SDTV), high-definition television (HDTV), and compression systems. With the help of hundreds of high-quality technical illustrations and an extensive glossary, this book details the following topics:

*Basic concepts of digitization, sampling, quantization, gamma, and filtering

*Principles of color science as applied to image capture and display

*Scanning and coding of SDTV and HDTV

*Video color coding: luma, chroma (4:2:2 component video, 4fSC composite video)

*Analog NTSC and PAL

*Studio systems and interfaces, including SDI, IEEE 1394, and DV-over-1394

*Digital videotape recording

*Compression technology, including M-JPEG, DV, and MPEG-2

*Broadcast standards (including digital television, DTV) and consumer video equipment

About the Author

Charles Poynton is an independent contractor specializing in digital color imaging systems, including digital video, HDTV, and digital cinema. A Fellow of the Society of Motion Picture and Television Engineers (SMPTE), Poynton was awarded the Society's prestigious David Sarnoff Gold Medal for his work to integrate video technology with computing and communications. Poynton is the author of the widely respected book, A Technical Introduction to Digital Video, published in 1996. Engineers (SMPTE), and in 1994 was awarded the Society's David Sarnoff Gold Medal for his work to integrate video technology with computing and communications. He is also the author of *A Technical Introduction to Digital Video*.

Users Review

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Linda Banks:

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Stacey Williams:

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