

Digital Image Processing Gonzalez 3rd Edition

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Image Processing - Tinku Acharya 2005-10-03
Image processing-from basics to advanced applications Learn how to master image processing and compression with this outstanding state-of-the-art reference. From fundamentals to sophisticated applications, *Image Processing: Principles and Applications* covers multiple topics and provides a fresh perspective on future directions and innovations in the field, including: * Image transformation techniques, including wavelet transformation and developments * Image enhancement and restoration, including noise modeling and filtering * Segmentation schemes, and classification and recognition of objects * Texture and shape analysis techniques * Fuzzy set theoretical approaches in image processing, neural networks, etc. * Content-based image retrieval and image mining * Biomedical image analysis and interpretation, including biometrical algorithms such as face recognition and signature verification * Remotely sensed images and their applications * Principles and applications of dynamic scene analysis and moving object detection and tracking * Fundamentals of image compression, including the JPEG standard and the new JPEG2000 standard Additional features include problems and solutions with each chapter to help you apply the theory and techniques, as well

as bibliographies for researching specialized topics. With its extensive use of examples and illustrative figures, this is a superior title for students and practitioners in computer science, wireless and multimedia communications, and engineering.
Principles of Digital Image Processing - Wilhelm Burger 2013-11-18
This textbook is the third of three volumes which provide a modern, algorithmic introduction to digital image processing, designed to be used both by learners desiring a firm foundation on which to build, and practitioners in search of critical analysis and concrete implementations of the most important techniques. This volume builds upon the introductory material presented in the first two volumes with additional key concepts and methods in image processing. Features: practical examples and carefully constructed chapter-ending exercises; real implementations, concise mathematical notation, and precise algorithmic descriptions designed for programmers and practitioners; easily adaptable Java code and completely worked-out examples for easy inclusion in existing applications; uses ImageJ; provides a supplementary website with the complete Java source code, test images, and corrections; additional presentation tools for instructors including a complete set of figures, tables, and

mathematical elements.

Fundamentals of Digital Image Processing -

Chris Solomon 2011-07-05

This is an introductory to intermediate level text on the science of image processing, which employs the Matlab programming language to illustrate some of the elementary, key concepts in modern image processing and pattern recognition. The approach taken is essentially practical and the book offers a framework within which the concepts can be understood by a series of well chosen examples, exercises and computer experiments, drawing on specific examples from within science, medicine and engineering. Clearly divided into eleven distinct chapters, the book begins with a fast-start introduction to image processing to enhance the accessibility of later topics. Subsequent chapters offer increasingly advanced discussion of topics involving more challenging concepts, with the final chapter looking at the application of automated image classification (with Matlab examples) . Matlab is frequently used in the book as a tool for demonstrations, conducting experiments and for solving problems, as it is both ideally suited to this role and is widely available. Prior experience of Matlab is not required and those without access to Matlab can still benefit from the independent presentation of topics and numerous examples. Features a companion website

www.wiley.com/go/solomon/fundamentals containing a Matlab fast-start primer, further exercises, examples, instructor resources and accessibility to all files corresponding to the examples and exercises within the book itself. Includes numerous examples, graded exercises and computer experiments to support both students and instructors alike.

Fundamentals of Digital Image Processing -

Anil K. Jain 1989

The African Film Industry - UNESCO

2021-10-01

The production and distribution of film and audiovisual works is one of the most dynamic growth sectors in the world. Thanks to digital technologies, production has been growing rapidly in Africa in recent years. For the first time, a complete mapping of the film and audiovisual industry in 54 States of the African

continent is available, including quantitative and qualitative data and an analysis of their strengths and weaknesses at the continental and regional levels. The report proposes strategic recommendations for the development of the film and audiovisual sectors in Africa and invites policymakers, professional organizations, firms, filmmakers and artists to implement them in a concerted manner.

Image Processing and Pattern Recognition -

Frank Y. Shih 2010-07-16

A comprehensive guide to the essential principles of image processing and pattern recognition Techniques and applications in the areas of image processing and pattern recognition are growing at an unprecedented rate. Containing the latest state-of-the-art developments in the field, Image Processing and Pattern Recognition presents clear explanations of the fundamentals as well as the most recent applications. It explains the essential principles so readers will not only be able to easily implement the algorithms and techniques, but also lead themselves to discover new problems and applications. Unlike other books on the subject, this volume presents numerous fundamental and advanced image processing algorithms and pattern recognition techniques to illustrate the framework. Scores of graphs and examples, technical assistance, and practical tools illustrate the basic principles and help simplify the problems, allowing students as well as professionals to easily grasp even complicated theories. It also features unique coverage of the most interesting developments and updated techniques, such as image watermarking, digital steganography, document processing and classification, solar image processing and event classification, 3-D Euclidean distance transformation, shortest path planning, soft morphology, recursive morphology, regulated morphology, and sweep morphology. Additional topics include enhancement and segmentation techniques, active learning, feature extraction, neural networks, and fuzzy logic. Featuring supplemental materials for instructors and students, Image Processing and Pattern Recognition is designed for undergraduate seniors and graduate students, engineering and scientific researchers, and professionals who

work in signal processing, image processing, pattern recognition, information security, document processing, multimedia systems, and solar physics.

Advanced Imaging Techniques in Clinical Pathology - Francesco M. Sacerdoti 2016-08-23

This text provides a comprehensive, state-of-the-art review of the application of image analysis focusing on the techniques which can be used in every biology and medical laboratory to automate procedures of cell analysis and to create statistics very useful for a comprehension of cell growth dynamics and the effects of drugs on them. This textbook will serve as a very useful resource for physicians and researchers dealing with, and interested in, cell analysis. It will provide a concise yet comprehensive summary of the current status of the field that will help guide patient management and stimulate investigative efforts. All chapters are written by experts in their fields and include the most up-to-date scientific and clinical information. *Advanced Imaging Techniques in Clinical Pathology* will be of great value to clinical pathologists, biologists, biology researchers, and those working in the clinical and biological laboratory arena.

Digital Signal and Image Processing Using MATLAB - Maurice Charbit 2010-01-05

This title provides the most important theoretical aspects of Image and Signal Processing (ISP) for both deterministic and random signals. The theory is supported by exercises and computer simulations relating to real applications. More than 200 programs and functions are provided in the MATLAB® language, with useful comments and guidance, to enable numerical experiments to be carried out, thus allowing readers to develop a deeper understanding of both the theoretical and practical aspects of this subject.

Digital Image Processing and Analysis -

Scott E Umbaugh 2010-11-19

Whether for computer evaluation of otherworldly terrain or the latest high definition 3D blockbuster, digital image processing involves the acquisition, analysis, and processing of visual information by computer and requires a unique skill set that has yet to be defined a single text. Until now. Taking an applications-oriented, engineering approach, *Digital Image*

Processing and Analysis provides the tools for developing and advancing computer and human vision applications and brings image processing and analysis together into a unified framework. Providing information and background in a logical, as-needed fashion, the author presents topics as they become necessary for understanding the practical imaging model under study. He offers a conceptual presentation of the material for a solid understanding of complex topics and discusses the theory and foundations of digital image processing and the algorithm development needed to advance the field. With liberal use of color through-out and more materials on the processing of color images than the previous edition, this book provides supplementary exercises, a new chapter on applications, and two major new tools that allow for batch processing, the analysis of imaging algorithms, and the overall research and development of imaging applications. It includes two new software tools, the Computer Vision and Image Processing Algorithm Test and Analysis Tool (CVIP-ATAT) and the CVIP Feature Extraction and Pattern Classification Tool (CVIP-FEPC). Divided into five major sections, this book provides the concepts and models required to analyze digital images and develop computer vision and human consumption applications as well as all the necessary information to use the CVIPtools environment for algorithm development, making it an ideal reference tool for this fast growing field.

Digital Image Processing - Rafael C. Gonzalez 2008

THE leader in the field for more than twenty years, this introduction to basic concepts and methodologies for digital image processing continues its cutting-edge focus on contemporary developments in all mainstream areas of image processing. Completely self-contained, heavily illustrated, and mathematically accessible, it has a scope of application that is not limited to the solution of specialized problems. *Digital Image Fundamentals. Image Enhancement in the Spatial Domain. Image Enhancement in the Frequency Domain. Image Restoration. Color Image Processing. Wavelets and Multiresolution Processing. Image Compression. Morphological Image Processing. Image Segmentation.*

Representation and Description. Object Recognition. For technicians interested in the fundamentals and contemporary applications of digital imaging processing

Video Processing and Communications - Yao Wang 2002

Useful as a reference work, this book offers a good balance between theoretical concepts and practical solutions, with more rigorous formulation of certain problems such as motion estimation, sampling, basic coding theory. Provides an in-depth exposition of fundamental theory and techniques for video processing, including frequency domain characterization of video signals and visual perception, video sampling and format conversion, two dimensional and three dimensional motion estimation. Also presents techniques important for video communications, including video coding and error control, and up-to-date coverage on recent international standards on video communications. A chapter is devoted to video streaming over Internet and wireless networks, one of the most popular video communication applications. In addition, it discusses processing and communications of stereoscopic and multiview video. Practicing researchers and engineers.

Instructor's Manual for Digital Image Processing - Rafael C. Gonzalez 1992

Image Processing with ImageJ - José María Mateos Pérez 2013-09-23

The book will help readers discover the various facilities of ImageJ through a tutorial-based approach. This book is targeted at scientists, engineers, technicians, and managers, and anyone who wishes to master ImageJ for image viewing, processing, and analysis. If you are a developer, you will be able to code your own routines after you have finished reading this book. No prior knowledge of ImageJ is expected.

Handbook of Fingerprint Recognition - Davide Maltoni 2009-04-21

A major new professional reference work on fingerprint security systems and technology from leading international researchers in the field. Handbook provides authoritative and comprehensive coverage of all major topics, concepts, and methods for fingerprint security systems. This unique reference work is an

absolutely essential resource for all biometric security professionals, researchers, and systems administrators.

Feature Extraction and Image Processing for Computer Vision - Mark Nixon 2019-11-17

Feature Extraction for Image Processing and Computer Vision is an essential guide to the implementation of image processing and computer vision techniques, with tutorial introductions and sample code in MATLAB and Python. Algorithms are presented and fully explained to enable complete understanding of the methods and techniques demonstrated. As one reviewer noted, "The main strength of the proposed book is the link between theory and exemplar code of the algorithms." Essential background theory is carefully explained. This text gives students and researchers in image processing and computer vision a complete introduction to classic and state-of-the-art methods in feature extraction together with practical guidance on their implementation. The only text to concentrate on feature extraction with working implementation and worked through mathematical derivations and algorithmic methods A thorough overview of available feature extraction methods including essential background theory, shape methods, texture and deep learning Up to date coverage of interest point detection, feature extraction and description and image representation (including frequency domain and colour) Good balance between providing a mathematical background and practical implementation Detailed and explanatory of algorithms in MATLAB and Python

Circulant Matrices - Philip J. Davis 2013-08

The book is well written; for people who are familiar with matrix theory, it can also be recreational reading. --Mathematical Reviews The book is written in a very stimulating and lucid style and is valuably complemented by extensive references and by well over 200 exercises. --Zentralblatt MATH A circulant matrix is one in which a basic row of numbers is repeated again and again, but with a shift in position. Such matrices have connection to problems in physics, signal and image processing, probability, statistics, numerical analysis, algebraic coding theory, and many other areas. At the same time, the theory of

circulants is easy, relative to the general theory of matrices. Practically every matrix-theoretic question for circulants may be resolved in closed form. Consequently, circulant matrices constitute a nontrivial but simple set of objects that the reader may use to practice, and ultimately deepen, a knowledge of matrix theory. They can also be viewed as special instances of structured or patterned matrices. This book serves as a general reference on circulants, as well as provides alternate or supplemental material for intermediate courses on matrix theory. There is some general discussion of matrices: block matrices, Kronecker products, decomposition theorems, generalized inverses. These topics were chosen because of their application to circulants and because they are not always found in books on linear algebra. More than 200 problems of varying difficulty are included.

Image Processing - Maria M. P. Petrou
2010-05-17

Following the success of the first edition, this thoroughly updated second edition of Image Processing: The Fundamentals will ensure that it remains the ideal text for anyone seeking an introduction to the essential concepts of image processing. New material includes image processing and colour, sine and cosine transforms, Independent Component Analysis (ICA), phase congruency and the monogenic signal and several other new topics. These updates are combined with coverage of classic topics in image processing, such as orthogonal transforms and image enhancement, making this a truly comprehensive text on the subject. Key features: Presents material at two levels of difficulty: the main text addresses the fundamental concepts and presents a broad view of image processing, whilst more advanced material is interleaved in boxes throughout the text, providing further reference for those who wish to examine each technique in depth. Contains a large number of fully worked out examples. Focuses on an understanding of how image processing methods work in practice. Illustrates complex algorithms on a step-by-step basis, and lists not only the good practices but also identifies the pitfalls in each case. Uses a clear question and answer structure. Includes a CD containing the MATLAB® code of the various

examples and algorithms presented in the book. There is also an accompanying website with slides available for download for instructors as a teaching resource. Image Processing: The Fundamentals, Second Edition is an ideal teaching resource for both undergraduate and postgraduate students. It will also be of value to researchers of various disciplines from medicine to mathematics with a professional interest in image processing

Algorithms for Image Processing and

Computer Vision - J. R. Parker 2010-11-29

A cookbook of algorithms for common image processing applications Thanks to advances in computer hardware and software, algorithms have been developed that support sophisticated image processing without requiring an extensive background in mathematics. This bestselling book has been fully updated with the newest of these, including 2D vision methods in content-based searches and the use of graphics cards as image processing computational aids. It's an ideal reference for software engineers and developers, advanced programmers, graphics programmers, scientists, and other specialists who require highly specialized image processing. Algorithms now exist for a wide variety of sophisticated image processing applications required by software engineers and developers, advanced programmers, graphics programmers, scientists, and related specialists This bestselling book has been completely updated to include the latest algorithms, including 2D vision methods in content-based searches, details on modern classifier methods, and graphics cards used as image processing computational aids Saves hours of mathematical calculating by using distributed processing and GPU programming, and gives non-mathematicians the shortcuts needed to program relatively sophisticated applications. Algorithms for Image Processing and Computer Vision, 2nd Edition provides the tools to speed development of image processing applications.

Digital Image Processing - D. Sundararajan
2017-10-12

This book offers readers an essential introduction to the fundamentals of digital image processing. Pursuing a signal processing and algorithmic approach, it makes the fundamentals of digital image processing accessible and easy

to learn. It is written in a clear and concise manner with a large number of 4 x 4 and 8 x 8 examples, figures and detailed explanations. Each concept is developed from the basic principles and described in detail with equal emphasis on theory and practice. The book is accompanied by a companion website that provides several MATLAB programs for the implementation of image processing algorithms. The book also offers comprehensive coverage of the following topics: Enhancement, Transform processing, Restoration, Registration, Reconstruction from projections, Morphological image processing, Edge detection, Object representation and classification, Compression, and Color processing.

Digital Image Processing - William K. Pratt
2007-02-09

A newly updated and revised edition of the classic introduction to digital image processing The Fourth Edition of Digital Image Processing provides a complete introduction to the field and includes new information that updates the state of the art. The text offers coverage of new topics and includes interactive computer display imaging examples and computer programming exercises that illustrate the theoretical content of the book. These exercises can be implemented using the Programmer's Imaging Kernel System (PIKS) application program interface included on the accompanying CD. Suitable as a textbook for students or as a reference for practitioners, this new edition provides a comprehensive treatment of these vital topics: Characterization of continuous images Image sampling and quantization techniques Two-dimensional signal processing techniques Image enhancement and restoration techniques Image analysis techniques Software implementation of image processing applications In addition, the bundled CD includes: A Solaris operating system executable version of the PIKS Scientific API A Windows operating system executable version of PIKS Scientific A Windows executable version of PIKSTool, a graphical user interface method of executing many of the PIKS Scientific operators without program compilation A PDF file format version of the PIKS Scientific C programmer's reference manual C program source demonstration programs A digital image database of most of the source images used in

the book plus many others widely used in the literature Note: CD-ROM/DVD and other supplementary materials are not included as part of eBook file.

Digital Image Processing Using MATLAB - Rafael C. Gonzalez 2020

"Update of popular Digital Image Processing text using the latest version of Matlab"--

□□□□□□□□ - Alasdair McAndrew 2004

Is an introduction to digital image processing from an elementary perspective. The book covers topics that can be introduced with simple mathematics so students can learn the concepts without getting overwhelmed by mathematical detail.

The Military Guide to Financial Independence and Retirement - Doug Nordman 2011-06

"Filled with examples, checklists, websites, and a rich collection of appendices that deal with inflation, multiple income streams, and the value of a military pension, this book is essential reading for anyone contemplating retiring from the military"--From publisher's website.

Introduction to Digital Image Processing - William K. Pratt 2013-09-13

The subject of digital image processing has migrated from a graduate to a junior or senior level course as students become more proficient in mathematical background earlier in their college education. With that in mind, Introduction to Digital Image Processing is simpler in terms of mathematical derivations and eliminates derivations of advanced s
Digital Image Processing - Rafael C. Gonzalez 2018

Introduce your students to image processing with the industry's most prized text For 40 years, Image Processing has been the foundational text for the study of digital image processing. The book is suited for students at the college senior and first-year graduate level with prior background in mathematical analysis, vectors, matrices, probability, statistics, linear systems, and computer programming. As in all earlier editions, the focus of this edition of the book is on fundamentals. The 4th Edition, which celebrates the book's 40th anniversary, is based on an extensive survey of faculty, students, and independent readers in 150 institutions from 30 countries. Their feedback led to expanded or new coverage of topics such as deep learning

and deep neural networks, including convolutional neural nets, the scale-invariant feature transform (SIFT), maximally-stable extremal regions (MSERs), graph cuts, k-means clustering and superpixels, active contours (snakes and level sets), and exact histogram matching. Major improvements were made in reorganizing the material on image transforms into a more cohesive presentation, and in the discussion of spatial kernels and spatial filtering. Major revisions and additions were made to examples and homework exercises throughout the book. For the first time, we added MATLAB projects at the end of every chapter, and compiled support packages for you and your teacher containing, solutions, image databases, and sample code. The support materials for this title can be found at www.ImageProcessingPlace.com
Image Processing, Analysis, and Machine Vision
- Milan Sonka 2008

Digital Image Processing - Wilhelm Burger
2012-01-19

Written as an introduction for undergraduate students, this textbook covers the most important methods in digital image processing. Formal and mathematical aspects are discussed at a fundamental level and various practical examples and exercises supplement the text. The book uses the image processing environment ImageJ, freely distributed by the National Institute of Health. A comprehensive website supports the book, and contains full source code for all examples in the book, a question and answer forum, slides for instructors, etc. Digital Image Processing in Java is the definitive textbook for computer science students studying image processing and digital processing.
An Interdisciplinary Introduction to Image Processing - Steven L. Tanimoto 2012-04-27
Basic principles of image processing and programming explained without college-level mathematics. This book explores image processing from several perspectives: the creative, the theoretical (mainly mathematical), and the grammatical. It explains the basic principles of image processing, drawing on key concepts and techniques from mathematics, psychology of perception, computer science, and art, and introduces computer programming as a

way to get more control over image processing operations. It does so without requiring college-level mathematics or prior programming experience. The content is supported by PixelMath, a freely available software program that helps the reader understand images as both visual and mathematical objects. The first part of the book covers such topics as digital image representation, sampling, brightness and contrast, color models, geometric transformations, synthesizing images, stereograms, photomosaics, and fractals. The second part of the book introduces computer programming using an open-source version of the easy-to-learn Python language. It covers the basics of image analysis and pattern recognition, including edge detection, convolution, thresholding, contour representation, and K-nearest-neighbor classification. A chapter on computational photography explores such subjects as high-dynamic-range imaging, autofocus, and methods for automatically inpainting to fill gaps or remove unwanted objects in a scene. Applications described include the design and implementation of an image-based game. The PixelMath software provides a "transparent" view of digital images by allowing the user to view the RGB values of pixels by zooming in on an image. PixelMath provides three interfaces: the pixel calculator; the formula page, an advanced extension of the calculator; and the Python window.

Image Analysis - Yujin Zhang 2017-08-07

This graduate textbook presents fundamentals, applications and evaluation of image segregation, unit description, feature measurement and pattern recognition. Analysis on texture, shape and motion are discussed and mathematical tools are employed extensively. Rich in examples and exercises, it prepares electrical engineering and computer science students with knowledge and skills for further studies on image understanding.

Digital Image Processing - Castleman 2007-09

Remote Sensing - Robert A. Schowengerdt
2012-12-02

This book is a completely updated, greatly expanded version of the previously successful volume by the author. The Second Edition includes new results and data, and discusses a

unified framework and rationale for designing and evaluating image processing algorithms. Written from the viewpoint that image processing supports remote sensing science, this book describes physical models for remote sensing phenomenology and sensors and how they contribute to models for remote-sensing data. The text then presents image processing techniques and interprets them in terms of these models. Spectral, spatial, and geometric models are used to introduce advanced image processing techniques such as hyperspectral image analysis, fusion of multisensor images, and digital elevation model extraction from stereo imagery. The material is suited for graduate level engineering, physical and natural science courses, or practicing remote sensing scientists. Each chapter is enhanced by student exercises designed to stimulate an understanding of the material. Over 300 figures are produced specifically for this book, and numerous tables provide a rich bibliography of the research literature.

Image Processing - Maria Petrou 1999-11-01
Image Processing The Fundamentals Maria Petrou, University of Surrey, Guildford, UK
Panagiota Bosdogianni, Technical University of Crete, Chania, Greece
Image processing has been one of the most active areas of research in recent years. The techniques involved have found significant applications in areas as diverse as video-conferencing, image communication, robotics, geoscience and medicine. From intelligent cars that drive themselves to key-hole surgery, this enormous impact on society is expected to change our lives radically. Providing a step by step guide to the basic principles underlying all image processing tasks, this volume is the result of 11 years of teaching experience. * Features numerous worked examples, guiding the reader through the intricacies of reaching the solutions. * Explains the concepts introduced using small sized images that the reader can manipulate without the use of computers. * Allows the reader to appreciate the 'nuts and bolts' of each method, the issues involved and the problems that may be encountered in real applications. * Presents detailed mathematical explanations at two levels - an easy-to-follow narrative with minimum use of mathematics, and a higher level that uses

mathematical rigour. Image Processing: The Fundamentals is an ideal self-teaching aide and will prove an invaluable companion for research students in related fields. Alternative techniques are demonstrated for each image allowing the reader to appreciate subtle differences between them. Visit Our Web Page!

<http://www.wiley.com/>

Computer Vision and Image Processing -

Balasubramanian Raman 2022-07-23

This two-volume set (CCIS 1567-1568)

constitutes the refereed proceedings of the 6th International Conference on Computer Vision and Image Processing, CVIP 2021, held in Rupnagar, India, in December 2021. The 70 full papers and 20 short papers were carefully reviewed and selected from the 260 submissions. The papers present recent research on such topics as biometrics, forensics, content protection, image enhancement/super-resolution/restoration, motion and tracking, image or video retrieval, image, image/video processing for autonomous vehicles, video scene understanding, human-computer interaction, document image analysis, face, iris, emotion, sign language and gesture recognition, 3D image/video processing, action and event detection/recognition, medical image and video analysis, vision-based human GAIT analysis, remote sensing, and more.

Digital Image Processing: Part I -

Digital Image Processing - Bernd Jähne

2013-03-09

From the reviews of the first edition: "I recommend this book to anyone seriously engaged in image processing. It will clearly stretch the horizon of some readers and be a good reference for others. This is not just another image processing book; it is a book worth owning and a book worth reading several times ..." #J. Electronic Imaging# This practical guidebook uses the concepts and mathematics familiar to students of the natural sciences to provide them with a working knowledge of modern techniques of digital image processing. It takes readers from basic concepts to current research topics and demonstrates how digital image processing can be used for data gathering in research. Detailed examples of applications on PC-based systems and ready-to-use algorithms

enhance the text, as do nearly 200 illustrations (16 in color). The book also includes the most exciting recent advances such as reconstruction of 3-D objects from projections and the analysis of stereo images and image sequences.

Handbook of Image and Video Processing -

Alan C. Bovik 2010-07-21

55% new material in the latest edition of this "must-have for students and practitioners of image & video processing! This Handbook is intended to serve as the basic reference point on image and video processing, in the field, in the research laboratory, and in the classroom. Each chapter has been written by carefully selected, distinguished experts specializing in that topic and carefully reviewed by the Editor, Al Bovik, ensuring that the greatest depth of understanding be communicated to the reader. Coverage includes introductory, intermediate and advanced topics and as such, this book serves equally well as classroom textbook as reference resource. • Provides practicing engineers and students with a highly accessible resource for learning and using image/video processing theory and algorithms • Includes a new chapter on image processing education, which should prove invaluable for those developing or modifying their curricula • Covers the various image and video processing standards that exist and are emerging, driving today's explosive industry • Offers an understanding of what images are, how they are modeled, and gives an introduction to how they are perceived • Introduces the necessary, practical background to allow engineering students to acquire and process their own digital image or video data • Culminates with a diverse set of applications chapters, covered in sufficient depth to serve as extensible models to the reader's own potential applications About the Editor... Al Bovik is the Cullen Trust for Higher Education Endowed Professor at The University of Texas at Austin, where he is the Director of the Laboratory for Image and Video Engineering (LIVE). He has published over 400 technical articles in the general area of image and video processing and holds two U.S. patents. Dr. Bovik was Distinguished Lecturer of the IEEE Signal Processing Society (2000), received the IEEE Signal Processing Society Meritorious Service Award (1998), the IEEE Third Millennium Medal

(2000), and twice was a two-time Honorable Mention winner of the international Pattern Recognition Society Award. He is a Fellow of the IEEE, was Editor-in-Chief, of the IEEE Transactions on Image Processing (1996-2002), has served on and continues to serve on many other professional boards and panels, and was the Founding General Chairman of the IEEE International Conference on Image Processing which was held in Austin, Texas in 1994. * No other resource for image and video processing contains the same breadth of up-to-date coverage * Each chapter written by one or several of the top experts working in that area * Includes all essential mathematics, techniques, and algorithms for every type of image and video processing used by electrical engineers, computer scientists, internet developers, bioengineers, and scientists in various, image-intensive disciplines

Digital Image Processing - Rafael C. Gonzalez
2002

Digital Image Processing has been the leading textbook in its field for more than 20 years. As was the case with the 1977 and 1987 editions by Gonzalez and Wintz, and the 1992 edition by Gonzalez and Woods, the present edition was prepared with students and instructors in mind. 771e material is timely, highly readable, and illustrated with numerous examples of practical significance. All mainstream areas of image processing are covered, including a totally revised introduction and discussion of image fundamentals, image enhancement in the spatial and frequency domains, restoration, color image processing, wavelets, image compression, morphology, segmentation, and image description. Coverage concludes with a discussion of the fundamentals of object recognition. Although the book is completely self-contained, a Companion Website (see inside front cover) provides additional support in the form of review material, answers to selected problems, laboratory project suggestions. and a score of other features. A supplementary instructor's manual is available to instructors who have adopted the book for classroom use. New Features *New chapters on wavelets, image morphology, and color image
Digital Image Processing and Analysis -
Scott E Umbaugh 2017-11-30

Digital image processing and analysis is a field that continues to experience rapid growth, with applications in many facets of our lives. Areas such as medicine, agriculture, manufacturing, transportation, communication systems, and space exploration are just a few of the application areas. This book takes an engineering approach to image processing and analysis, including more examples and images throughout the text than the previous edition. It provides more material for illustrating the concepts, along with new PowerPoint slides. The application development has been expanded and updated, and the related chapter provides step-by-step tutorial examples for this type of development. The new edition also includes supplementary exercises, as well as MATLAB-based exercises, to aid both the reader and student in development of their skills.

Medical Imaging Systems - Andreas Maier

2018-08-02

This open access book gives a complete and comprehensive introduction to the fields of medical imaging systems, as designed for a broad range of applications. The authors of the book first explain the foundations of system theory and image processing, before highlighting several modalities in a dedicated chapter. The initial focus is on modalities that are closely related to traditional camera systems such as endoscopy and microscopy. This is followed by more complex image formation processes: magnetic resonance imaging, X-ray projection imaging, computed tomography, X-ray phase-contrast imaging, nuclear imaging, ultrasound, and optical coherence tomography.

Computer Vision - Simon J. D. Prince 2012-06-18
A modern treatment focusing on learning and inference, with minimal prerequisites, real-world examples and implementable algorithms.