H 264 4 8 16 Channel Dvr User Manual Supercircuits

This book presents essential principles, technical information, and expert insights on multimedia security technology. Illustrating the need for improved content security as the Internet and digital multimedia applications rapidly evolve, it presents a wealth of everyday protection application examples in fields including . Giving readers an in-depth introduction to different aspects of information security mechanisms and methods, it also serves as an instructional tool on the fundamental theoretical framework required for the development of advanced techniques.

The requirements for multimedia (especially video and audio) communications increase rapidly in the last two decades in broad areas such as television, entertainment, interactive services, telecommunications, conference, medicine, security, business, traffic, defense and banking. Video and audio coding standards play most important roles in multimedia communications. In order to meet these requirements, series of video and audio coding standards have been developed such as MPEG-2, MPEG-4, MPEG-21 for audio and video by ISO/IEC, H.26x for video and G.72x for audio by ITU-T, Video Coder 1 (VC-1) for video by the Society of Motion Picture and Television Engineers (SMPTE) and RealVideo (RV) 9 for video by Real Networks. AVS China is the abbreviation for Audio Video Coding Standard of China. This new standard includes four main technical areas, which are systems, video, audio and digital copyright management (DRM), and some supporting documents such as consistency verification. The second part of the standard known as AVS1-P2 (Video - Jizhun) was approved as the national standard of China in 2006, and several final drafts of the standard have been completed, including AVS1-P1 (System - Broadcast), AVS1-P2 (Video - Zengqiang), AVS1-P3 (Audio - Double track), AVS1-P3 (Audio - 5.1), AVS1-P7 (Mobile Video), AVS-S-P2 (Video) and AVS-S-P3 (Audio). AVS China provides a technical solution for many applications such as digital broadcasting (SDTV and HDTV), high-density storage media, Internet streaming media, and will be used in the domestic IPTV, satellite and possibly the cable TV market. Comparing with other coding standards such as H.264 AVC, the advantages of AVS video standard include similar performance, lower complexity, lower implementation cost and licensing fees. This standard has attracted great deal of attention from industries related to television, multimedia communications and even chip manufacturing from around the world. Also many well known companies have joined the AVS Group to be Full Members or Observing Members. The 163 members of AVS Group include Texas Instruments (TI) Co., Agilent Technologies Co. Ltd., Envivio Inc., NDS, Philips Research East Asia, Aisino Corporation, LG, Alcatel Shanghai Bell Co. Ltd., Nokia (China) Investment (NCIC) Co. Ltd., Sony (China) Ltd., and Toshiba (China) Co. Ltd. as well as some high level universities in China. Thus there is a pressing need from the instructors, students, and engineers for a book dealing with the topic of AVS China and its performance comparisons with similar standards such as H.264, VC-1 and RV-9.

Welcome to the proceedings of the 2005 IFIP International Conference on - bedded and Ubiquitous Computing (EUC 2005), which was held in Nagasaki, Japan, December 6–9, 2005. Embedded and ubiquitous computing is emerging rapidly as an exciting new paradigm to provide computing and communication services all the time, - erywhere. Its systems are now pervading every aspect of life to the point that they are hidden inside various appliances or can be worn unobtrusively as part of clothing and jewelry. This emergence is a natural outcome of research and technological advances in embedded systems, pervasive computing and c- munications, wireless networks, mobile computing, distributed computing and agent technologies, etc. Its tremendous impact on academics, industry, gove- ment, and daily life can be compared to that of electric motors over the past century, in fact it but promises to revolutionize life much more profoundly than elevators, electric motors or even personal computers. The EUC 2005 conference provided a forum for engineers and scientists in academia, industry, and government to address profound issues including te- nical challenges, safety, and social, legal, political, and economic issues, and to present and discuss their ideas, results, work in progress, and experience on all aspects of embedded and ubiquitous computing.

All the design and development inspiration and direction an electronics engineer needs in one blockbuster book! John Donovan, Editor-in Chief, Portable Design has selected the very best electronic design material from the Newnes portfolio and has compiled it into this volume. The result is a book covering the gamut of electronic design from design fundamentals to low-power approaches with a strong pragmatic emphasis. In addition to specific design techniques and practices, this book also discusses various approaches to solving electronic design problems and how to successfully apply theory to actual design tasks. The material has been selected for its timelessness as well as for its relevance to contemporary electronic design issues. Contents: Chapter 1 System Resource Partitioning and Code Optimization Chapter 2 Low Power Design Techniques, Design Methodology, and Tools Chapter 3 System-Level Approach to Energy Conservation Chapter 4 Radio Communication Basics Chapter 5 Applications and Technologies Chapter 6 RF Design Tools Chapter 7 On Memory Systems and Their Design Chapter 8 Storage in Mobile Consumer Electronics Devices Chapter 9 Analog Low-Pass Filters Chapter 10 Class A Amplifiers Chapter 11 MPEG-4 and H.264 Chapter 12 Liquid Crystal Displays *Hand-picked content selected by John Donovan, Editor-in Chief, Portable Design *Proven best design practices for low-power, storage, and streamlined development *Case histories and design examples get you off and running on your current project

As multimedia applications have become part of contemporary daily life, numerous paradigm-shifting technologies in multimedia processing have emerged over the last decade. Substantially updated with 21 new chapters, Multimedia Image and Video Processing, Second Edition explores the most recent advances in multimedia research and applications. This edition presents a comprehensive treatment of multimedia information mining, security, systems, coding, search, hardware, and communications as well as multimodal information fusion and interaction. Clearly divided into seven parts, the book begins with a section on standards, fundamental methods, design issues, and typical architectures. It then focuses on the coding of video and multimedia content before covering multimedia search, retrieval, and management. After examining multimedia security, the book describes multimedia communications and networking and explains the architecture design and implementation for multimedia image and video processing. It concludes with a section on multimedia systems and applications. Written by some of the most prominent experts in the field, this updated edition provides readers with the latest research in multimedia processing and equips them with advanced techniques for the design of multimedia systems.

Multimedia hardware still cannot accommodate the demand for large amounts of visual data. Without the generation of high-quality video bitstreams, limited hardware capabilities will continue

to stifle the advancement of multimedia technologies. Thorough grounding in coding is needed so that applications such as MPEG-4 and JPEG 2000 may come to fruition. Image and Video Compression for Multimedia Engineering provides a solid, comprehensive understanding of the fundamentals and algorithms that lead to the creation of new methods for generating high quality video bit streams. The authors present a number of relevant advances along with international standards. New to the Second Edition · A chapter describing the recently developed video coding standard, MPEG-Part 10 Advances Video Coding also known as H.264 · Fundamental concepts and algorithms of JPEG2000 · Color systems of digital video · Up-to-date video coding standards and profiles Visual data, image, and video coding will continue to enable the creation of advanced hardware, suitable to the demands of new applications. Covering both image and video compression, this book yields a unique, self-contained reference for practitioners tobuild a basis for future study, research, and development.

This book constitutes the refereed proceedings of the 13th Conference on Advanced Computer Architecture, ACA 2020, held in Kunming, China, in August 2020. Due to the COVID-19 pandemic the conference was held online. The 24 revised full papers presented were carefully reviewed and selected from 105 submissions. The papers of this volume are organized in topical sections on: interconnection network, router and network interface architecture; accelerator-based, application-specific and reconfigurable architecture; processor, memory, and storage systems architecture; model, simulation and evaluation of architecture; new trends of technologies and applications.

This book constitutes the refereed proceedings of the Fourth International Conference on High Performance Embedded Architectures and Compilers, HiPEAC 2009, held in Paphos, Cyprus, in January 2009. The 27 revised full papers presented together with 2 invited keynote paper were carefully reviewed and selected from 97 submissions. The papers are organized in topical sections on dynamic translation and optimisation, low level scheduling, parallelism and resource control, communication, mapping for CMPs, power, cache issues as well as parallel embedded applications.

This textbook introduces the “Fundamentals of Multimedia”, addressing real issues commonly faced in the workplace. The essential concepts are explained in a practical way to enable students to apply their existing skills to address problems in multimedia. Fully revised and updated, this new edition now includes coverage of such topics as 3D TV, social networks, high-efficiency video compression and conferencing, wireless and mobile networks, and their attendant technologies. Features: presents an overview of the key concepts in multimedia, including color science; reviews lossless and lossy compression methods for image, video and audio data; examines the demands placed by multimedia communications on wired and wireless networks; discusses the impact of social media and cloud computing on information sharing and on multimedia content search and retrieval; includes study exercises at the end of each chapter; provides supplementary resources for both students and instructors at an associated website.

Surveys key advances in commercial satellite communications and what might be the implications and/or opportunities for end-users and service providers in utilizing the latest fast-evolving innovations in this field This book explores the evolving technical options and opportunities of satellite networks. Designed to be a self-contained reference, the book includes background technical material in an introductory chapter that will serve as a primer to satellite communications. The text discusses advances in modulation techniques, such as DBV-S2 extensions (DVS-S2X); spotbeam-based geosynchronous and medium earth orbit High Throughput Satellite (HTS) technologies and Internet applications; enhanced mobility services with aeronautical and maritime applications; Machine to Machine (M2M) satellite applications; emerging ultra HD technologies; and electric propulsion. The author surveys the latest innovations and service strategies and the resulting implications, which involves: Discussing advances in modulation techniques and HTS spotbeam technologies Surveying emerging high speed aeronautical mobility services and maritime and other terrestrial mobility services Assessing M2M (machine-to-machine) applications, emerging Ultra HD video technologies and new space technology Satellite communication is an integral part of the larger fields of commercial, television/media, government, and military communications, because of its multicast/broadcast capabilities, mobility, reliability, and global reach. High Throughput Satellites) are expected to revolutionize the field during this decade, providing very high speed, yet cost-effective, Internet access and connectivity anywhere in the world, in rural areas, in the air, and at sea. M2M connectivity, enabled by satellite communications, connects trucks on transcontinental trips, aircraft in real-time-telemetry aggregation, and mercantile ships. A comprehensive analysis of the new advances in satellite communications, Innovations in Satellite Communications Technology is a reference for telecommunications and satellite providers and end-users, technology investors, logistic professionals, and more.

This book constitutes the refereed proceedings of the 10th Asia-Pacific Computer Systems Architecture Conference, ACSAC 2005, held in Singapore in October 2005. The 65 revised full papers presented were carefully reviewed and selected from 173 submissions. The papers are organized in topical sections on energy efficient and power aware techniques, methodologies and architectures for application-specific systems, processor architectures and microarchitectures, high-reliability and fault-tolerant architectures, compiler and OS for emerging architectures, data value predictions, reconfigurable computing systems and polymorphic architectures, interconnect networks and network interfaces, parallel architectures and computation models, hardware-software partitioning, verification, and testing of complex architectures, architectures for secured computing, simulation and performance evaluation, architectures for emerging technologies and applications, and memory systems hierarchy and management.

Programming multi-core and many-core computing systems Sabri Pllana, Linnaeus University, Sweden Fatos Xhafa, Technical University of Catalonia, Spain Provides state-of-the-art methods for programming multi-core and many-core systems The book comprises a selection of twenty two chapters covering: fundamental techniques and algorithms; programming approaches; methodologies and frameworks; scheduling and management; testing and evaluation methodologies; and case studies for programming multi-core and many-core systems. Program development for multi-core processors, especially for heterogeneous multi-core processors, is significantly more complex than for single-core processors. However, programmers have been traditionally trained for the development of sequential programs, and only a small percentage of them have experience with parallel programming. In the past, only a relatively small group of programmers interested in High Performance Computing (HPC) was concerned with the parallel programming issues, but the situation has changed dramatically with the appearance of multi-core processors on commonly used computing systems. It is expected that with the pervasiveness of multi-core processors, parallel programming will become mainstream. The pervasiveness of multi-core processors affects a large spectrum of systems, from embedded and general-purpose, to high-end computing systems. This book assists programmers in mastering the efficient programming of multi-core systems, which is of paramount importance for the software-intensive industry towards a more effective product-development cycle. Key features: Lessons, challenges, and roadmaps ahead. Contains real world examples and case studies. Helps programmers in mastering the efficient programming of multi-core and many-core systems. The book serves as a reference for a larger audience of practitioners, young researchers and graduate level students. A basic level of programming knowledge is required to use this book.

This book constitutes the refereed proceedings of the 6th International Workshop on Systems, Architectures, Modeling, and Simulation, SAMOS 2006, held in Samos, Greece on July 2006. The 47 revised full papers presented together with 2 keynote talks were thoroughly reviewed and selected from 130 submissions. The papers are organized in topical sections on system design and modeling, wireless sensor

networks, processor design, dependable computing, architectures and implementations, and embedded sensor systems.

Many new DCT-like transforms have been proposed since the first edition of this book. For example, the integer DCT that yields integer transform coefficients, the directional DCT to take advantage of several directions of the image and the steerable DCT. The advent of higher dimensional frames such as UHDTV and 4K-TV demand for small and large transform blocks to encode small or large similar areas respectively in an efficient way. Therefore, a new updated book on DCT, adapted to the modern days, considering the new advances in this area and targeted for students, researchers and the industry is a necessity.

This book provides developers, engineers, researchers and students with detailed knowledge about the High Efficiency Video Coding (HEVC) standard. HEVC is the successor to the widely successful H.264/AVC video compression standard, and it provides around twice as much compression as H.264/AVC for the same level of quality. The applications for HEVC will not only cover the space of the well-known current uses and capabilities of digital video – they will also include the deployment of new services and the delivery of enhanced video quality, such as ultra-high-definition television (UHDTV) and video with higher dynamic range, wider range of representable color, and greater representation precision than what is typically found today. HEVC is the next major generation of video coding design – a flexible, reliable and robust solution that will support the next decade of video applications and ease the burden of video on world-wide network traffic. This book provides a detailed explanation of the various parts of the standard, insight into how it was developed, and in-depth discussion of algorithms and architectures for its implementation.

This book constitutes the refereed post-conference proceedings of the Third International Conference on Future Access Enablers for Ubiquitous and Intelligent Infrastructures, FABULOUS 2017, held in Bucharest, Romania, in October 2017. The 37 revised full papers were carefully reviewed and selected from 61 submissions. The main topics deal with future access networks, Internet of Things and smart city/smart environment applications, communications and computing infrastructures, security aspects in communication and data processing, signal processing and multimedia.

Get a clear picture of IP Multicast applications for delivering commercial high-quality video services This book provides a concise guide to current IP Multicast technology and its applications, with a focus on IP-based Television (IPTV) and Digital Video Broadcast-Handheld (DVB-H) applications—areas of tremendous commercial interest. Traditional phone companies can use IP Multicast technology to deliver video services over their networks; cell phone companies can use it to stream video to handheld phones and PDAs; and many cable TV companies are considering upgrading to IP technology. In addition to applications in industries seeking to provide high-quality digital video and audio, there are numerous other practical uses: multi-site corporate videoconferencing; broad distribution of financial data, stock quotes, and news bulletins; database replication; software distribution; and content caching (for example, Web site caching). After an introduction that gets readers up to speed on the basics, IP Multicast with Applications to IPTV and Mobile DVB-H: Discusses multicast addressing for payload and payload forwarding Covers routing in a variety of protocols, including PIM-SM, CBT, PIM-DM, DVMRP, and MOSPF Discusses multicasting in IPv6 environments and Multicast Listener Discovery (MLD) Features examples of IP Multicast applications in the IPTV and mobile DVB-H environments Includes reference RFCs and protocols placed in the proper context of a commercial-grade infrastructure for the delivery of robust, entertainment-quality linear and nonlinear video programming This is a concise, compact reference for practitioners who seek a quick, practical review of the topic with an emphasis on the major and most often used aspects of the technology. It serves as a hands-on resource for engineers in the communications industry or Internet design, content providers, and researchers. It's also an excellent text for college courses on IP Multicast and/or IPTV.

A comprehensive presentation of the video communication techniques and systems, this book examines 4G wireless systems which are set to revolutionise ubiquitous multimedia communication.4G Wireless Video Communications covers the fundamental theory and looks at systems' descriptions with a focus on digital video. It addresses the key topics associated with multimedia communication on 4G networks, including advanced video coding standards, error resilience and error concealment techniques, as well as advanced content-analysis and adaptation techniques for video communications, cross-layer design and optimization frameworks and methods. It also provides a high-level overview of the digital video compression standard MPEG-4 AVC/H.264 that is expected to play a key role in 4G networks. Material is presented logically allowing readers to turn directly to specific points of interest. The first half of the book covers fundamental theory and systems, while the second half moves onto advanced techniques and applications. This book is a timely reflection of the latest advances in video communications for 4G wireless systems. One of the first books to study the latest video communications developments for emerging 4G wireless systems Considers challenges and techniques in video delivery over 4G wireless systems Examines system architecture, key techniques and related standards of advanced wireless multimedia applications Written from both the perspective of industry and academia

Operators are introducing mobile television and digital video content services globally. The Handbook of Mobile Broadcasting addresses all aspects of these services, providing a comprehensive reference on DVB-H, DMB, ISDB-T, and MediaFLO. Featuring contributions from experts in the field, the text presents technical standards and distribution proto

This volume presents a parametric, packet-based, comprehensive model to measure and predict the audiovisual quality of Internet Protocol Television services as it is likely to be perceived by the user. The comprehensive model is divided into three sub-models referred to as the audio model, the video model, and the audiovisual model. The audio and video models take as input a parametric description of the audiovisual processing path, and deliver distinct estimates for both the audio and video quality. These distinct estimates are eventually used as input data for the audiovisual model. This model provides an overall estimate of the perceived audiovisual quality in total. The parametric description can be used as diagnostic information. The quality estimates and diagnostic information can be practically applied to enhance network deployment and operations. Two applications come to mind in particular: Network planning and network service quality monitoring. The audio model can be used indifferently for both applications. However, two variants of the video model have been developed in order to address particular needs of the applications mentioned above. The comprehensive model covers effects due to resolution, coding, and IP-packet loss in case of RTP-type transport. The model applied to quality monitoring is standardized under the ITU-T Recommendations P.1201 and P.1201.2.

This book discusses in detail the basic algorithms of video compression that are widely used in modern video codec. The authors dissect complicated specifications and present material in a way that gets readers quickly up to speed by describing video compression algorithms succinctly, without going to the mathematical details and technical specifications. For accelerated learning, hybrid codec structure, inter- and intra- prediction techniques in MPEG-4, H.264/AVC, and HEVC are discussed together. In addition, the latest research in the fast encoder design for

the HEVC and H.264/AVC is also included.
Provides a clear, coherent review of all major wireless broadband standards with an emphasis on managing the explosive growth in mobile video 802.11ac/ad, 802.16m, 802.22, and LTE-Advanced are the emerging broadband wireless standards that offer many powerful wireless features. This book gives an accessible overview of the various standards and practical information on 802.11 link adaptation, 4G smartphone antenna design, wireless video streaming, and smart grids. Broadband Wireless Multimedia Networks distills the many complex wireless features in a clean and concise manner so that the reader can understand the key principles. Topics covered include adaptive modulation and coding, orthogonal frequency-division multiple access, single-carrier frequency-division multiple access, multiple antenna systems, medium access control time and frequency-division duplex, transmission, and the frame formats. With wireless operators now carrying a much greater amount of video traffic than data and voice traffic, the book also covers adaptive bit rate streaming and bandwidth management for 3D and HD video delivery to multi-screen personal devices. Featured chapters in the book are: Overview of Broadband Wireless Networks IEEE 802.11 Standard IEEE 802.16 Standard Long-Term Evolution ATSC Digital TV and IEEE 802.22 Standards Mesh, Relay, and Interworking Networks Wireless Video Streaming Green Communications in Wireless Home Area Networks Including over 180 chapter-end exercises and 200 illustrative figures; and accessible recorded tutorials, Broadband Wireless Multimedia Networks is ideal for industry professionals and practitioners, graduate students, and researchers.
This book constitutes the refereed proceedings of the 5th International Conference on High Performance Embedded Architectures and Compilers, HiPEAC 2010, held in Pisa, Italy, in January 2010. The 23 revised full papers presented together with the abstracts of 2 invited keynote addresses were carefully reviewed and selected from 94 submissions. The papers are organized in topical sections on architectural support for concurrency; compilation and runtime systems; reconfigurable and customized architectures; multicore efficiency, reliability, and power; memory organization and optimization; and programming and analysis of accelerators.
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 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
This book addresses the emergence of multi-channel broadcasting. Televisions, PC's, handheld and mobile reception devices now all receive content hat was once solely distributed by broadcast TV. No book currently on the market addresses the production infrastructure necessary to efficiently produce content for multi-channel delivery to a variety of reception platforms/devices. Readers will acquire an overview of not just the technology, but processes that impact the creative process and new cross-platform advertising sale/buy model.
This handbook brings together a variety of approaches to the uses of big data in multiple fields, primarily science, medicine, and business. This single resource features contributions from researchers around the world from a variety of fields, where they share their findings and experience. This book is intended to help spur further innovation in big data. The research is presented in a way that allows readers, regardless of their field of study, to learn from how applications have proven successful and how similar applications could be used in their own field. Contributions stem from researchers in fields such as physics, biology, energy, healthcare, and business. The contributors also discuss important topics such as fraud detection, privacy implications, legal perspectives, and ethical handling of big data.
High definition video requires substantial compression in order to be transmitted or stored economically. Advances in video coding standards from MPEG-1, MPEG-2, MPEG-4 to H.264/AVC have provided ever increasing coding efficiency, at the expense of great computational complexity which can only be delivered through massively parallel processing. This book will present VLSI architectural design and chip implementation for high definition H.264/AVC video encoding, using a state-of-the-art video application, with complete VLSI prototype, via FPGA/ASIC. It will serve as an invaluable reference for anyone interested in VLSI design and high-level (EDA) synthesis for video.
Existing software applications should be redesigned if programmers want to benefit from the performance offered by multi- and many-core architectures. Performance scalability now depends on the possibility of finding and exploiting enough Thread-Level Parallelism (TLP) in applications for using the increasing numbers of cores on a chip. Video decoding is an example of an application domain with increasing computational requirements every new generation. This is due, on the one hand, to the trend towards high quality video systems (high definition and frame rate, 3D displays, etc) that results in a continuous increase in the amount of data that has to be processed in real-time. On the other hand, there is the requirement to maintain high compression efficiency which is only possible with video codes like H.264/AVC that use advanced coding techniques. In this book, the parallelization of H.264/AVC decoding is presented as a case study of parallel programming. H.264/AVC decoding is an example of a complex application with many levels of dependencies, different kernels, and irregular data structures. The book presents a detailed methodology for parallelization of this type of applications. It begins with a description of the algorithm, an analysis of the data dependencies and an evaluation of the different parallelization strategies. Then the design and implementation of a novel parallelization approach is presented that is scalable to many core architectures. Experimental results on

different parallel architectures are discussed in detail. Finally, an outlook is given on parallelization opportunities in the upcoming HEVC standard.

A comprehensive resource on multimedia communications. Covers recent trends and standardization activities in multimedia communications, such as layered structures, underlying theories and the current best design techniques. Describes the convergence of various technologies including communications, broadcasting, information technology, and home electronics, and emerging new communication services and applications resulting from the growth of the Internet and wireless technologies. Please go to www-ee.uta.edu/dip for additional information.

This book constitutes the refereed proceedings of the 22nd International Conference on Distributed and Computer and Communication Networks, DCCN 2019, held in Moscow, Russia, in September 2019. The 50 full papers and 2 short papers were carefully reviewed and selected from 174 submissions. The papers cover the following topics: Computer and Communication Networks and Technologies, Analytical Modeling of Distributed Systems, and Distributed Systems Applications.

Learn how to compress video and audio with optimal quality and minimal hassles. Renowned expert Ben Waggoner teaches you to improve the quality of your final content and develop effective workflows. Understand the basic concepts of vision and hearing, apply that knowledge in the context of compression, then move onto practical, applicable information for creating, editing, and compressing the best video and audio, whether you're delivering for the web, DVD, Blu-ray, phones, or beyond. Clear examples of how to make the best choices in real-world projects Covers Mac and Windows products for a complete look at today's compression technologies: all the different tools, codecs, and formats for different kinds of deliverables are described, focusing on how to pick the right options for particular projects, players, and sources Formats Windows Media QuickTime Flash FLV and F4V MPEG-4 and H.264 MPEG-2 Ogg Vorbis and Theora Silverlight and Smooth Streaming Devices iPod and iPhone Zune HD Playstation Portable Playstation 3 Xbox 360 DVD and Blu-ray

This book presents a collection of algorithms and VLSI architectures of entropy (or statistical) codecs of recent video compression standards, with focus on the H.264/AVC standard. For any visual data compression scheme, there exists a combination of two, or all of the following three stages: spatial, temporal, and statistical compression. General readers are first introduced with the various algorithms of the statistical coders. The VLSI implementations are also reviewed and discussed. Readers with limited hardware design background are also introduced with a design methodology starting from performance-complexity analyses to software/hardware co-simulation. A typical design of the Contextbased Adaptive Binary Arithmetic Coding (CABAC) encoder is also presented in details. To support System-on-Chip design environment, the CABAC design is wrapped with a SoC-based Wishbone system bus interface.

Multimedia data are used more and more widely in human being's life, e.g., videoconferencing, visual telephone, IPTV, etc. Nearly most of the applications need multimedia transmission techniques that send multimedia data from one side to another side and keep the properties of efficiency, robustness and security. Here, the efficiency denotes the time cost of transmission operations, the robustness denotes the ability to survive transmission errors or noises, and the security denotes the protection of the transmitted media content. Recently, various intelligent or innovative techniques are invented, which bring vast performance improvements to practical applications. For example, such content transmission techniques as p2p, sensor network and ad hoc network are constructed, which adaptively use the peers' properties to improve the network's resources. Multimedia adaptation techniques can adjust the multimedia data rate in order to compliant with the network's bandwidth. Scalable encryption techniques can generate the data stream that can be correctly decrypted after bit rate conversion. Ubiquitous multimedia services make the user share any kind of content anywhere. The book includes fourteen chapters highlighting current concepts, issues and emerging technologies. Distinguished scholars from many prominent research institutions around the world contribute to the book. The book covers various aspects, including not only some fundamental knowledge and the latest key techniques, but also typical applications and open issues. For example, the covered topics include the present and future video coding standards, stereo and multiview coding techniques, free-viewpoint TV techniques, wireless broadcasting techniques, media streaming techniques, wireless media transmission techniques and systems, and User-Generated Content sharing.

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.

Reviews the new High Efficiency Video Coding (HEVC) standard and advancements in adaptive streaming technologies for use in broadband networks and the Internet This book describes next-generation video coding and streaming technologies with a comparative assessment of the strengths and weaknesses. Specific emphasis is placed on the H.265/HEVC video coding standard and adaptive bit rate video streaming. In addition to evaluating the impact of different types of video content and powerful feature sets on HEVC coding efficiency, the text provides an in-depth study on the practical performance of popular adaptive streaming platforms and useful tips for streaming optimization. Readers will learn of new over-the-top (OTT) online TV advancements, the direction of the broadband telecommunications industry, and the latest developments that will help keep implementation costs down and maximize return on infrastructure investment. Reviews the emerging High Efficiency Video Coding (HEVC) standard and compares its coding performance with the MPEG-4 Advanced Video Coding (AVC) and MPEG-2 standards Provides invaluable insights into the intra and inter coding efficiencies of HEVC, such as the impact of hierarchical block partitioning and new prediction modes Evaluates the performance of the Apple and Microsoft adaptive streaming platforms and presents innovative techniques related to aggregate stream bandwidth prediction, duplicate chunk Includes end-of-chapter homework problems and access to instructor slides Next-Generation Video Coding and Streaming is written for students, researchers, and industry professionals working in the field of video communications. Benny Bing has worked in academia for over 20 years. He has published over 80 research papers and 12 books, and has 6 video patents licensed to industry. He has served as a technical editor for several IEEE journals and an IEEE Communications Society Distinguished lecturer. He also received the National Association of Broadcasters (NAB) Technology Innovation

Award for demonstrations of advanced media technologies.
This book constitutes the refereed proceedings of the 5th International Conference on Active Media Technology, AMT 2009, held in Beijing, China, in October 2009. The 47 revised full papers and the 6 keynote talks were carefully reviewed and selected. The papers reflect the shared forum for researchers and practitioniers from diverse fields, such as computer science, information technology, artificial intelligence, media engineering, economics, data mining, data and knowledge engineering, intelligent agent technology, human computer interaction, complex systems and systems science. The book offers new insights into the main research challenges and development of AMT by revealing the interplay between the studies of human informatics and research of informatics on the Web/Internet, mobile and wireless centric intelligent information processing systems.
Mobile multimedia broadcasting compasses a broad range of topics including radio propagation, modulation and demodulation, error control, signal compression and coding, transport and time slicing, system on chip real-time implementation in ha- ware, software and system levels. The major goal of this technology is to bring multimedia enriched contents to handheld devices such as mobile phones, portable digital assistants, and media players through radio transmission or internet pro- col (IP) based broadband networks. Research and development of mobile multi- dia broadcasting technologies are now explosively growing and regarded as new killer applications. A number of mobile multimedia broadcasting standards related to transmission, compression and multiplexing now coexist and are being ext- sively further developed. The development and implementation of mobile multi- dia broadcasting systems are very challenging tasks and require the huge efforts of the related industry, research and regulatory authorities so as to bring the success. From an implementation design and engineering practice point of view, this book aims to be the ?rst single volume to provide a comprehensive and highly coherent treatment for multiple standards of mobile multimedia broadcasting by covering basic principles, algorithms, design trade-off, and well-compared implementation system examples. This book is organized into 4 parts with 22 chapters.
Visual information is one of the richest and most bandwidth-consuming modes of communication. To meet the requirements of emerging applications, powerful data compression and transmission techniques are required to achieve highly efficient communication, even in the presence of growing communication channels that offer increased bandwidth. Presenting the results of the author’s years of research on visual data compression and transmission, Advances in Visual Data Compression and Communication: Meeting the Requirements of New Applications provides a theoretical and technical basis for advanced research on visual data compression and communication. The book studies the drifting problem in scalable video coding, analyzes the reasons causing the problem, and proposes various solutions to the problem. It explores the author’s Barbell-based lifting coding scheme that has been adopted as common software by MPEG. It also proposes a unified framework for deriving a directional transform from the nondirectional counterpart. The structure of the framework and the statistic distribution of coefficients are similar to those of the nondirectional transforms, which facilitates subsequent entropy coding. Exploring the visual correlation that exists in media, the text extends the current coding framework from different aspects, including advanced image synthesis—from description and reconstruction to organizing correlated images as a pseudo sequence. It explains how to apply compressive sensing to solve the data compression problem during transmission and covers novel research on compressive sensor data gathering, random projection codes, and compressive modulation. For analog and digital transmission technologies, the book develops the pseudo-analog transmission for media and explores cutting-edge research on distributed pseudo-analog transmission, denoising in pseudo-analog transmission, and supporting MIMO. It concludes by considering emerging developments of information theory for future applications.