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KEY=COMPUTER - CAMILA PAOLA

PRINCIPLES OF DIGITAL IMAGE PROCESSING

ADVANCED METHODS

Springer Science & Business Media 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

AN ALGORITHMIC APPROACH WITH MATLAB

CRC Press 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 AND ANALYSIS

COMPUTER VISION AND IMAGE ANALYSIS

CRC Press Computer vision and image analysis is a field that continues to advance at an ever increasing pace, with applications ranging from medical diagnostics to space exploration. The diversity of applications is one of the driving forces that make it such an exciting field to be involved in for the 21st century. This book presents a unique engineering approach to the practice of computer vision and image analysis, which starts by presenting a global model to help gain an understanding of the overall process, followed by a breakdown and explanation of each individual topic. Topics are presented as they become necessary for understanding the practical imaging model under study, which provides the reader with the motivation to learn about and use the tools and methods being explored. The book includes chapters on image systems and software, image analysis, edge, line and shape detection, image segmentation, feature extraction and pattern classification. Numerous examples, including over 500 color images are used to illustrate the concepts discussed. Readers can explore their own application development with any programming languages, including C/C++, Matlab, Python, and R, and software is provided for both the Windows/C/C++ and Matlab environment. The book can be used by the academic community in teaching and research, with over 700 PowerPoint Slides and a complete Solutions Manual to the over 150 included problems. The book can also be used for self-study by those involved with developing computer vision applications, whether they are engineers, scientists, or artists. The new edition has been extensively updated and includes numerous problems and programming exercises that will help the reader and student to develop their skills.

DIGITAL IMAGE PROCESSING AND ANALYSIS

APPLICATIONS WITH MATLAB AND CVIPTOOLS

CRC Press 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.

ADVANCES IN DIGITAL IMAGE PROCESSING

THEORY, APPLICATION, IMPLEMENTATION

Springer Digital image processing, originally established to analyze and improve lunar images, is rapidly growing into a wealth of new appli cations, due to the enormous technical progress made in computer engineering. At present, the most important fields of growth appear to emerge in the areas of medical image processing (i. e. tomography, thermography), earth resource inventory (i. e. land usage, minerals), office automation (i. e. document storage, retrieval and reproduction) and industrial production (i. e. computer vision for mechanical ro bots). Currently, emphasis is being shifted from signal-processing re search and design-innovation activities towards cost-efficient system implementations for interactive digital image processing. For the years ahead, trends in computer engineering indicate still further advances in Large Scale Integration (LSI) and Input/Output (I/O) technologies allowing the implementation of powerful parallel and/or distributed processor architectures for real-time processing of high resolution achromatic and color images. In view of the many new developments in the field of digital image processing and recognizing the importance of discussing these developments amongst key scientists that might make use of them, ffiM Germany sponsored an international symposium on 'Advances in Digital Image Processing', held at Bad Neuenahr, Federal Republic of Germany, September 26 - 28, 1978. The interest shown in this symposium encouraged the publi cation of the papers presented in this volume of the ffiM Research Symposium Series.

DIGITAL IMAGE PROCESSING

AN ALGORITHMIC INTRODUCTION USING JAVA

Springer Science & Business Media 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.

DIGITAL COLOR IMAGE PROCESSING

John Wiley & Sons An introduction to color in three-dimensional image processing and the emerging area of multi-spectral image processing The importance of color information in digital image processing is greater than ever. However, the transition from scalar to vector-valued image functions has not yet been generally covered in most textbooks. Now, Digital Color Image Processing fills this pressing need with a detailed introduction to this important topic. In four comprehensive sections, this book covers: The fundamentals and requirements for color image processing from a vector-valued viewpoint Techniques for preprocessing color images Three-dimensional scene analysis using color information, as well as the emerging area of multi-spectral imaging Applications of color image processing, presented via the examination of two case studies In addition to introducing readers to important new technologies in the field, Digital Color Image Processing also contains novel topics such as: techniques for improving three-dimensional reconstruction, three-dimensional computer vision, and emerging areas of safety and security applications in luggage inspection and video surveillance of high-security facilities. Complete with full-color illustrations and two applications chapters, Digital Color Image Processing is the only book that covers the breadth of the subject under one convenient cover. It is written at a level that is accessible for first- and second-year graduate students in electrical and computer engineering and computer science courses, and that is also appropriate for researchers who wish to extend their knowledge in the area of color image processing.

DIGITAL IMAGE PROCESSING

Springer Science & Business Media 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

COMPUTER IMAGING

DIGITAL IMAGE ANALYSIS AND PROCESSING

CRC Press Computer Imaging: Digital Image Analysis and Processing brings together analysis and processing in a unified framework, providing a valuable foundation for understanding both computer vision and image processing applications. Taking an engineering approach, the text integrates theory with a

conceptual and application-oriented style, allowing you to immediately understand how each topic fits into the overall structure of practical application development. Divided into five major parts, the book begins by introducing the concepts and definitions necessary to understand computer imaging. The second part describes image analysis and provides the tools, concepts, and models required to analyze digital images and develop computer vision applications. Part III discusses application areas for the processing of images, emphasizing human visual perception. Part IV delivers the information required to apply a CVIPtools environment to algorithm development. The text concludes with appendices that provide supplemental imaging information and assist with the programming exercises found in each chapter. The author presents topics as needed for understanding each practical imaging model being studied. This motivates the reader to master the topics and also makes the book useful as a reference. The CVIPtools software integrated throughout the book, now in a new Windows version, provides practical examples and encourages you to conduct additional exploration via tutorials and programming exercises provided with each chapter.

DIGITAL IMAGE PROCESSING

HANDBOOK OF IMAGE AND VIDEO PROCESSING

The Handbook of Image and Video Processing contains a comprehensive and highly accessible presentation of all essential mathematics, techniques, and algorithms for every type of image and video processing used by scientists and engineers. The timely volume will provide both the novice and the seasoned practitioner with the necessary information and skills to be able to develop algorithms and applications for multimedia, digital imaging, digital video, telecommunications, and World Wide Web industries. Handbook of Image and Video Processing will also serve as a textbook for courses such as digital image processing, digital image analysis, digital video, video communications, multimedia, and biomedical image processing in the departments of electrical and computer engineering and computer science. * No other resource contains the same breadth of up-to-date coverage * Contains over 100 example algorithm illustrations * Contains a series of extremely accessible tutorial chapters * Indispensible for researchers in telecommunications, internet applications, multimedia, and nearly every branch of science

FUNDAMENTALS OF DIGITAL IMAGE PROCESSING

A PRACTICAL APPROACH WITH EXAMPLES IN MATLAB

John Wiley & Sons 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 PROCESSING

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

DIVE INTO IMAGE PROCESSING

BOOK 2

Ignite Learning LLC This interactive ebook is for self-paced, hands-on learning. It features instructional video clips, checkpoint questions, and code snippets. This book is the second of our Dive into Image Processing book series.

DIVE INTO IMAGE PROCESSING

BOOK 1

Ignite Learning LLC This interactive ebook is for self-paced, hands-on learning. It

features instructional video clips, checkpoint questions, and code snippets. This book is the first of our Dive into Image Processing book series.

DIGITAL IMAGE PROCESSING AND COMPUTER VISION

John Wiley & Sons Incorporated An introduction to computer vision and associated digital processing functions. Reviews all aspects of image processing, pattern recognition, geometric optics, and artificial intelligence that are important to solving computer vision problems. Also provides an introduction to digital image acquisition and display, hardware, and techniques. Discusses special computer architectures for computer vision, new neural network applications, edge detection strategies, and segmentation.

BINARY DIGITAL IMAGE PROCESSING

A DISCRETE APPROACH

Academic Press 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.

IMAGE PROCESSING AND PATTERN RECOGNITION

FUNDAMENTALS AND TECHNIQUES

John Wiley & Sons 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.

SOLUTIONS MANUAL FOR COMPUTER IMAGING

CRC Press

THE ART OF IMAGE PROCESSING WITH JAVA

CRC Press While most other image processing texts approach this subject from an engineering perspective, The Art of Image Processing with Java places image processing within the realm of both engineering and computer science students by emphasizing software design. Ideal for students studying computer science or software engineering, it clearly teaches

UNDERSTANDING DIGITAL IMAGE PROCESSING

CRC Press This book introduces the fundamental concepts of modern digital image processing. It aims to help the students, scientists, and practitioners to understand the concepts through clear explanations, illustrations and examples. The discussion of the general concepts is supplemented with examples from applications and ready-to-use implementations of concepts in MATLAB®. Program code of some important concepts in programming language 'C' is provided. To explain the concepts, MATLAB® functions are used throughout the book. MATLAB® Version 9.3 (R2017b), Image Acquisition Toolbox Version 5.3 (R2017b), Image Processing Toolbox, Version 10.1 (R2017b) have been used to create the book material. Meant for students and practicing engineers, this book provides a clear, comprehensive and up-to-date introduction to Digital Image Processing in a pragmatic manner.

RESEARCH DEVELOPMENTS IN COMPUTER VISION AND IMAGE PROCESSING: METHODOLOGIES AND APPLICATIONS

METHODOLOGIES AND APPLICATIONS

IGI Global Similar to the way in which computer vision and computer graphics act as the dual fields that connect image processing in modern computer science, the field of image processing can be considered a crucial middle road between the vision and graphics fields. Research Developments in Computer Vision and Image Processing: Methodologies and Applications brings together various research methodologies and trends in emerging areas of application of computer vision and image processing. This book is useful for students, researchers, scientists, and engineers interested in the research developments of this rapidly growing field.

DIGITAL IMAGE PROCESSING AND ANALYSIS

IMAGE ENHANCEMENT, RESTORATION AND COMPRESSION

CRC Press The book, Digital Image Enhancement, Restoration and Compression, focuses on human vision based imaging application development. Examples include making poor images look better, development of advanced compression algorithms,

special effects imaging for motion pictures, and the restoration of satellite images distorted by atmospheric disturbance. This book presents a unique engineering approach to the practice of digital imaging, which starts by presenting a global model to help gain an understanding of the overall process, followed by a breakdown and explanation of each individual topic. Topics are presented as they become necessary for understanding the practical imaging model under study, which provides the reader with the motivation to learn about and use the tools and methods being explored. The book includes chapters on imaging systems and software, the human visual system, image transforms, image filtering, image enhancement, image restoration and image compression. Numerous examples, including over 700 color images are used to illustrate the concepts discussed. Readers can explore their own application development with any programming languages, including C/C++, Matlab, Python, and R, and software is provided for both the Windows/C/C++ and Matlab environment. The book can be used by the academic community in teaching and research, with over 1,000 PowerPoint Slides and a complete Solutions Manual to the over 230 included problems. The book can also be used for self-study by those involved with application development, whether they are engineers, scientists, or artists. The new edition has been extensively updated and includes numerous problems and programming exercises that will help the reader and student to develop their skills.

DIGITAL IMAGE PROCESSING

MATHEMATICAL AND COMPUTATIONAL METHODS

Elsevier 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

DIGITAL IMAGE PROCESSING

OUP India Digital Image Processing is a fundamental textbook designed to cater to the needs of undergraduate engineering students of computer science, electronics and electrical engineering. The book aims to provide an understanding of the principles and various processing techniques of digital images to further the utility of images.

FUNDAMENTALS OF DIGITAL IMAGE PROCESSING

Pearson Education India Fundamentals of Digital Image Processing clearly

discusses the five fundamental aspects of digital image processing namely, image enhancement, transformation, segmentation, compression and restoration. Presented in a simple and lucid manner, the book aims to provide the reader a sound and firm theoretical knowledge on digital image processing. It is supported by large number of colored illustrations.

DIGITAL IMAGE PROCESSING

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

ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING IN 2D/3D MEDICAL IMAGE PROCESSING

CRC Press Digital images have several benefits, such as faster and inexpensive processing cost, easy storage and communication, immediate quality assessment, multiple copying while preserving quality, swift and economical reproduction, and adaptable manipulation. Digital medical images play a vital role in everyday life. Medical imaging is the process of producing visible images of inner structures of the body for scientific and medical study and treatment as well as a view of the function of interior tissues. This process pursues disorder identification and management. Medical imaging in 2D and 3D includes many techniques and operations such as image gaining, storage, presentation, and communication. The 2D and 3D images can be processed in multiple dimensions. Depending on the requirement of a specific problem, one must identify various features of 2D or 3D images while applying suitable algorithms. These image processing techniques began in the 1960s and were used in such fields as space, clinical purposes, the arts, and television image improvement. In the 1970s, with the development of computer systems, the cost of image processing was reduced and processes became faster. In the 2000s, image processing became quicker, inexpensive, and simpler. In the 2020s, image processing has become a more accurate, more efficient, and self-learning technology. This book highlights the framework of the robust and novel methods for medical image processing techniques in 2D and 3D. The chapters explore existing and emerging image challenges and opportunities in the medical field using various

medical image processing techniques. The book discusses real-time applications for artificial intelligence and machine learning in medical image processing. The authors also discuss implementation strategies and future research directions for the design and application requirements of these systems. This book will benefit researchers in the medical image processing field as well as those looking to promote the mutual understanding of researchers within different disciplines that incorporate AI and machine learning. FEATURES Highlights the framework of robust and novel methods for medical image processing techniques Discusses implementation strategies and future research directions for the design and application requirements of medical imaging Examines real-time application needs Explores existing and emerging image challenges and opportunities in the medical field

DEEP LEARNING FOR CHEST RADIOGRAPHS

COMPUTER-AIDED CLASSIFICATION

Elsevier Deep Learning for Chest Radiographs enumerates different strategies implemented by the authors for designing an efficient convolution neural network-based computer-aided classification (CAC) system for binary classification of chest radiographs into "Normal" and "Pneumonia." Pneumonia is an infectious disease mostly caused by a bacteria or a virus. The prime targets of this infectious disease are children below the age of 5 and adults above the age of 65, mostly due to their poor immunity and lower rates of recovery. Globally, pneumonia has prevalent footprints and kills more children as compared to any other immunity-based disease, causing up to 15% of child deaths per year, especially in developing countries. Out of all the available imaging modalities, such as computed tomography, radiography or X-ray, magnetic resonance imaging, ultrasound, and so on, chest radiographs are most widely used for differential diagnosis between Normal and Pneumonia. In the CAC system designs implemented in this book, a total of 200 chest radiograph images consisting of 100 Normal images and 100 Pneumonia images have been used. These chest radiographs are augmented using geometric transformations, such as rotation, translation, and flipping, to increase the size of the dataset for efficient training of the Convolutional Neural Networks (CNNs). A total of 12 experiments were conducted for the binary classification of chest radiographs into Normal and Pneumonia. It also includes in-depth implementation strategies of exhaustive experimentation carried out using transfer learning-based approaches with decision fusion, deep feature extraction, feature selection, feature dimensionality reduction, and machine learning-based classifiers for implementation of end-to-end CNN-based CAC system designs, lightweight CNN-based CAC system designs, and hybrid CAC system designs for chest radiographs. This book is a valuable resource for academicians, researchers, clinicians, postgraduate and graduate students in medical imaging, CAC, computer-aided diagnosis, computer science and engineering, electrical and electronics engineering, biomedical engineering, bioinformatics, bioengineering, and professionals from the IT industry. Provides insights into the theory, algorithms, implementation, and application of deep-learning techniques for medical images such as transfer learning using pretrained CNNs, series networks, directed acyclic graph networks, lightweight CNN

models, deep feature extraction, and conventional machine learning approaches for feature selection, feature dimensionality reduction, and classification using support vector machine, neuro-fuzzy classifiers Covers the various augmentation techniques that can be used with medical images and the CNN-based CAC system designs for binary classification of medical images focusing on chest radiographs Investigates the development of an optimal CAC system design with deep feature extraction and classification of chest radiographs by comparing the performance of 12 different CAC system designs

UNDERSTANDING DIGITAL IMAGE PROCESSING

CRC Press This book introduces the fundamental concepts of modern digital image processing. It aims to help the students, scientists, and practitioners to understand the concepts through clear explanations, illustrations and examples. The discussion of the general concepts is supplemented with examples from applications and ready-to-use implementations of concepts in MATLAB®. Program code of some important concepts in programming language 'C' is provided. To explain the concepts, MATLAB® functions are used throughout the book. MATLAB® Version 9.3 (R2017b), Image Acquisition Toolbox Version 5.3 (R2017b), Image Processing Toolbox, Version 10.1 (R2017b) have been used to create the book material. Meant for students and practicing engineers, this book provides a clear, comprehensive and up-to-date introduction to Digital Image Processing in a pragmatic manner.

COMPUTER VISION AND IMAGE PROCESSING IN INTELLIGENT SYSTEMS AND MULTIMEDIA TECHNOLOGIES

IGI Global The fields of computer vision and image processing are constantly evolving as new research and applications in these areas emerge. Staying abreast of the most up-to-date developments in this field is necessary in order to promote further research and apply these developments in real-world settings. Computer Vision and Image Processing in Intelligent Systems and Multimedia Technologies features timely and informative research on the design and development of computer vision and image processing applications in intelligent agents as well as in multimedia technologies. Covering a diverse set of research in these areas, this publication is ideally designed for use by academicians, technology professionals, students, and researchers interested in uncovering the latest innovations in the field.

DIGITAL IMAGE PROCESSING FOR OPHTHALMOLOGY

DETECTION AND MODELING OF RETINAL VASCULAR ARCHITECTURE

Morgan & Claypool Publishers The monitoring of the effects of retinopathy on the visual system can be assisted by analyzing the vascular architecture of the retina. This book presents methods based on Gabor filters to detect blood vessels in fundus images of the retina. Forty images of the retina from the Digital Retinal Images for Vessel Extraction (DRIVE) database were used to evaluate the performance of the methods. The results demonstrate high efficiency in the detection of blood vessels with an area under the receiver operating characteristic curve of 0.96. Monitoring

the openness of the major temporal arcade (MTA) could facilitate improved diagnosis and optimized treatment of retinopathy. This book presents methods for the detection and modeling of the MTA, including the generalized Hough transform to detect parabolic forms. Results obtained with 40 images of the DRIVE database, compared with hand-drawn traces of the MTA, indicate a mean distance to the closest point of about 0.24mm. This book illustrates applications of the methods mentioned above for the analysis of the effects of proliferative diabetic retinopathy and retinopathy of prematurity on retinal vascular architecture.

DIGITAL HOLOGRAPHY AND DIGITAL IMAGE PROCESSING

PRINCIPLES, METHODS, ALGORITHMS

Springer Science & Business Media 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.

COMPUTER VISION AND IMAGE PROCESSING

6TH INTERNATIONAL CONFERENCE, CVIP 2021, RUPNAGAR, INDIA, DECEMBER 3-5, 2021, REVISED SELECTED PAPERS, PART II

Springer Nature This two-volume set (CCIS 1567-1568) constitutes the refereed proceedings of the 6h 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.

INFORMATION THEORY TOOLS FOR IMAGE PROCESSING

Morgan & Claypool Publishers Information Theory (IT) tools, widely used in many

scientific fields such as engineering, physics, genetics, neuroscience, and many others, are also useful transversal tools in image processing. In this book, we present the basic concepts of IT and how they have been used in the image processing areas of registration, segmentation, video processing, and computational aesthetics. Some of the approaches presented, such as the application of mutual information to registration, are the state of the art in the field. All techniques presented in this book have been previously published in peer-reviewed conference proceedings or international journals. We have stressed here their common aspects, and presented them in an unified way, so to make clear to the reader which problems IT tools can help to solve, which specific tools to use, and how to apply them. The IT basics are presented so as to be self-contained in the book. The intended audiences are students and practitioners of image processing and related areas such as computer graphics and visualization. In addition, students and practitioners of IT will be interested in knowing about these applications.

SOFT COMPUTING BASED MEDICAL IMAGE ANALYSIS

Academic Press Soft Computing Based Medical Image Analysis presents the foremost techniques of soft computing in medical image analysis and processing. It includes image enhancement, segmentation, classification-based soft computing, and their application in diagnostic imaging, as well as an extensive background for the development of intelligent systems based on soft computing used in medical image analysis and processing. The book introduces the theory and concepts of digital image analysis and processing based on soft computing with real-world medical imaging applications. Comparative studies for soft computing based medical imaging techniques and traditional approaches in medicine are addressed, providing flexible and sophisticated application-oriented solutions. Covers numerous soft computing approaches, including fuzzy logic, neural networks, evolutionary computing, rough sets and Swarm intelligence Presents transverse research in soft computing formation from various engineering and industrial sectors in the medical domain Highlights challenges and the future scope for soft computing based medical analysis and processing techniques

IMAGE PROCESSING FOR COMPUTER GRAPHICS

Springer Science & Business Media Image processing is a central theme in computer graphics. This book provides a modern introduction to both the underlying mathematics and the main concepts and techniques of the subject. It covers important modern techniques such as morphing and warping images as well as dithering, compositing, and other operations on images.

DIGITAL IMAGE PROCESSING AND ANALYSIS

APPLICATIONS WITH MATLAB AND CVIPTOOLS

CRC Press 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.

ADVANCES IN DIGITAL IMAGE PROCESSING AND INFORMATION TECHNOLOGY

FIRST INTERNATIONAL CONFERENCE ON DIGITAL IMAGE PROCESSING AND PATTERN RECOGNITION, DPPR 2011, TIRUNELVELI, TAMIL NADU, INDIA, SEPTEMBER 23-25, 2011, PROCEEDINGS

Springer This book constitutes the refereed proceedings of the First International Conference on Digital Image Processing and Pattern Recognition, DPPR 2011, held in Tirunelveli, India, in September 2011. The 48 revised full papers were carefully reviewed and selected from about 400 submissions. The conference brought together leading researchers, engineers and scientists in the domain of Digital Image Processing and Pattern Recognition. The papers cover all theoretical and practical aspects of the field and present new advances and current research results in two tracks, namely: digital image processing and pattern recognition, and computer science, engineering and information technology.

EMERGING TECHNOLOGIES IN INTELLIGENT APPLICATIONS FOR IMAGE AND VIDEO PROCESSING

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