

[Books] Digital Image Processing An Algorithmic Introduction Using Java Texts In Computer Science

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Digital Image Processing-Wilhelm Burger
2016-03-25 This revised and expanded new edition of an internationally successful classic presents an accessible introduction to the key methods in digital image processing for both practitioners and teachers. Emphasis is placed on practical application, presenting precise algorithmic descriptions in an unusually high level of detail, while highlighting direct connections between the mathematical foundations and concrete implementation. The text is supported by practical examples and carefully constructed chapter-ending exercises drawn from the authors' years of teaching experience, including easily adaptable Java code and completely worked out examples. Source code, test images and additional instructor materials are also provided at an associated website. Digital Image Processing is the definitive textbook for students, researchers, and professionals in search of critical analysis and modern implementations of the most important algorithms in the field, and is also eminently suitable for self-study.

Digital Image Processing-Uvais Qidwai
2009-10-15 Avoiding heavy mathematics and lengthy programming details, Digital Image Processing: An Algorithmic Approach with MATLAB® presents an easy methodology for learning the fundamentals of image processing.

The book applies the algorithms using MATLAB®, without bogging down students with syntactical and debugging issues. One chapter can typically be completed per week, with each chapter divided into three sections. The first section presents theoretical topics in a very simple and basic style with generic language and mathematics. The second section explains the theoretical concepts using flowcharts to streamline the concepts and to form a foundation for students to code in any programming language. The final section supplies MATLAB codes for reproducing the figures presented in the chapter. Programming-based exercises at the end of each chapter facilitate the learning of underlying concepts through practice. This textbook equips undergraduate students in computer engineering and science with an essential understanding of digital image processing. It will also help them comprehend more advanced topics and sophisticated mathematical material in later courses. A color insert is included in the text while various instructor resources are available on the author's website.

Digital Image Processing-Wilhelm Burger
2016-04-05 This revised and expanded new edition of an internationally successful classic presents an accessible introduction to the key methods in digital image processing for both practitioners and teachers. Emphasis is placed on practical application, presenting precise algorithmic descriptions in an unusually high

level of detail, while highlighting direct connections between the mathematical foundations and concrete implementation. The text is supported by practical examples and carefully constructed chapter-ending exercises drawn from the authors' years of teaching experience, including easily adaptable Java code and completely worked out examples. Source code, test images and additional instructor materials are also provided at an associated website. Digital Image Processing is the definitive textbook for students, researchers, and professionals in search of critical analysis and modern implementations of the most important algorithms in the field, and is also eminently suitable for self-study.

Digital Image Processing Algorithms and Applications-Ioannis Pitas 2000-02-22 A unique collection of algorithms and lab experiments for practitioners and researchers of digital image processing technology With the field of digital image processing rapidly expanding, there is a growing need for a book that would go beyond theory and techniques to address the underlying algorithms. Digital Image Processing Algorithms and Applications fills the gap in the field, providing scientists and engineers with a complete library of algorithms for digital image processing, coding, and analysis. Digital image transform algorithms, edge detection algorithms, and image segmentation algorithms are carefully gleaned from the literature for compatibility and a track record of acceptance in the scientific community. The author guides readers through all facets of the technology, supplementing the discussion with detailed lab exercises in EIKONA, his own digital image processing software, as well as useful PDF transparencies. He covers in depth filtering and enhancement, transforms, compression, edge detection, region segmentation, and shape analysis, explaining at every step the relevant theory, algorithm structure, and its use for problem solving in various applications. The availability of the lab exercises and the source code (all algorithms are presented in C-code) over the Internet makes the book an invaluable self-study guide. It also lets interested readers develop digital image processing applications on ordinary desktop computers as well as on Unix machines.

Digital Image Processing-Wilhelm Burger 2009-11-14 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.

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.

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.

Topological Algorithms for Digital Image Processing

T.Y. Kong 1996-07-17 Basic topological algorithms are the subject of this new book. It presents their underlying theory and discusses their applications. Due to the wide variety of topics treated in the seven chapters, no attempt has been made to standardize the notation and terminology used by the authors. Each chapter, however, is self-contained and can be read independently of the others. Some of the basic terminology and fundamental concepts of digital topology are reviewed in the appendix which also describes important areas of the field. A bibliography of over 360 references is also provided. The notations and terminologies used in this book will serve to introduce readers to the even wider variety that exists in the voluminous literature dealing with topological algorithms.

Principles of Digital Image Processing

Wilhelm Burger 2009-04-02 This is the second volume of a book series that provides a modern, algorithmic introduction to digital image processing. It is designed to be used both by learners desiring a firm foundation on which to build and practitioners in search of critical analysis and modern implementations of the most important techniques. This updated and enhanced paperback edition of our comprehensive textbook *Digital Image Processing: An Algorithmic Approach Using Java* packages the original material into a series of compact volumes, thereby supporting a flexible sequence of courses in digital image processing. Tailoring the contents to the scope of individual semester courses is also an attempt to provide affordable (and "backpack-compatible") textbooks without compromising the quality and depth of content. This second volume, titled *Core Algorithms*, extends the introductory material presented in the first volume (*Fundamental Techniques*) with additional techniques that are, nevertheless, part of the standard image processing toolbox. A forthcoming third volume (*Advanced Techniques*)

will extend this series and add important material beyond the elementary level, suitable for an advanced undergraduate or even graduate course.

Modern Algorithms for Image Processing

Vladimir Kovalevsky 2018-12-10 Utilize modern methods for digital image processing and take advantage of the many time-saving templates provided for all of the projects in this book. *Modern Algorithms for Image Processing* approaches the topic of image processing through teaching by example. Throughout the book, you will create projects that resolve typical problems that you might encounter in the world of digital image processing. Some projects teach you methods for addressing the quality of images, such as reducing random errors or noise and suppressing pulse noise (salt and pepper), a method valuable for improving the quality of historical images. Other methods detail how to correct inhomogeneous illumination, not by means of subtracting the mean illumination, but through division, a far more efficient method. Additional projects cover contrasting, and a process for edge detection, more efficient than Canny's, for detecting edges in color images directly, without converting them into black and white images. What You'll Learn Apply innovative methods for suppressing pulse noise, enhancing contrast, and edge detection Know the pros and cons of enlisting a particular method Use new approaches for image compression and recognizing circles in photos Utilize a valuable method for straightening photos of paintings taken at an oblique angle, a critical concept to understand when using flash at a right angle Understand the problem statement of polygonal approximation of boundaries or edges and its solution Use a new method for detecting bicycles in traffic Access complete source code examples in C# for all of the projects Who This Book Is For C# developers who work with digital image processing or are interested in informatics. The reader should have programming experience and access to an integrated development environment (IDE), ideally .NET. This book does not prove or disprove theorems, but suggests methods for learning valuable concepts that will enable you to customize your own image processing projects.

Digital Image Processing

Bernd Jähne 2013-03-09 This long-established and well-received monograph offers an integral view of

image processing - from image acquisition to the extraction of the data of interest - written by a physical scientists for other scientists. Supplements discussion of the general concepts is supplemented with examples from applications on PC-based image processing systems and ready-to-use implementations of important algorithms. Completely revised and extended, the most notable extensions being a detailed discussion on random variables and fields, 3-D imaging techniques and a unified approach to regularized parameter estimation. Complete text of the book is now available on the accompanying CD-ROM. It is hyperlinked so that it can be used in a very flexible way. CD-ROM contains a full set of exercises to all topics covered by this book and a runtime version of the image processing software heurisko. A large collection of images, image sequences, and volumetric images is available for practice exercises

DIGITAL IMAGE PROCESSING-Joshi, Madhuri A. 2018-06-01 This introduction to the fundamental concepts and methodologies of image processing is suitable for first-year postgraduate and senior undergraduate students in almost every engineering discipline, and in particular meets the requirement of the prescribed courses in the streams: Electronics and Communication, Computer Science and Engineering, Information Technology, and Computer Applications. The book, now in its second edition, continues to offer a balanced exposition of the basic principles and applications of image processing. It lays considerable emphasis on the algorithmic approach in order to teach students how to write good practical programs for problem solving. Major topics covered in the book include Image fundamentals, Different image transforms, Image enhancement in the spatial and frequency domains, Restoration, Image analysis, Image description, Image compression, Image reconstruction from projections, and Applications of image processing in the areas of biometrics, speaker recognition, satellite imaging, medical imaging, and many more. The style of presentation is comprehensive and application oriented, comprising examples, diagrams, image results, case studies of applications, and review questions—making it easy for students to understand key ideas, their practical relevance and applications. NEW TO THIS EDITION • Object representation, recognition and classification • MATLAB programs for image

processing • OpenCV programs for image processing

Digital Image Processing-Bernd Jähne 2013-06-29 Digital image processing is a fascinating subject in several aspects. Human beings perceive most of the information about their environment through their visual sense. While for a long time images could only be captured by photography, we are now at the edge of another technological revolution which allows image data to be captured, manipulated, and evaluated electronically with computers. With breathtaking pace, computers are becoming more powerful and at the same time less expensive, so that widespread applications for digital image processing emerge. In this way, image processing is becoming a tremendous tool to analyze image data in all areas of natural science. For more and more scientists digital image processing will be the key to study complex scientific problems they could not have dreamed to tackle only a few years ago. A door is opening for new interdisciplinary cooperations merging computer science with the corresponding research areas. Many students, engineers, and researchers in all natural sciences are faced with the problem of needing to know more about digital image processing. This book is written to meet this need. The author- himself educated in physics- describes digital image processing as a new tool for scientific research. The book starts with the essentials of image processing and leads - in selected areas - to the state-of-the art. This approach gives an insight as to how image processing really works.

Digital Image Processing Techniques-Michael P. Ekstrom 2012-12-02 Digital Image Processing Techniques is a state-of-the-art review of digital image processing techniques, with emphasis on the processing approaches and their associated algorithms. A canonical set of image processing problems that represent the class of functions typically required in most image processing applications is presented. Each chapter broadly addresses the problem being considered; the best techniques for this particular problem and how they work; their strengths and limitations; and how the techniques are actually implemented as well as their computational aspects. Comprised of eight chapters, this volume begins with a discussion on processing techniques associated with the following tasks:

image enhancement, restoration, detection and estimation, reconstruction, and analysis, along with image data compression and image spectral estimation. The second section describes hardware and software systems for digital image processing. Aspects of commercially available systems that combine both processing and display functions are considered, as are future prospects for their technological and architectural evolution. The specifics of system design trade-offs are explicitly presented in detail. This book will be of interest to students, practitioners, and researchers in various disciplines including digital signal processing, computer science, statistical communications theory, control systems, and applied physics.

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 Holography and Digital Image Processing-Leonid Yaroslavsky 2013-03-14 Digital holography and digital image processing are twins born by computer era. They share origin, theoretical base, methods and algorithms. The present book describes these common fundamentals principles, methods and algorithms including image and hologram digitization, data compression, digital transforms and efficient computational algorithms, statistical and Monte-Carlo methods, image restoration and enhancement, image reconstruction in tomography and digital holography, discrete signal resampling and image geometrical transformations, accurate measurements and reliable target localization in images, recording and reconstruction of computer generated holograms, adaptive and nonlinear filters for sensor signal perfecting and image restoration and enhancement. The book combines theory, heavily illustrated practical methods and efficient computational algorithms and is written for senior-level undergraduate and graduate students, researchers and engineers in optics, photonics, opto-electronics and electronic engineering.

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 using SCILAB-Rohit

M. Thanki 2018-05-07 This book provides basic theories and implementations using SCILAB open-source software for digital images. The book simplifies image processing theories and well as implementation of image processing algorithms, making it accessible to those with basic knowledge of image processing. This book includes many SCILAB programs at the end of each theory, which help in understanding concepts. The book includes more than sixty SCILAB programs of the image processing theory. In the appendix, readers will find a deeper glimpse into the research areas in the image processing.

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.

Digital Image Interpolation in Matlab-Chi-

Wah Kok 2019-03-19 This book provides a comprehensive study in digital image interpolation with theoretical, analytical and Matlab® implementation. It includes all historically and practically important interpolation algorithms, accompanied with Matlab® source code on a website, which will assist readers to learn and understand the implementation details of each presented interpolation algorithm. Furthermore, sections in fundamental signal processing theories and image quality models are also included. The authors intend for the book to help readers develop a thorough consideration of the design of image interpolation algorithms and applications for their future research in the field of digital image processing. Introduces a wide range of traditional and advanced image interpolation methods concisely and provides thorough treatment of theoretical foundations. Discusses in detail the assumptions and limitations of presented algorithms. Investigates a variety of interpolation and implementation methods including transform domain, edge-directed, wavelet and scale-space, and fractal based methods. Features simulation results for comparative analysis, summaries and computational and analytical exercises at the end of each chapter. Digital Image Interpolation in Matlab® is an excellent guide for researchers and engineers working in digital imaging and digital video technologies. Graduate students studying digital image processing will also benefit from this practical reference text.

Binary Digital Image Processing-Stéphane

Marchand-Maillet 2000 Foreword. Acknowledgements. Notation. Preface. Digital topology. Discrete geometry. Algorithmic graph

theory. Acquisition and storage. Distance transformations. Binary digital image characteristics. Image thinning. Some applications. References. Index.

Data Analysis in Astronomy-V. di Gesù

2012-12-06 The international Workshop on "Data Analysis in Astronomy" was intended to give a presentation of experiences that have been acquired in data analysis and image processing, developments and applications that are steadily growing up in Astronomy. The quality and the quantity of ground and satellite observations require more sophisticated data analysis methods and better computational tools. The Workshop has reviewed the present state of the art, explored new methods and discussed a wide range of applications. The topics which have been selected have covered the main fields of interest for data analysis in Astronomy. The Workshop has been focused on the methods used and their significant applications. Results which gave a major contribution to the physical interpretation of the data have been stressed in the presentations. Attention has been devoted to the description of operational system for data analysis in astronomy. The success of the meeting has been the results of the coordinated effort of several people from the organizers to those who presented a contribution and/or took part in the discussion. We wish to thank the members of the Workshop scientific committee Prof. M. Cappacioli, Prof. G. De Biase, Prof. G. Sedmak, Prof. A. Zichichi and of the local organizing committee Dr. R. Buccheri and Dr. M.C. Maccone together with Miss P. Savalli and Dr. A. Gabriele of the E. Majorana Center for their support and the unvaluable part in arranging the Workshop.

Algorithms for Image Processing and Computer Vision-J. R. Parker 1997

A cookbook of the hottest new algorithms and cutting-edge techniques in image processing and computer vision This amazing book/CD package puts the power of all the hottest new image processing techniques and algorithms in your hands. Based on J. R. Parker's exhaustive survey of Internet newsgroups worldwide, Algorithms for Image Processing and Computer Vision answers the most frequently asked questions with practical solutions. Parker uses dozens of real-life examples taken from fields such as robotics, space exploration, forensic analysis, cartography,

and medical diagnostics, to clearly describe the latest techniques for morphing, advanced edge detection, wavelets, texture classification, image restoration, symbol recognition, and genetic algorithms, to name just a few. And, best of all, he implements each method covered in C and provides all the source code on the CD. For the first time, you're rescued from the hours of mind-numbing mathematical calculations it would ordinarily take to program these state-of-the-art image processing capabilities into software. At last, nonmathematicians get all the shortcuts they need for sophisticated image recognition and processing applications. On the CD-ROM you'll find: * Complete code for examples in the book * A gallery of images illustrating the results of advanced techniques * A free GNU compiler that lets you run source code on any platform * A system for restoring damaged or blurred images * A genetic algorithms package

Digital Image Processing-J M Blackledge

2005-11-30 This authoritative text (the second part of a complete MSc course) provides mathematical methods required to describe images, image formation and different imaging systems, coupled with the principle techniques used for processing digital images. It is based on a course for postgraduates reading physics, electronic engineering, telecommunications engineering, information technology and computer science. This book relates the methods of processing and interpreting digital images to the 'physics' of imaging systems. Case studies reinforce the methods discussed, with examples of current research themes. Provides mathematical methods required to describe images, image formation and different imaging systems Outlines the principle techniques used for processing digital images Relates the methods of processing and interpreting digital images to the 'physics' of imaging systems

3-D Image Processing Algorithms-Nikolaidis,

Nikos Nikolaidis 2000-11-06 Thorough, up-to-date, comprehensive coverage of 3-D image processing This authoritative guide presents and explains numerous 3-D image processing, analysis, and visualization techniques, including volume filtering, interpolation, 3-D discrete Fourier transform, evaluation of topological and geometrical features, region segmentation and edge detection, skeletonization and registration, and visualization. Necessary theoretical

background is provided for each topic, along with a number of algorithms, selected on the basis of their acceptance by the scientific community. The presentation of each technique includes a commented implementation, either in C code or in C-like pseudocode. Though presented in an almost ready-to-run form, the C code is simplified to expose the structure of the processing algorithms, rather than their programming details. This combination of theoretical treatment and C code implementation allows readers to gain a thorough insight into these techniques. Important features of 3-D Image Processing Algorithms include: * A demo version of EIKONA 3D image processing software * Lab exercises based on EIKONA 3D * Accompanying transparencies summarizing the most important topics. The material can be downloaded from an ftp site Based on the authors' long experience in research and teaching of 2-D/3-D image processing, 3-D Image Processing Algorithms is an indispensable resource for electrical, computer, and biomedical engineers, as well as computer graphics professionals and programmers.

Fundamentals of Three-dimensional Digital

Image Processing-Junichiro Toriwaki 2009-04-23 This book is a detailed description of the basics of three-dimensional digital image processing. A 3D digital image (abbreviated as "3D image" below) is a digitalized representation of a 3D object or an entire 3D space, stored in a computer as a 3D array. Whereas normal digital image processing is concerned with screens that are a collection of square shapes called "pixels" and their corresponding density levels, the "image plane" in three dimensions is represented by a division into cubical graphical elements (called "voxels") that represent corresponding density levels. In the context of image processing, in many cases 3D image processing will refer to the input of multiple 2D images and performing processing in order to understand the 3D space (or "scene") that they depict. This is a result of research into how to use input from image sensors such as television cameras as a basis for learning about a 3D scene, thereby replicating the sense of vision for humans or intelligent robots, and this has been the central problem in image processing research since the 1970s. However, a completely different type of image with its own new problems, the 3D digital image discussed in this book, rapidly took prominence in the 1980s, particularly in the field of medical

imaging. These were recordings of human bodies obtained through computed (or "computerized") tomography (CT), images that recorded not only the external, visible surface of the subject but also, to some degree of resolution, its internal structure. This was a type of image that no one had experienced before.

Image Processing Technologies-Kiyoharu Aizawa 2004-03-01 Showcasing the most influential developments, experiments, and architectures impacting the digital, surveillance, automotive, industrial, and medical sciences, this text/reference tracks the evolution and advancement of CVIP technologies - examining methods and algorithms for image analysis, optimization, segmentation, and restoration.

Image Processing-Maher A. Sid-Ahmed 1995

Digital Image Compression-Weidong Kou 2013-03-14 Digital image business applications are expanding rapidly, driven by recent advances in the technology and breakthroughs in the price and performance of hardware and firmware. This ever increasing need for the storage and transmission of images has in turn driven the technology of image compression: image data rate reduction to save storage space and reduce transmission rate requirements. Digital image compression offers a solution to a variety of imaging applications that require a vast amount of data to represent the images, such as document imaging management systems, facsimile transmission, image archiving, remote sensing, medical imaging, entertainment, HDTV, broadcasting, education and video teleconferencing. Digital Image Compression: Algorithms and Standards introduces the reader to compression algorithms, including the CCITT facsimile standards T.4 and T.6, JBIG, CCITT H.261 and MPEG standards. The book provides comprehensive explanations of the principles and concepts of the algorithms, helping the readers' understanding and allowing them to use the standards in business, product development and R&D. Audience: A valuable reference for the graduate student, researcher and engineer. May also be used as a text for a course on the subject.

Automatic Digital Document Processing and Management-Stefano Ferilli 2011-01-03 This

text reviews the issues involved in handling and processing digital documents. Examining the full range of a document's lifetime, the book covers acquisition, representation, security, pre-processing, layout analysis, understanding, analysis of single components, information extraction, filing, indexing and retrieval. Features: provides a list of acronyms and a glossary of technical terms; contains appendices covering key concepts in machine learning, and providing a case study on building an intelligent system for digital document and library management; discusses issues of security, and legal aspects of digital documents; examines core issues of document image analysis, and image processing techniques of particular relevance to digitized documents; reviews the resources available for natural language processing, in addition to techniques of linguistic analysis for content handling; investigates methods for extracting and retrieving data/information from a document.

Digital Image Processing-Bernd Jähne
1997-10-06 This long-established and well-received monograph offers an integral view of image processing - from image acquisition to the extraction of the data of interest - written by a physical scientist for other scientists. Supplements discussion of the general concepts is supplemented with examples from applications on PC-based image processing systems and ready-to-use implementations of important algorithms. Completely revised and extended, the most notable extensions being a detailed discussion on random variables and fields, 3-D imaging techniques and a unified approach to regularized parameter estimation. Complete text of the book is now available on the accompanying CD-ROM. It is hyperlinked so that it can be used in a very flexible way. CD-ROM contains a full set of exercises to all topics covered by this book and a runtime version of the image processing software heurisko. A large collection of images, image sequences, and volumetric images is available for practice exercises

Intelligent Analysis of Multimedia Information-Bhattacharyya, Siddhartha
2016-07-13 Multimedia represents information in novel and varied formats. One of the most prevalent examples of continuous media is video. Extracting underlying data from these videos can be an arduous task. From video indexing,

surveillance, and mining, complex computational applications are required to process this data. Intelligent Analysis of Multimedia Information is a pivotal reference source for the latest scholarly research on the implementation of innovative techniques to a broad spectrum of multimedia applications by presenting emerging methods in continuous media processing and manipulation. This book offers a fresh perspective for students and researchers of information technology, media professionals, and programmers.

Digital Image Sequence Processing, Compression, and Analysis-Todd R. Reed
2004-07-27 Digital image sequences (including digital video) are increasingly common and important components in technical applications ranging from medical imaging and multimedia communications to autonomous vehicle navigation. The immense popularity of DVD video and the introduction of digital television make digital video ubiquitous in the consumer domain. Digital Image Sequence Processing, Compression, and Analysis provides an overview of the current state of the field, as analyzed by leading researchers. An invaluable resource for planning and conducting research in this area, the book conveys a unified view of potential directions for further industrial development. It offers an in-depth treatment of the latest perspectives on processing, compression, and analysis of digital image sequences. Research involving digital image sequences remains extremely active. The advent of economical sequence acquisition, storage, and display devices, together with the availability of computing power, opens new areas of opportunity. This volume delivers the background necessary to understand the strengths and weaknesses of current techniques and the directions that consumer and technical applications may take over the coming decade.

Applications from Engineering with MATLAB Concepts-Jan Valdman
2016-07-07 The book presents a collection of MATLAB-based chapters of various engineering background. Instead of giving exhausting amount of technical details, authors were rather advised to explain relations of their problems to actual MATLAB concepts. So, whenever possible, download links to functioning MATLAB codes were added and a potential reader can do own testing. Authors are typically scientists with interests in modeling in

MATLAB. Chapters include image and signal processing, mechanics and dynamics, models and data identification in biology, fuzzy logic, discrete event systems and data acquisition systems.

Fundamentals of Digital Image Processing-S.
Annadurai 2007

Microscope Image Processing-Qiang Wu
2010-07-27 Digital image processing, an integral part of microscopy, is increasingly important to the fields of medicine and scientific research. This book provides a unique one-stop reference on the theory, technique, and applications of this technology. Written by leading experts in the field, this book presents a unique practical perspective of state-of-the-art microscope image processing and the development of specialized algorithms. It contains in-depth analysis of methods coupled with the results of specific real-world experiments. Microscope Image Processing covers image digitization and display, object measurement and classification, autofocusing, and structured illumination. Key Features: Detailed descriptions of many leading-edge methods and algorithms In-depth analysis of the method and experimental results, taken from real-life examples Emphasis on computational and algorithmic aspects of microscope image processing Advanced material on geometric, morphological, and wavelet image processing, fluorescence, three-dimensional and time-lapse microscopy, microscope image enhancement, MultiSpectral imaging, and image data management This book is of interest to all scientists, engineers, clinicians, post-graduate fellows, and graduate students working in the fields of biology, medicine, chemistry, pharmacology, and other related fields. Anyone who uses microscopes in their work and needs to understand the methodologies and capabilities of the latest digital image processing techniques will find this book invaluable. Presents a unique practical perspective of state-of-the-art microscope image processing and the development of specialized algorithms Each chapter includes in-depth analysis of methods coupled with the results of specific real-world experiments Co-edited by Kenneth R. Castleman, world-renowned pioneer in digital image processing and author of two seminal textbooks on the subject

Digital Image Processing-Rafael C. Gonzalez
2011-11-21 This is the eBook of the printed book and may not include any media, website access codes, or print supplements that may come packaged with the bound book. For courses in Image Processing and Computer Vision. Completely self-contained—and heavily illustrated—this introduction to basic concepts and methodologies for digital image processing is written at a level that truly is suitable for seniors and first-year graduate students in almost any technical discipline. The leading textbook in its field for more than twenty years, it continues its cutting-edge focus on contemporary developments in all mainstream areas of image processing—e.g., image fundamentals, image enhancement in the spatial and frequency domains, restoration, color image processing, wavelets, image compression, morphology, segmentation, image description, and the fundamentals of object recognition. It focuses on material that is fundamental and has a broad scope of application.

Remote Sensing Digital Image Analysis-John A. Richards 2013-04-17 With the widespread availability of satellite and aircraft remote sensing image data in digital form, and the ready access most remote sensing practitioners have to computing systems for image interpretation, there is a need to draw together the range of digital image processing procedures and methodologies commonly used in this field into a single treatment. It is the intention of this book to provide such a function, at a level meaningful to the non-specialist digital image analyst, but in sufficient detail that algorithm limitations, alternative procedures and current trends can be appreciated. Often the applications specialist in remote sensing wishing to make use of digital processing procedures has had to depend upon either the mathematically detailed treatments of image processing found in the electrical engineering and computer science literature, or the sometimes necessarily superficial treatments given in general texts on remote sensing. This book seeks to redress that situation. Both image enhancement and classification techniques are covered making the material relevant in those applications in which photointerpretation is used for information extraction and in those wherein information is obtained by classification.

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 for Medical Applications

-Geoff Dougherty 2009-04-09
Hands-on text for a first course aimed at end-users, focusing on concepts, practical issues and problem solving.