

Fundamentals Of Digital Image Processing Anil K Jain

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Turek's Orthopaedics Principles and Their Applications Anil K. Jain 2016-01-01 Now in its revised, updated Seventh edition, this text provides residents and medical students with a broad overview of adult and pediatric orthopaedics. Major sections focus on general and regional disorders of the musculoskeletal system.

A Computational Approach to Digital Chinese Painting and Calligraphy Songhua Xu 2009-05-12 "A Computational Approach to Digital Chinese Painting and Calligraphy" is a technical book on computer science and its applications in the arts. It focuses on Oriental digital arts, in particular Chinese arts and painting, offering a multi-disciplinary treatment from the angles of computer graphics, interactive techniques, human-computer interaction, and artificial intelligence. The book also discusses the unique difficulties and challenges of using the computer to produce Oriental arts, including research results by the authors and their lessons and engineering experiences behind these efforts. Songhua Xu is a computer scientist of Zhejiang University and Yale University, as well as an honorary researcher of the University of Hong Kong. Francis C.M. Lau is Professor at the University of Hong Kong where he leads the Systems Research Group in the Department of Computer Science. Yunhe Pan is Professor of Computer Science at Zhejiang University as well as Deputy President of Chinese Academy of Engineering.

Digital Image Processing and Analysis J.C. Simon 2014-08-23 A NATO advanced Study Institute took place at Bonas from June 14th to June 25th 1976 on "Digital Image Processing and Analysis". This book is the lasting result of a successful meeting, where the best specialists of the field could exchange their ideas and results. The papers are arranged so as to present first the more general and tutorial articles and then the more specific ones on applications. The general topics cover two dimensional transforms, techniques of image restoration, recursive filters, segmentation and analysis of image parts, some points of view from psychology and physiology, and problems of software and processing. The application fields concerned are remote sensing, medical applications, TV image compression, and optical character recognition. The editors wish to thank the Scientific Affairs Division of NATO for the edition of this book. Acknowledgment: This ASI has been made possible by the financial support of the NATO Scientific Affairs Division and D. R. M. E. and the material support of IRIA and the Institut de Programmation. VII TABLE OF CONTENTS William K. Pratt Two dimensional unitary transforms 1 T. S. Huang Two-dimensional Fourier transform 23 T. S. Huang Algebraic methods of image restoration 41 S. Castan Image enhancement and restoration 47 T. S. Huang Film grain noise 63 K. G. Beauchamp Two-dimensional recursive digital filtering 69 S. Attasi A new approach to 2D-recursive filtering 81 V. Cappellini Some efficient two-dimensional recursive digital filters 87 T. S. Durrani and C. E.

Digital Image Processing and Pattern Recognition Pakhira Malay K. 2011

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.

VII Latin American Congress on Biomedical Engineering CLAIB 2016, Bucaramanga, Santander, Colombia, October 26th -28th, 2016 Isnardo Torres 2017-04-05 This volume presents the proceedings of the CLAIB 2016, held in Bucaramanga, Santander, Colombia, 26, 27 & 28 October 2016. The proceedings, presented by the Regional Council of Biomedical Engineering for Latin America (CORAL), offer research findings, experiences and activities between institutions and universities to develop Bioengineering, Biomedical Engineering and related sciences. The conferences of the American Congress of Biomedical Engineering are sponsored by the International Federation for Medical and Biological Engineering (IFMBE), Society for Engineering in Biology and Medicine (EMBS) and the Pan American Health Organization (PAHO), among other organizations and international agencies to bring together scientists, academics and biomedical engineers in Latin America and other continents in an environment conducive to exchange and professional growth. *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

Fundamentals of Digital Image Processing Anil K. Jain 2005

Handbook Of Pattern Recognition And Computer Vision (2nd Edition) Chi Hau Chen 1999-03-12 The very significant advances in computer vision and pattern recognition and their applications in the last few years reflect the strong and growing interest in the field as well as the many opportunities and challenges it offers. The second edition of this handbook represents both the latest progress and updated knowledge in this dynamic field. The applications and technological issues are particularly emphasized in this edition to reflect the wide applicability of the field in many practical problems. To keep the book in a single volume, it is not possible to retain all chapters of the first edition. However, the chapters of both editions are well written for permanent reference. This indispensable handbook will continue to serve as an authoritative and comprehensive guide in the field.

Handbook of Biometrics Anil K. Jain 2007-10-23 Biometrics is a rapidly evolving field with applications ranging from accessing one’s computer to gaining entry into a country. The deployment of large-scale biometric systems in both commercial and government applications has increased public awareness of this technology. Recent years have seen significant growth in biometric research resulting in the development of innovative sensors, new algorithms, enhanced test methodologies and novel applications. This book addresses this void by inviting some of the prominent researchers in Biometrics to contribute chapters describing the fundamentals as well as the latest innovations in their respective areas of expertise.

Digital Image Processing Castleman 2007-09

Fundamentals Of Digital Image Processing,1/e Anil K. Jain 2001

Whole Slide Imaging Anil V. Parwani 2021-10-29 This book provides up-to-date and practical knowledge in all aspects of whole slide imaging (WSI) by experts in the field. This includes a historical perspective on the evolution of this technology, technical aspects of making a great whole slide image, the various applications of whole slide imaging and future applications using WSI for computer-aided diagnosis The goal is to provide practical knowledge and address knowledge gaps in this emerging field. This book is unique because it addresses an emerging area in pathology for which currently there is only limited information about the practical aspects of deploying this technology. For example, there are no established selection criteria for choosing new scanners and a knowledge base with the key information. The authors of the various chapters have years of real-world experience in selecting and implementing WSI solutions in various aspects of pathology practice. This text also discusses practical tips and pearls to address the selection of a WSI vendor, technology details, implementing this technology and provide an overview of its everyday uses in all areas of pathology. Chapters include important information on how to integrate digital slides with laboratory information system and how to streamline the “digital workflow” with the intent of saving time, saving money, reducing errors, improving efficiency and accuracy, and ultimately benefiting patient outcomes. Whole Slide Imaging: Current Applications and Future Directions is designed to present a comprehensive and state-of-the-art approach to WSI within the broad area of digital pathology. It aims to give the readers a look at WSI with a deeper lens and also envision the future of pathology imaging as it pertains to WSI and associated digital innovations.

Fundamentals of Digital Image Processing Anil K. Jain 1989

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.

Image Data Compression Belur V. Dasarathy 1995 A comprehensive tutorial on block truncation coding (BTC), a specialized area within the data compression domain, providing a detailed study and relative assessment of its techniques. The focus is on the quality aspects of BTC performance relative to its computational requirements, and flexibility i

Fundamentals of Digital Image Processing,1/e(Paperback) Jain, Anil K. 2009-07-06

The Essential Guide to Image Processing Alan C. Bovik 2009-07-08 A complete introduction to the basic and intermediate concepts of image processing from the leading people in the field Up-to-date content, including statistical modeling of natural, anisotropic diffusion, image quality and the latest developments in JPEG 2000 This comprehensive and state-of-the art approach to image processing gives engineers and students a thorough introduction, and includes full coverage of key applications: image watermarking, fingerprint recognition, face recognition and iris recognition and medical imaging. "This book combines basic image processing techniques with some of the most advanced procedures. Introductory chapters dedicated to general principles are presented alongside detailed application-orientated ones. As a result it is suitably adapted for different classes of readers, ranging from Master to PhD students and beyond." – Prof. Jean-Philippe Thiran, EPFL, Lausanne, Switzerland "Al Bovik’s compendium proceeds systematically from fundamentals to today’s research frontiers. Professor Bovik, himself a highly respected leader in the field, has invited an all-star team of contributors. Students, researchers, and practitioners of image processing alike should benefit from the Essential Guide." – Prof. Bernd Girod, Stanford University, USA "This book is informative, easy to read with plenty of examples, and allows great flexibility in tailoring a course on image processing or analysis." – Prof. Pamela Cosman, University of California, San Diego, USA A complete and modern introduction to the basic and intermediate concepts of image processing – edited and written by the leading people in the field An essential reference for all types of engineers working on image processing applications Up-to-date content, including statistical modelling of natural, anisotropic diffusion, image quality and the latest developments in JPEG 2000

Innovations and Advanced Techniques in Computer and Information Sciences and Engineering Tarek Sobh 2007-09-04 This book includes a set of rigorously reviewed world-class manuscripts addressing and detailing state-of-the-art research projects in the areas of Computer Science, Computer Engineering and Information Sciences. The book presents selected papers from the conference proceedings of the International Conference on Systems, Computing Sciences and Software Engineering (SCSS 2006). All aspects of the conference were managed on-line.

Shape Analysis and Classification Luciano da Fontoura Costa 2010-12-12 Advances in shape analysis impact a wide range of disciplines, from mathematics and engineering to medicine, archeology, and art. Anyone just entering the field, however, may find the few existing books on shape analysis too specific or advanced, and for students interested in the specific problem of shape recognition and characterization, traditio *Fundamentals of Digital Image Processing* Anil K. Jain 1989 Two-Dimensional Systems and Mathematical Preliminaries - Image Perception - Image Sampling and Quantization - Image Transforms - Image Representation by Stochastic Models - Image Enhancement - Image Filtering and Restoration - Image Analysis and Computer Vision - Image Reconstruction From Projections - Image Data Compression.

Color for the Sciences Jan J. Koenderink 2010-08-20 A comprehensive introduction to colorimetry from a conceptual perspective. Color for the Sciences is the first book on colorimetry to offer an account that emphasizes conceptual and formal issues rather than applications. Jan Koenderink’s introductory text

treats colorimetry—literally, “color measurement”—as a science, freeing the topic from the usual fixation on conventional praxis and how to get the “right” result. Readers of Color for the Sciences will learn to rethink concepts from the roots in order to reach a broader, conceptual understanding. After a brief account of the history of the discipline (beginning with Isaac Newton) and a chapter titled “Colorimetry for Dummies,” the heart of the book covers the main topics in colorimetry, including the space of beams, achromatic beams, edge colors, optimum colors, color atlases, and spectra. Other chapters cover more specialized topics, including implementations, metrics pioneered by Schrödinger and Helmholtz, and extended color space. Color for the Sciences can be used as a reference for professionals or in a formal introductory course on colorimetry. It will be especially useful both for those working with color in a scientific or engineering context who find the standard texts lacking and for professionals and students in image engineering, computer graphics, and computer science. Each chapter ends with exercises, many of which are open-ended, suggesting ways to explore the topic further, and can be developed into research projects. The text and notes contain numerous suggestions for demonstration experiments and individual explorations. The book is self-contained, with formal methods explained in appendixes when necessary.

Satellite Technology Anil K. Maini 2014-03-31 Fully updated edition of the comprehensive, single-source reference on satellite technology and its applications Covering both the technology and its applications, Satellite Technology is a concise reference on satellites for commercial, scientific and military purposes. The book explains satellite technology fully, beginning by offering an introduction to the fundamentals, before covering orbits and trajectories, launch and in-orbit operations, hardware, communication techniques, multiple access techniques, and link design fundamentals. This new edition also includes comprehensive chapters on Satellite Networks and Satellite Technology – Emerging Trends. Providing a complete survey of applications, from remote sensing and military uses, to navigational and scientific applications, the authors also present an inclusive compendium on satellites and satellite launch vehicles. Filled with diagrams and illustrations, this book serves as an ideal introduction for those new to the topic, as well as a reference point for professionals. Fully updated edition of the comprehensive, single-source reference on satellite technology and its applications - remote sensing, weather, navigation, scientific, and military - including new chapters on Satellite Networks and Satellite Technology – Emerging Trends Covers the full range of satellite applications in remote sensing, meteorology, the military, navigation and science, and communications, including satellite-to-under sea communication, satellite cell-phones, and global Xpress system of INMARSAT The cross-disciplinary coverage makes the book an essential reference book for professionals, R&D scientists and students at post graduate level Companion website provides a complete compendium on satellites and satellite launch vehicles An ideal introduction for Professionals and R&D scientists in the field. Engineering Students. Cross disciplinary information for engineers and technical managers.

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

Single-Sensor Imaging Rastislav Lukac 2018-10-03 A Decade of Extraordinary Growth The past decade has brought a surge of growth in the technologies for digital color imaging, multidimensional signal processing, and visual scene analysis. These advances have been crucial to developing new camera-driven applications and commercial products in digital photography. Single-Sensor Imaging: Methods and Applications for Digital Cameras embraces this extraordinary progress, comprehensively covering state-of-the-art systems, processing techniques, and emerging applications. Experts Address Challenges and Trends Single-Sensor Imaging: Methods and Applications for Digital Cameras presents leading experts elucidating their own accomplishments in developing the technologies reshaping this field. The editor invited renowned authorities to address specific research challenges and recent trends in their particular areas of expertise. The book discusses single-sensor digital color imaging fundamentals, including reusable embedded software platform, digital camera image processing chain, optical filter and color filter array designs. It also details the latest techniques and approaches in contemporary and traditional digital camera color image processing and analysis for various sophisticated applications, including: Demosaicking and color restoration White balancing and color transfer Color and exposure correction Image denoising and color enhancement Image compression and storage formats Red-eye detection and removal Image resizing Video-demosaicking and superresolution imaging Image and video stabilization A Solid Foundation of Knowledge to Solve Problems Single-Sensor Imaging: Methods and Applications for Digital Cameras builds a strong fundamental understanding of theory and methods for solving many of today’s most interesting and challenging problems in digital color image and video acquisition, analysis, processing, and storage. A broad survey of the existing solutions and relevant literature makes this book a valuable resource both for researchers and those applying rapidly evolving digital camera technologies.

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

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.

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.

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.

Computer Vision and Image Processing Manas Kamal Bhuyan 2019-11-05 The book familiarizes readers with fundamental concepts and issues related to computer vision and major approaches that address them. The focus of the book is on image acquisition and image formation models, radiometric models of image formation, image formation in the camera, image processing concepts, concept of feature extraction and feature selection for pattern classification/recognition, and advanced concepts like object classification, object tracking, image-based rendering, and image registration. Intended to be a companion to a typical teaching course on computer vision, the book takes a problem-solving approach.

Digital Electronics Anil K. Maini 2007-09-27 The fundamentals and implementation of digital electronics are essential to understanding the design and working of consumer/industrial electronics, communications, embedded systems, computers, security and military equipment. Devices used in applications such as these are constantly decreasing in size and employing more complex technology. It is therefore essential for engineers and students to understand

the fundamentals, implementation and application principles of digital electronics, devices and integrated circuits. This is so that they can use the most appropriate and effective technique to suit their technical need. This book provides practical and comprehensive coverage of digital electronics, bringing together information on fundamental theory, operational aspects and potential applications. With worked problems, examples, and review questions for each chapter, Digital Electronics includes: information on number systems, binary codes, digital arithmetic, logic gates and families, and Boolean algebra; an in-depth look at multiplexers, de-multiplexers, devices for arithmetic operations, flip-flops and related devices, counters and registers, and data conversion circuits; up-to-date coverage of recent application fields, such as programmable logic devices, microprocessors, microcontrollers, digital troubleshooting and digital instrumentation. A comprehensive, must-read book on digital electronics for senior undergraduate and graduate students of electrical, electronics and computer engineering, and a valuable reference book for professionals and researchers.

Introduction to Biometrics Anil K. Jain 2011-11-18 Biometric recognition, or simply biometrics, is the science of establishing the identity of a person based on physical or behavioral attributes. It is a rapidly evolving field with applications ranging from securely accessing one’s computer to gaining entry into a country. While the deployment of large-scale biometric systems in both commercial and government applications has increased the public awareness of this technology, "Introduction to Biometrics" is the first textbook to introduce the fundamentals of Biometrics to undergraduate/graduate students. The three commonly used modalities in the biometrics field, namely, fingerprint, face, and iris are covered in detail in this book. Few other modalities like hand geometry, ear, and gait are also discussed briefly along with advanced topics such as multibiometric systems and security of biometric systems. Exercises for each chapter will be available on the book website to help students gain a better understanding of the topics and obtain practical experience in designing computer programs for biometric applications. These can be found at: <http://www.csee.wvu.edu/~ross/BiometricsTextBook/>. Designed for undergraduate and graduate students in computer science and electrical engineering, "Introduction to Biometrics" is also suitable for researchers and biometric and computer security professionals.

Fundamentals of Digital Image Processing S. Annadurai 2007

Image Feature Detectors and Descriptors Ali Ismail Awad 2016-02-22 This book provides readers with a selection of high-quality chapters that cover both theoretical concepts and practical applications of image feature detectors and descriptors. It serves as reference for researchers and practitioners by featuring survey chapters and research contributions on image feature detectors and descriptors. Additionally, it emphasizes several keywords in both theoretical and practical aspects of image feature extraction. The keywords include acceleration of feature detection and extraction, hardware implantations, image segmentation, evolutionary algorithm, ordinal measures, as well as visual speech recognition.

Digital Video and HD Charles Poynton 2003-01-03 Rapidly evolving computer and communications technologies have achieved data transmission rates and data storage capacities high enough for digital video. But video involves much more than just pushing bits! Achieving the best possible image quality, accurate color, and smooth motion requires understanding many aspects of image acquisition, coding, processing, and display that are outside the usual realm of computer graphics. At the same time, video system designers are facing new demands to interface with film and computer system that require techniques outside conventional video engineering. Charles Poynton's 1996 book A Technical Introduction to Digital Video became an industry favorite for its succinct, accurate, and accessible treatment of standard definition television (SDTV). In Digital Video and HDTV, Poynton augments that book with coverage of high definition television (HDTV) and compression systems. For more information on HDTV Retail markets, go to:

<http://www.insightmedia.info/newsletters.php#hdtv> With the help of hundreds of high quality technical illustrations, this book presents the following topics: * Basic concepts of digitization, sampling, quantization, gamma, and filtering * Principles of color science as applied to image capture and display * Scanning and coding of SDTV and HDTV * Video color coding: luma, chroma (4:2:2 component video, 4fSC composite video) * Analog NTSC and PAL * Studio systems and interfaces * Compression technology, including M-JPEG and MPEG-2 * Broadcast standards and consumer video equipment **Handbook of Multibiometrics** Arun A. Ross 2006-08-11 Details multimodal biometrics and its exceptional utility for increasingly reliable human recognition systems. Reveals the substantial advantages of multimodal systems over conventional identification methods.

Multidimensional Signal, Image, and Video Processing and Coding John W. Woods 2011-05-31 This book gives a concise introduction to both image and video processing, providing a balanced coverage between theory, applications and standards. It gives an introduction to both 2-D and 3-D signal processing theory, supported by an introduction to random processes and some essential results from information theory, providing the necessary foundation for a full understanding of the image and video processing concepts that follow. A significant new feature is the explanation of practical network coding methods for image and video transmission. There is also coverage of new approaches such as: super-resolution methods, non-local processing, and directional transforms. This book also has on-line support that contains many short MATLAB programs that complement examples and exercises on multidimensional signal, image, and video processing. There are numerous short video clips showing applications in video processing and coding, plus a copy of the vdiview video player for playing .yuv video files on a Windows PC and an illustration of the effect of packet loss on H.264/AVC coded bitstreams. New to this edition: New appendices on random processes, information theory New coverage of image analysis – edge detection, linking, clustering, and segmentation Expanded coverage on image sensing and perception, including color spaces. Now summarizes the new MPEG coding standards: scalable video coding (SVC) and multiview video coding (MVC), in addition to coverage of H.264/AVC. Updated video processing material including new example on scalable video coding and more material on object- and region-based video coding. More on video coding for networks including practical network coding (PNC), highlighting the significant advantages of PNC for both video downloading and streaming. New coverage of super-resolution methods for image and video. Only R&D level tutorial that gives an integrated treatment of image and video processing - topics that are interconnected. New chapters on introductory random processes, information theory, and image enhancement and analysis Coverage and discussion of the latest standards in video coding: H.264/AVC and the new scalable video standard (SVC)

Automatic Vehicle Guidance Massimmo Bertozzi 1999-04-19 This book surveys the history of automatic vehicle guidance based on the processing of visual information, starting from the very first projects worldwide up to the latest developments. It also presents the ARGO prototype vehicle, developed at the University of Parma (Italy), and describes its equipment, setup, and performance. ARGO has been equipped with cameras and processing systems to drive autonomously in real traffic conditions. The complete system has been tested on public roads, during a tour in which ARGO drove itself along the Italian highway network for more than 2000 km. A detailed analysis of this trip is also included.

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

Fundamentals of Polymer Engineering, Third Edition Anil Kumar 2018-12-07 Exploring the chemistry of synthesis, mechanisms of polymerization, reaction engineering of step-growth and chain-growth polymerization, polymer characterization, thermodynamics and structural, mechanical, thermal and transport behavior of polymers as melts, solutions and solids, Fundamentals of Polymer Engineering, Third Edition covers essential concepts and breakthroughs in reactor design and polymer production and processing. It contains modern theories and real-world examples for a clear understanding of polymer function and development. This fully updated edition addresses new materials, applications, processing techniques, and interpretations of data in the field of polymer science. It discusses the conversion of biomass and coal to plastics and fuels, the use of porous polymers and membranes for water purification, and the use

of polymeric membranes in fuel cells. Recent developments are brought to light in detail, and there are new sections on the improvement of barrier properties of polymers, constitutive equations for polymer melts, additive manufacturing and polymer recycling. This textbook is aimed at senior

undergraduate students and first year graduate students in polymer engineering and science courses, as well as professional engineers, scientists, and chemists. Examples and problems are included at the end of each chapter for concept reinforcement.