

Digital Pictures Representation Compression And Standards Applications Of Communications Theory

Ultrasonic imaging is a powerful diagnostic tool available to medical practitioners, engineers and researchers today. Due to the relative safety, and the non-invasive nature, ultrasonic imaging has become one of the most rapidly advancing technologies. These rapid advances are directly related to the parallel advancements in electronics, computing, and transducer technology together with sophisticated signal processing techniques. This book focuses on state of the art developments in ultrasonic imaging applications and underlying technologies presented by leading practitioners and researchers from many parts of the world.

"The only continuing source that helps users analyze, plan, design, evaluate, and manage integrated telecommunications networks, systems, and services, The Froehlich/Kent Encyclopedia of Telecommunications presents both basic and technologically advanced knowledge in the field. An ideal reference source for both newcomers as well as seasoned specialists, the Encyclopedia covers seven key areas--Terminals and Interfaces; Transmission; Switching, Routing, and Flow Control; Networks and Network Control; Communications Software and Protocols; Network and system Management; and Components and Processes."

In order to utilize digital images effectively, specific techniques are needed to reduce

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the number of bits required for their representation. This Tutorial Text provides the groundwork for understanding these image compression techniques and presents a number of different schemes that have proven useful. The algorithms discussed in this book are concerned mainly with the compression of still-frame, continuous-tone, monochrome and color images, but some of the techniques, such as arithmetic coding, have found widespread use in the compression of bilevel images. Both lossless (bit-preserving) and lossy techniques are considered. A detailed description of the compression algorithm proposed as the world standard (the JPEG baseline algorithm) is provided. The book contains approximately 30 pages of reconstructed and error images illustrating the effect of each compression technique on a consistent image set, thus allowing for a direct comparison of bit rates and reconstructed image quality. For each algorithm, issues such as quality vs. bit rate, implementation complexity, and susceptibility to channel errors are considered.

Discover success in global business today with the most strategic approach to international business topics and unique coverage not found in other books. Written by renowned international instructor and author Mike Peng, GLOBAL BUSINESS is the first truly global business book to answer the big question, "What determines the success and failure of firms around the globe?" This edition blends both an institutional-based view and resource-based view throughout every chapter for an unparalleled continuity in the learning process. The book combines an inviting, conversational style

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with the latest research and examples throughout every chapter. A comprehensive set of cases from Mike Peng and other respected international experts examine how companies throughout the world have expanded globally. All-new video cases, world maps, and unique global debate sections help readers view business challenges from a truly global perspective. Available with InfoTrac Student Collections
<http://gocengage.com/infotrac>.

TRACK 1: Innovative Applications in the Public Sector The integration of multimedia based applications and the information superhighway fundamentally concerns the creation of a communication technology to support the activities of people. Communication is a profoundly social activity involving interactions among groups or individuals, common standards of exchange, and national infrastructures to support telecommunications activities. The contributions of the invited speakers and others in this track begin to explore the social dimension of communication within the context of integrated, information systems for the public sector. Interactions among businesses and households are described by Ralf Strauss through the development within a real community of a "wired city" with information and electronic services provided by the latest telecommunications technologies. A more specific type of interaction between teacher and student forms the basis of education. John Tiffin demonstrates how virtual classrooms can be used to augment the educational process. Carl Loeffler presents yet another perspective on interaction through the integration of A-life and agent

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technologies to investigate the dynamics of complex behaviors within networked simulation environments. Common standards for communication in the form of electronic documents or CSCW (Computer Supported Cooperative Work), according to Roland Traunmiller, provide enabling technologies for a paradigm shift in the management of organizations. As pointed out by William Olle, the impact of standardization work on the future of information technology depends critically upon the interoperability of software systems.

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

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understand the strengths and weaknesses of current techniques and the directions that consumer and technical applications may take over the coming decade.

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

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exercises provided with each chapter.

Multimedia Communications is at the core of the advanced interactive services that make up today's Information Society. Videoconferencing, teleworking, teleshopping and video-on-demand will benefit from developments in broadband and mobile telecommunication systems, intelligent multimedia terminals and digital signal processing. The latest research findings from these fields are presented here in the proceedings of the 10th Tyrrhenian Workshop on Digital Communications, held in Ischia, Italy, September 19 98. Focus is placed on the following four areas: Signal Processing for Multimedia Communications. Modeling, Analysis and Simulation of Multimedia Traffic Sources. Access Techniques. Multimode Multimedia Terminals. In particular, multimedia services and applications are presented. This comprehensive collection of papers will enable the reader to keep pace with the rapid changes that are taking place in this field. Experts have co-operated with top research centers worldwide, on an academic and industrial level, to make this an up-to-date reference volume for all those who are concerned with technological advances in Multimedia Distributed Systems.

For more than six years, The Communications Handbook stood as the definitive, one-stop reference for the entire field. With new chapters and extensive revisions that reflect recent technological advances, the second edition is now poised to take its place on the desks of engineers, researchers, and students around the world. From fundamental theory to state-of-

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the-art applications, The Communications Handbook covers more areas of specialty with greater depth than any other handbook available. Telephony Communication networks Optical communications Satellite communications Wireless communications Source compression Data recording Expertly written, skillfully presented, and masterfully compiled, The Communications Handbook provides a perfect balance of essential information, background material, technical details, and international telecommunications standards. Whether you design, implement, buy, or sell communications systems, components, or services, you'll find this to be the one resource you can turn to for fast, reliable, answers.

This book covers the MPEG H.264 and MS VC-1 video coding standards as well as issues in broadband video delivery over IP networks. This professional reference is designed for industry practitioners, including video engineers, and professionals in consumer electronics, telecommunications and media compression industries. The book is also suitable as a secondary text for advanced-level students in computer science and electrical engineering. Video compression coding is the enabling technology behind a new wave of communication applications. From streaming internet video to broadcast digital television and digital cinema, the video codec is a key building block for a host of new multimedia applications and services. Video Codec Design sets out to de-mystify the subject of video coding and present a practical, design-based approach to this emerging field. Featuring:

- * Guidance on the practical design and implementation of video coding technology.
- * Explanation of the major video coding standards, including MPEG-2, MPEG-4, H.263 and H.26L.
- * Detailed coverage of key video coding techniques and core algorithms.
- * Examination of critical design issues including transmission, Quality of Service and processing platforms.
- * A wealth of illustrations and

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practical examples, including quantitative comparisons of design alternatives. Video Codec Design provides communications engineers, system designers, researchers and technical managers with an essential handbook to image and video compression technology. The clear presentation and emphasis on real-life examples make this book an excellent teaching tool for computer science and electronic engineering instructors.

Readings in Multimedia Computing and Networking captures the broad areas of research and developments in this burgeoning field, distills the key findings, and makes them accessible to professionals, researchers, and students alike. For the first time, the most influential and innovative papers on these topics are presented in a cohesive form, giving shape to the diverse area of multimedia computing. The seminal moments are recorded by a dozen visionaries in the field and each contributing editor provides a context for their area of research by way of a thoughtful, focused chapter introduction. The volume editors, Kevin Jeffay and HongJiang Zhang, offer further incisive interpretations of past and present developments in this area, including those within media and content processing, operating systems, and networking support for multimedia. This book will provide you with a sound understanding of the theoretical and practical issues at work in the field's continuing evolution. * Offers an in-depth look at the technical challenges in multimedia and provides real and potential solutions that promise to expand the role of multimedia in business, entertainment, and education. * Examines in Part One issues at the heart of multimedia processes: the means by which multimedia data are coded, compressed, indexed, retrieved, and otherwise manipulated. * Examines in Part Two the accommodation of these processes by storage systems, operating systems, network protocols, and applications. * Written by leading researchers, the

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introductions give shape to a field that is continually defining itself and place the key research findings in context to those who need to understand the state-of-the-art developments.

Intelligent Image and Video Compression: Communicating Pictures, Second Edition explains the requirements, analysis, design and application of a modern video coding system. It draws on the authors' extensive academic and professional experience in this field to deliver a text that is algorithmically rigorous yet accessible, relevant to modern standards and practical. It builds on a thorough grounding in mathematical foundations and visual perception to demonstrate how modern image and video compression methods can be designed to meet the rate-quality performance levels demanded by today's applications and users, in the context of prevailing network constraints.

Key Features

- An approach that combines algorithmic rigor with practical implementation using numerous worked examples
- Explains how video compression methods exploit statistical redundancies, natural correlations, and knowledge of human perception to improve performance
- Uses contemporary video coding standards (AVC, HEVC and VVC) as a vehicle for explaining block-based compression
- Provides broad coverage of important topics such as visual quality assessment and video streaming

New to this edition:

- Coverage of new, more immersive applications, explaining compression requirements and solutions for HDR and UHDTV, VR, AR, and MR
- Description of how we can measure viewer engagement with these applications
- An introduction to machine learning algorithms and coverage of how these can be used to optimize future compression tools
- Inclusion of the latest advances in perceptual metrics, such as VMAF
- Description of new and extended databases for video quality evaluation and for training machine learning systems
- Coverage of recent innovations and standards to support adaptive video streaming
- A review of the perceptual

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influences of dynamic range including descriptions of perceptual quantization and new formats. A comprehensive coverage of recent compression standards including AV1 and VVC. The hand is quicker than the eye. In many cases, so is digital video. Maintaining image quality in bandwidth- and memory-restricted environments is quickly becoming a reality as thriving research delves ever deeper into perceptual coding techniques, which discard superfluous data that humans cannot process or detect. Surveying the topic from a Human Visual System (HVS)-based approach, *Digital Video Image Quality and Perceptual Coding* outlines the principles, metrics, and standards associated with perceptual coding, as well as the latest techniques and applications. This book is divided broadly into three parts. First, it introduces the fundamental theory, concepts, principles, and techniques underlying the field, such as the basics of compression, HVS modeling, and coding artifacts associated with current well-known techniques. The next section focuses on picture quality assessment criteria; subjective and objective methods and metrics, including vision model based digital video impairment metrics; testing procedures; and international standards regarding image quality. Finally, practical applications come into focus, including digital image and video coder designs based on the HVS as well as post-filtering, restoration, error correction, and concealment techniques. The permeation of digital images and video throughout the world cannot be understated. Nor can the importance of preserving quality while using minimal storage space, and *Digital Video Image Quality and Perceptual Coding* provides the tools necessary to accomplish this goal. Instructors and lecturers wishing to make use of this work as a textbook can download a presentation of 786 slides in PDF format organized to augment the text. accompany our book (H.R. Wu and K.R. Rao, *Digital Video Image Quality and Perceptual Coding*, CRC Press

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(ISBN: 0-8247-2777-0), Nov. 2005) for lecturers or instructor to use for their classes if they use the book.

Focusing exclusively on Image-Based Rendering (IBR) this book examines the theory, practice, and applications associated with image-based rendering and modeling. Topics covered vary from IBR basic concepts and representations on the theory side to signal processing and data compression on the practical side. One of the only titles devoted exclusively to IBR this book is intended for researchers, professionals, and general readers interested in the topics of computer graphics, computer vision, image process, and video processing. With this book advanced-level students in EECS studying related disciplines will be able to seriously expand their knowledge about image-based rendering.

Digital Video offers comprehensive coverage of the MPEG-2 audio/visual digital compression standard. The treatment includes the specifics needed to implement an MPEG-2 Decoder, including the syntax and semantics of the coded bitstreams. Since the MPEG-2 Encoders are not specified by the standard, and are actually closely held secrets of many vendors, the book only outlines the fundamentals of encoder design and algorithm optimization.

This book intends to provide highlights of the current research in signal processing area and to offer a snapshot of the recent advances in this field. This work is mainly destined to researchers in the signal processing related areas but it is also accessible to anyone with a scientific background desiring to have an up-to-date overview of this domain. The twenty-five chapters present methodological advances and recent applications of signal processing algorithms in various domains as telecommunications, array processing, biology, cryptography, image and speech processing. The methodologies illustrated in this book, such as sparse

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signal recovery, are hot topics in the signal processing community at this moment. The editor would like to thank all the authors for their excellent contributions in different areas of signal processing and hopes that this book will be of valuable help to the readers.

This volume is the most comprehensive reference work on visual communications to date. An international group of well-known experts in the field provide up-to-date and in-depth contributions on topics such as fundamental theory, international standards for industrial applications, high definition television, optical communications networks, and VLSI design. The book includes information for learning about both the fundamentals of image/video compression as well as more advanced topics in visual communications research. In addition, the Handbook of Visual Communications explores the latest developments in the field, such as model-based image coding, and provides readers with insight into possible future developments. Displays comprehensive coverage from fundamental theory to international standards and VLSI design Includes 518 pages of contributions from well-known experts Presents state-of-the-art knowledge--the most up-to-date and accurate information on various topics in the field Provides an extensive overview of international standards for industrial applications

The enormous growth in the field of biotechnology necessitates the utilization of information technology for the management, flow and organization of data. The field continues to evolve with the development of new applications to fit the needs of the biomedicine. From molecular imaging to healthcare knowledge management, the storage, access and analysis of data contributes significantly to biomedical research and practice. All biomedical professionals can benefit from a greater understanding of how data can be efficiently managed and utilized

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through data compression, modelling, processing, registration, visualization, communication, and large-scale biological computing. In addition Biomedical Information Technology contains practical integrated clinical applications for disease detection, diagnosis, surgery, therapy, and biomedical knowledge discovery, including the latest advances in the field, such as ubiquitous M-Health systems and molecular imaging applications. The world's most recognized authorities give their "best practices" ready for implementation Provides professionals with the most up to date and mission critical tools to evaluate the latest advances in the field and current integrated clinical applications Gives new staff the technological fundamentals and updates experienced professionals with the latest practical integrated clinical applications

A comprehensive and practical analysis and overview of the imaging chain through acquisition, processing and displayThe Handbook of Digital Imaging provides a coherent overview of the imaging science amalgam, focusing on the capture, storage and display of images. The volumes are arranged thematically to provide a seamless analysis of the imaging chain from source (image acquisition) to destination (image print/display). The coverage is planned to have a very practical orientation to provide a comprehensive source of information for practicing engineers designing and developing modern digital imaging systems. The content will be drawn from all aspects of digital imaging including optics, sensors, quality, control, colour encoding and decoding, compression, projection and display. • Contains approximately 50, highly illustrated articles (ranging from 20-40 pages), printed in full colour throughoutComprehensive 3-volume set, also available on Wiley Online Library. • Over 50 Contributors, with contributors from Europe, US and Asia. Contributors are both and from academia and industryThe 3 volumes will be organized thematically for enhanced

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usability: Volume 1: Image Capture and Storage • Image Capture and Storage Volume 2: Image Display and Reproduction • Image Display and Projection • Hardcopy Technology • Halftoning and Physical Evaluation • Models for Halftone Reproduction Volume 3: Imaging System Applications • Media Imaging • Remote Imaging • Medical and Forensic Imaging Ideal for engineers and designers in the dynamic global imaging and display industries

Multimedia stands as one of the most challenging and exciting aspects of the information era. Although there are books available that deal with various facets of multimedia, the field has urgently needed a comprehensive look at recent developments in the systems, processing, and applications of image and video data in a multimedia environment.

This book presents a comprehensive coverage of video transition analysis and detection, which is a critical technology in video indexing embodied in the recent MPEG-7 standard, defining the description interface for multimedia content. It is a timely publication, in that the MPEG-7 standard is driving the explosion of multimedia applications on the Internet. The book outlines a revolutionary system for automatic analysis and detection of transitions, which is not found in any other book.

Digital Pictures Representation and Compression Springer Science & Business Media

"3-D modeling and inversion is a reality, and not an illusion." This is the clear conclusion of the Second International Symposium on Three-Dimensional Electromagnetics held at the University of Utah in 1999. Containing papers submitted by 36 authors, this volume, by the sheer number of works, their diversity, and the truly international character of the efforts attests to the vigor with which the problems of the field are pursued today. The papers in this book are grouped in three parts: 3-D EM modeling; 3-D EM inversion; and 3-D EM in practice. They

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cover a wide range of topics in forward modeling and inversion based on new fast approximate approaches and new efficient solutions by integral equation, finite difference and finite elements techniques. If the 1980s were the decade of rapid development in 3D seismics, the 1990s became the decade of growing interest of practical geophysicists in 3D EM modeling and inversion methods. The contributions contained in this volume represent a snapshot of today's state-of-the-art in three-dimensional electromagnetics.

Consumers want it, businesses are demanding it. The migration of Internet services to a mobile environment is inevitable. But while the ability to be on the go and connected to the Internet sets the stage for increased efficiency and productivity, many technical challenges associated with user mobility and wireless connectivity remain. Mobil

Reporting the state of the art of colour image processing, this monograph fills a gap in the literature on digital signal and image processing. It contains numerous examples and pictures of colour image processing results, plus a library of algorithms implemented in C.

Binary Digital Image Processing is aimed at faculty, postgraduate students and industry specialists. It is both a text reference and a textbook that reviews and analyses the research output in this field of binary image processing. It is aimed at both advanced researchers as well as educating the novice to this area. The

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theoretical part of this book includes the basic principles required for binary digital image analysis. The practical part which will take an algorithmic approach addresses problems which find applications beyond binary digital line image processing. The book first outlines the theoretical framework underpinning the study of digital image processing with particular reference to those needed for line image processing. The theoretical tools in the first part of the book set the stage for the second and third parts, where low-level binary image processing is addressed and then intermediate level processing of binary line images is studied. The book concludes with some practical applications of this work by reviewing some industrial and software applications (engineering drawing storage and primitive extraction, fingerprint compression). Outlines the theoretical framework underpinning the study of digital image processing with particular reference to binary line image processing Addresses low-level binary image processing, reviewing a number of essential characteristics of binary digital images and providing solution procedures and algorithms Includes detailed reviews of topics in binary digital image processing with up-to-date research references in relation to each of the problems under study Includes some practical applications of this work by reviewing some common applications Covers a range of topics, organised by theoretical field rather than being driven

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by problem definitions

Digital technology now enables unparalleled functionality and flexibility in the capture, processing, exchange, and output of color images. But harnessing its potential requires knowledge of color science, systems, processing algorithms, and device characteristics-topics drawn from a broad range of disciplines. One can acquire the requisite background with an armload of physics, chemistry, engineering, computer science, and mathematics books and journals- or one can find it here, in the Digital Color Imaging Handbook. Unprecedented in scope, this handbook presents, in a single concise and authoritative publication, the elements of these diverse areas relevant to digital color imaging. The first three chapters cover the basics of color vision, perception, and physics that underpin digital color imaging. The remainder of the text presents the technology of color imaging with chapters on color management, device color characterization, digital halftoning, image compression, color quantization, gamut mapping, computationally efficient transform algorithms, and color image processing for digital cameras. Each chapter is written by world-class experts and largely self-contained, but cross references between chapters reflect the topics' important interrelations. Supplemental materials are available for download from the CRC Web site, including electronic versions of some of the images presented in the

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book.

This three-volume set LNCS 10666, 10667, and 10668 constitutes the refereed conference proceedings of the 9th International Conference on Image and Graphics, ICIG 2017, held in Shanghai, China, in September 2017. The 172 full papers were selected from 370 submissions and focus on advances of theory, techniques and algorithms as well as innovative technologies of image, video and graphics processing and fostering innovation, entrepreneurship, and networking. Communicating Pictures starts with a unique historical perspective of the role of images in communications and then builds on this to explain the applications and requirements of a modern video coding system. It draws on the author's extensive academic and professional experience of signal processing and video coding to deliver a text that is algorithmically rigorous, yet accessible, relevant to modern standards, and practical. It offers a thorough grounding in visual perception, and demonstrates how modern image and video compression methods can be designed in order to meet the rate-quality performance levels demanded by today's applications, networks and users. With this book you will learn: Practical issues when implementing a codec, such as picture boundary extension and complexity reduction, with particular emphasis on efficient algorithms for transforms, motion estimators and error resilience Conflicts

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between conventional video compression, based on variable length coding and spatiotemporal prediction, and the requirements for error resilient transmission How to assess the quality of coded images and video content, both through subjective trials and by using perceptually optimised objective metrics Features, operation and performance of the state-of-the-art High Efficiency Video Coding (HEVC) standard Covers the basics of video communications and includes a strong grounding in how we perceive images and video, and how we can exploit redundancy to reduce bitrate and improve rate distortion performance Gives deep insight into the pitfalls associated with the transmission of real-time video over networks (wireless and fixed) Uses the state-of- the-art video coding standard (H.264/AVC) as a basis for algorithm development in the context of block based compression Insight into future video coding standards such as the new ISO/ITU High Efficiency Video Coding (HEVC) initiative, which extends and generalizes the H.264/AVC approach

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

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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.

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This unique reference presents in-depth coverage of the latest methods and applications of digital image processing describing various computer architectures ideal for satisfying specific image processing demands.

The two volumes of this book collect high-quality peer-reviewed research papers presented in the International Conference on ICT for Sustainable Development (ICT4SD 2015) held at Ahmedabad, India during 3 – 4 July 2015. The book discusses all areas of Information and Communication Technologies and its applications in field for engineering and management. The main focus of the volumes are on applications of ICT for Infrastructure, e-Governance, and contemporary technologies advancements on Data Mining, Security, Computer Graphics, etc. The objective of this International Conference is to provide an opportunity for the researchers, academicians, industry persons and students to interact and exchange ideas, experience and expertise in the current trend and strategies for Information and Communication Technologies.

The discrete wavelet transform (DWT) algorithms have a firm position in processing of signals in several areas of research and industry. As DWT provides both octave-scale frequency and spatial timing of the analyzed signal, it is constantly used to solve and treat more and more advanced problems. The present book: Discrete Wavelet Transforms: Algorithms and Applications reviews the recent progress in discrete wavelet transform algorithms and applications. The book covers a wide range of methods (e.g. lifting, shift invariance, multi-scale analysis) for constructing DWTs. The

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book chapters are organized into four major parts. Part I describes the progress in hardware implementations of the DWT algorithms. Applications include multitone modulation for ADSL and equalization techniques, a scalable architecture for FPGA-implementation, lifting based algorithm for VLSI implementation, comparison between DWT and FFT based OFDM and modified SPIHT codec. Part II addresses image processing algorithms such as multiresolution approach for edge detection, low bit rate image compression, low complexity implementation of CQF wavelets and compression of multi-component images. Part III focuses watermarking DWT algorithms. Finally, Part IV describes shift invariant DWTs, DC lossless property, DWT based analysis and estimation of colored noise and an application of the wavelet Galerkin method. The chapters of the present book consist of both tutorial and highly advanced material. Therefore, the book is intended to be a reference text for graduate students and researchers to obtain state-of-the-art knowledge on specific applications.

This second edition provides easy access to important concepts, issues and technology trends in the field of multimedia technologies, systems, techniques, and applications. Over 1,100 heavily-illustrated pages — including 80 new entries — present concise overviews of all aspects of software, systems, web tools and hardware that enable video, audio and developing media to be shared and delivered electronically.

For thousands of years mankind has been creating pictures which attempt to portray real or imagined scenes as perceived by human vision. Cave drawings, paintings and

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photographs are able to stimulate the visual system and conjure up thoughts of faraway places, imagined situations or pleasant sensations. The art of motion picture creation has advanced to the point where viewers often undergo intense emotional experiences. On-the spot news coverage gives the impression of actually witnessing events as they unfold. Relatively recently, other forms of visual information have been invented which do not, in themselves, stimulate the eye. For example, voltage variations in an electrical signal, as in television, can represent in analogous fashion the brightness variations in a picture. In this form the visual information can be stored on magnetic tape or transmitted over long distances, and, at least for engineering purposes, it is often much more use ful than other forms which do stimulate human vision. With the evolution of digital techniques for information processing, storage, and transmission, the need arises for digital representation of visual information, that is, the representation of images by a sequence of integer numbers (usually binary). In this form, computer processing and digital circuit techniques can be utilized which were undreamed of only a short time ago. Machine manipulation and interpretation of visual information becomes possible. Sophisticated techniques can be employed for efficient storage of images. And processing methods can be used to significantly reduce the costs of picture transmission.

New design architectures in computer systems have surpassed industry expectations. Limits, which were once thought of as fundamental, have now been broken. Digital

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Systems and Applications details these innovations in systems design as well as cutting-edge applications that are emerging to take advantage of the fields increasingly sophisticated capabilities. This book features new chapters on parallelizing iterative heuristics, stream and wireless processors, and lightweight embedded systems. This fundamental text— Provides a clear focus on computer systems, architecture, and applications Takes a top-level view of system organization before moving on to architectural and organizational concepts such as superscalar and vector processor, VLIW architecture, as well as new trends in multithreading and multiprocessing. includes an entire section dedicated to embedded systems and their applications Discusses topics such as digital signal processing applications, circuit implementation aspects, parallel I/O algorithms, and operating systems Concludes with a look at new and future directions in computing Features articles that describe diverse aspects of computer usage and potentials for use Details implementation and performance-enhancing techniques such as branch prediction, register renaming, and virtual memory Includes a section on new directions in computing and their penetration into many new fields and aspects of our daily lives

This book and its sister volumes constitute the proceedings of the 2nd International Symposium on Neural Networks (ISNN 2005). ISNN 2005 was held in the beautiful mountain city Chongqing by the upper Yangtze River in southwestern China during May 30–June 1, 2005, as a sequel of ISNN 2004 successfully held in Dalian, China. ISNN

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emerged as a leading conference on neural computation in the region with - creasing global recognition and impact. ISNN 2005 received 1425 submissions from authors on 7 continents (Asia, Europe, North America, South America, and Oceania), 33 countries and regions (Mainland China, Hong Kong, Macao, Taiwan, South Korea, Japan, Singapore, Thailand, India, Nepal, Iran, Qatar, United Arab Emirates, Turkey, Lithuania, Hungary, Poland, Austria, Switzerland, Germany, France, Sweden, Norway, Spain, Portugal, UK, USA, Canada, Venezuela, Brazil, Chile, Australia, and New Zealand). Based on rigorous reviews, 483 high-quality papers were selected by the Program Committee for presentation at ISNN 2005 and publication in the proceedings, with an acceptance rate of less than 34%. In addition to the numerous contributed papers, 10 distinguished scholars were invited to give plenary speeches and tutorials at ISNN 2005.

In recent years there have been major advances in the fields of cardiovascular nuclear medicine and cardiac magnetic resonance imaging. In nuclear cardiology more adequate tomographic systems have been designed for routine cardiac use, as well as new or improved quantitative analytic software packages both for planar and tomographic studies implemented on modern state-of-the-art workstations. In addition, artificial intelligence techniques are being applied to these images in attempts to interpret the nuclear studies in a more objective and reproducible manner. Various new radiotracers have been developed, such as antimyosin, labeled isonitriles, metabolic

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compounds, etc. Furthermore, alternative stress testing with dipyridamole and dobutamine has received much attention in clinical cardiac practice. Magnetic resonance imaging is a relative newcomer in cardiology and has already shown its merits, not only for anatomical information but increasingly for the functional aspects of cardiac performance. This book covers almost every aspect of quantitative cardiovascular nuclear medicine and magnetic resonance imaging. It will assist the nuclear medicine physician, the radiologist, the physicist/image processing specialist and the clinical cardiologist in understanding the nuclear medicine techniques used in cardiovascular medicine, and in increasing our knowledge of cardiac magnetic resonance imaging.

This book presents a selection of papers representing current research on using field programmable gate arrays (FPGAs) for realising image processing algorithms. These papers are reprints of papers selected for a Special Issue of the Journal of Imaging on image processing using FPGAs. A diverse range of topics is covered, including parallel soft processors, memory management, image filters, segmentation, clustering, image analysis, and image compression. Applications include traffic sign recognition for autonomous driving, cell detection for histopathology, and video compression. Collectively, they represent the current state-of-the-art on image processing using FPGAs.

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