Image Processing for Computer Graphics and Vision (Texts in Computer Science)

By Luiz Velho, Alejandro C. Frery, Jonas Gomes

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Image processing is concerned with the analysis and manipulation of images by computer. Providing a thorough treatment of image processing with an emphasis on those aspects most used in computer graphics, the authors concentrate on describing and analyzing the underlying concepts rather than on presenting algorithms or pseudocode. As befits a modern introduction to this topic, a good balance is struck between discussing the underlying mathematics and the main topics: signal processing, data discretization, the theory of colour and different colour systems, operations in images, dithering and half-toning, warping and morphing and image processing.

This second edition reflects recent trends in science andtechnology that exploit image processing in computer graphics and vision applications. Stochastic image models and statistical methods for image processing are covered as are: A modern approach and new developments in the area, Probability theory for image processing, Applications in image analysis and computer vision.

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Editorial Review

Review

From the reviews of the second edition:

"The mathematical aspects of image processing are emphasized in this book … . I found useful information in all of the chapters, for reasons of personal bias, I found some chapters more interesting than others-- especially 'Color Quantization,' 'Digital Halftoning' (dithering), 'Combining Images,' and 'Warping and Morphing.' Chapters can be read independently, and each includes a bibliography. The presentation is well structured and clear." (O. Lecarme, ACM Computing Reviews, June, 2009)

"The book is devoted to image processing techniques with an emphasis on the aspects most used in computer graphics and vision. … The book is presented in an accessible fashion, with many illustrations and examples. … It is suitable both as a textbook and as a professional reference for students, researchers and engineers. It is a great starting point for those who want to use computer graphics and vision in research or are interested in the field." (Agnieszka Lisowska, Mathematical Reviews, Issue 2011 j)

From the Back Cover

Image processing is concerned with the analysis and manipulation of images by computer. Providing a thorough treatment of image processing, with an emphasis on those aspects most used in computer graphics and vision, this fully revised second edition concentrates on describing and analyzing the underlying concepts of this subject.

As befits a modern introduction to this topic, a good balance is struck between discussing the underlying mathematics and the main topics of signal processing, data discretization, the theory of color and different color systems, operations in images, dithering and half-toning, warping and morphing, and image processing. Significantly expanded and revised, this easy-to-follow text/reference reflects recent trends in science and technology that exploit image processing in computer graphics and vision applications. Stochastic image models and statistical methods for image processing are covered, as is probability theory for image processing, and a focus on applications in image analysis and computer vision.

Features:

• Includes 5 new chapters and major changes throughout

• Adopts a conceptual approach with emphasis on the mathematical concepts and their applications

•Introduces an abstraction paradigm that relates mathematical models with image processing techniques and implementation methods - used throughout to help understanding of the mathematical theory and its practical use

• Motivates through an elementary presentation, opting for an intuitive description where needed

• Contains adopted innovative formulations whenever necessary for clarity of exposition

• Provides numerous examples and illustrations, as an aid to understanding

• Focuses on the aspects of image processing that have importance in computer graphics and vision applications

• Offers a comprehensive introductory chapter for instructors

This comprehensive text imparts a good conceptual understanding of the topic, as a basis for further study, and is suitable both as a textbook and a professional reference. The current extended edition is a must-have resource and guide for all studying or interested in this field.

Users Review

From reader reviews:

Jack Michaud:

This Image Processing for Computer Graphics and Vision (Texts in Computer Science) book is simply not ordinary book, you have after that it the world is in your hands. The benefit you receive by reading this book is information inside this book incredible fresh, you will get facts which is getting deeper you read a lot of information you will get. This specific Image Processing for Computer Graphics and Vision (Texts in Computer Science) without we comprehend teach the one who examining it become critical in pondering and analyzing. Don't end up being worry Image Processing for Computer Graphics and Vision (Texts in Computer Science) can bring when you are and not make your bag space or bookshelves' grow to be full because you can have it in the lovely laptop even telephone. This Image Processing for Computer Graphics and Vision (Texts in Computer Science) having great arrangement in word along with layout, so you will not truly feel uninterested in reading.

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