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Covering some of the most cutting-edge research on the delivery and retrieval of interactive multimedia content, this volume of specially chosen contributions provides the most updated perspective on one of the hottest contemporary topics. The material represents extended versions of papers presented at the 11th International Workshop on Image Analysis for Multimedia Interactive Services, a vital international forum on this fast-moving field. Logically organized in discrete sections that approach the subject from its various angles, the content deals in turn with content analysis, motion and activity analysis, high-level descriptors and video retrieval, 3-D and multi-view, and multimedia delivery. The chapters cover the finest detail of emerging techniques such as the use of high-level audio information in improving scene segmentation and the use of subjective logic for forensic visual surveillance. On content delivery, the book examines both images and video, focusing on key subjects including an efficient pre-fetching strategy for JPEG 2000 image sequences. Further contributions look at new methodologies for simultaneous block

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reconstruction and provide a trellis-based algorithm for faster motion-vector decision making.

This book constitutes the proceedings of the 20th International GI/ITG Conference on Measurement, Modelling and Evaluation of Computing Systems, MMB 2020, held in Saarbrücken, Germany, in March 2020. The 16 full papers presented in this volume were carefully reviewed and selected from 32 submissions. They are dealing with scientific aspects of measurement, modelling and evaluation of intelligent systems including computer architectures, communication networks, distributed systems and software, autonomous systems, workflow systems, cyber-physical systems and networks, Internet-of-Things, as well as highly dependable, highly performant and highly secure systems.

Algorithmic discrete mathematics plays a key role in the development of information and communication technologies, and methods that arise in computer science, mathematics and operations research – in particular in algorithms, computational complexity, distributed computing and optimization – are vital to modern services such as mobile telephony, online banking and VoIP. This book examines communication networking from a mathematical viewpoint. The contributing authors took part in the European COST action 293 – a four-year program of multidisciplinary research on this subject. In this book they offer introductory overviews and state-of-

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the-art assessments of current and future research in the fields of broadband, optical, wireless and ad hoc networks. Particular topics of interest are design, optimization, robustness and energy consumption. The book will be of interest to graduate students, researchers and practitioners in the areas of networking, theoretical computer science, operations research, distributed computing and mathematics. Provides insight on both classical means and new trends in the application of power electronic and artificial intelligence techniques in power system operation and control This book presents advanced solutions for power system controllability improvement, transmission capability enhancement and operation planning. The book is organized into three parts. The first part describes the CSC-HVDC and VSC-HVDC technologies, the second part presents the FACTS devices, and the third part refers to the artificial intelligence techniques. All technologies and tools approached in this book are essential for power system development to comply with the smart grid requirements. Discusses detailed operating principles and diagrams, theory of modeling, control strategies and physical installations around the world of HVDC and FACTS systems Covers a wide range of Artificial Intelligence techniques that are successfully applied for many power system problems, from planning and monitoring to operation and control Each chapter is

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carefully edited, with drawings and illustrations that helps the reader to easily understand the principles of operation or application. Advanced Solutions in Power Systems: HVDC, FACTS, and Artificial Intelligence is written for graduate students, researchers in transmission and distribution networks, and power system operation. This book also serves as a reference for professional software developers and practicing engineers.

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 hardware, 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 protocol (IP) based broadband networks. Research and development of mobile multimedia 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 extensively further developed. The development and implementation of mobile multimedia broadcasting systems are very challenging tasks and require the huge efforts of the related

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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 first 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.

"This multiple-volume publications exhibits the most up-to-date collection of research results and recent discoveries in the transfer of knowledge access across the globe"--Provided by publisher.

The two-volume set LNCS 6753/6754 constitutes the refereed proceedings of the 8th International Conference on Image and Recognition, ICIAR 2011, held in Burnaby, Canada, in June 2011. The 84 revised full papers presented were carefully reviewed and selected from 147 submissions. The papers are organized in topical sections on image and video processing; feature extraction and pattern recognition; computer vision; color, texture, motion and shape; tracking; biomedical image analysis; biometrics; face recognition; image coding, compression and encryption; and applications.

This book provides a comprehensive examination of the use of MPEG-2, MPEG-4, MPEG-7, MPEG-21, and MPEG-A standards, providing a detailed

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reference to their application. In this book, the authors address five leading MPEG standards: MPEG-2, MPEG-4, MPEG-7, MPEG-21, and MPEG-A, focusing not only on the standards themselves, but specifically upon their application (e.g. for broadcasting media, personalised advertising and news, multimedia collaboration, digital rights management, resource adaptation, digital home systems, and so on); including MPEG cross-breed applications. In the evolving digital multimedia landscape, this book provides comprehensive coverage of the key MPEG standards used for generation and storage, distribution and dissemination, and delivery of multimedia data to various platforms within a wide variety of application domains. It considers how these MPEG standards may be used, the context of their use, and how supporting and complementary technologies and the standards interact and add value to each other. Key Features: Integrates the application of five popular MPEG standards (MPEG-2, MPEG-4, MPEG-7, MPEG-21, and MPEG-A) into one single volume, including MPEG cross-breed applications Up-to-date coverage of the field based on the latest versions of the five MPEG standards Opening chapter provides overviews of each of the five MPEG standards Contributions from leading MPEG experts worldwide Includes an accompanying website with supporting material (www.wiley.com/go/angelides_mpeg) This

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book provides an invaluable reference for researchers, practitioners, CTOs, design engineers, and developers. Postgraduate students taking MSc, MRes, MPhil and PhD courses in computer science and engineering, IT consultants, and system developers in the telecoms, broadcasting and publishing sectors will also find this book of interest. Springer Handbook of Power Systems Springer Nature

An introduction to the theory and techniques for achieving high quality network communication with the best possible bandwidth economy, this book focuses on network information flow with fidelity. Covering both lossless and lossy source reconstruction, it is illustrated throughout with real-world applications, including sensor networks and multimedia communications. Practical algorithms are presented, developing novel techniques for tackling design problems in joint network-source coding via collaborative multiple description coding, progressive coding, diversity routing and network coding. With systematic introductions to the basic theories of distributed source coding, network coding and multiple description coding, this is an ideal self-contained resource for researchers and students in information theory and network theory.

This comprehensive text/reference examines in depth the synergy between multimedia content analysis, personalization, and next-generation

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networking. The book demonstrates how this integration can result in robust, personalized services that provide users with an improved multimedia-centric quality of experience. Each chapter offers a practical step-by-step walkthrough for a variety of concepts, components and technologies relating to the development of applications and services. Topics and features: introduces the fundamentals of social media retrieval, presenting the most important areas of research in this domain; examines the important topic of multimedia tagging in social environments, including geo-tagging; discusses issues of personalization and privacy in social media; reviews advances in encoding, compression and network architectures for the exchange of social media information; describes a range of applications related to social media.

“What a difference a year makes – 52 little weeks”

This variation of the first line from Dinah

Washington’s famous song, which originally reads,

“What a difference a day makes - 24 little hours,”

brings it to the point: According to all experts, the press, and most people’s impression we are today in a serious economic recession. Less than one year ago, we practically lived on the “island of the blessed”

(namely, at Networking 2008 that was held on the island of Singapore), or in the famous country where “milk and honey flow” (or “where wine and liquor

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ow"). This convenient situation has changed abruptly within less than 52 weeks. It looks like the same kind of problems has emerged in all areas – and the “Networking” area has, of course, been affected, too. Looking into the 2009 proceedings, however, you will immediately notice that the manuscripts are largely unaffected by any aspect of the economic crisis (which should be a bit of a consolation). Apparently, research directions are dictated by a process that is all too sluggish in order to be quickly and radically changed by a “tsunami.” Likewise, the conference itself was prepared in spite of such a crisis.

This book highlights the emerging field of intelligent computing and developing smart systems. It includes chapters discussing the outcome of challenging research related to distributed computing, smart machines and their security related research, and also covers next-generation communication techniques and the networking technologies that have the potential to build the future communication infrastructure. Bringing together computing, communications and other aspects of intelligent and smart computing, it contributes to developing a roadmap for future research on intelligent systems. This book constitutes the refereed proceedings of the 10th International Conference on Next Generation Teletraffic and Wired/Wireless Advanced Networking, NEW2AN 2010, held in conjunction with

the Third Conference on Smart Spaces, ruSMART 2009 in St. Petersburg, Russia, in August 2010. The 27 revised NEW2AN full papers are organized in topical sections on performance evaluation; performance modeling; delay-/disruption-tolerant networking and overlay systems; integrated wireless networks; resource management; and multimedia communications. The 14 revised ruSMART full papers are about smart spaces use cases; smart-M3 platform; and smart spaces solutions.

This important text addresses the latest issues in end-to-end resilient routing in communication networks. The work highlights the main causes of failures of network nodes and links, and presents an overview of resilient routing mechanisms, covering issues related to the Future Internet (FI), wireless mesh networks (WMNs), and vehicular ad-hoc networks (VANETs). Features: discusses FI architecture for network virtualization; introduces proposals for dedicated and shared protection in random failure scenarios and against malicious activities; describes measures for WMN survivability that allow for evaluation of performance under multiple failures; proposes a new scheme to enable proactive updates of WMN antenna alignment; includes a detailed analysis of the differentiated reliability requirements for VANET applications, with a focus on issues of multi-hop data delivery; reviews techniques for improving the stability of end-to-end

VANET communication paths based on multipath routing and anycast forwarding.

SAW devices are widely used in multitude of device concepts mainly in MEMS and communication electronics. As such, SAW based micro sensors, actuators and communication electronic devices are well known applications of SAW technology. For example, SAW based passive micro sensors are capable of measuring physical properties such as temperature, pressure, variation in chemical properties, and SAW based communication devices perform a range of signal processing functions, such as delay lines, filters, resonators, pulse compressors, and convolvers. In recent decades, SAW based low-powered actuators and microfluidic devices have significantly added a new dimension to SAW technology. This book consists of 20 exciting chapters composed by researchers and engineers active in the field of SAW technology, biomedical and other related engineering disciplines. The topics range from basic SAW theory, materials and phenomena to advanced applications such as sensors actuators, and communication systems. As such, in addition to theoretical analysis and numerical modelling such as Finite Element Modelling (FEM) and Finite Difference Methods (FDM) of SAW devices, SAW based actuators and micro motors, and SAW based micro sensors are some of the exciting applications presented in this

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book. This collection of up-to-date information and research outcomes on SAW technology will be of great interest, not only to all those working in SAW based technology, but also to many more who stand to benefit from an insight into the rich opportunities that this technology has to offer, especially to develop advanced, low-powered biomedical implants and passive communication devices.

A thorough and rigorous analysis of electromagnetic fields in cavities This book offers a comprehensive analysis of electromagnetic fields in cavities of general shapes and properties. Part One covers classical deterministic methods to conclude resonant frequencies, modal fields, and cavity losses; quality factor; mode bandwidth; and the excitation of cavity fields from arbitrary current distributions for metal-wall cavities of simple shape. Part Two covers modern statistical methods to analyze electrically large cavities of complex shapes and properties. *Electromagnetic Fields in Cavities* combines rigorous solutions to Maxwell's equations with conservation of energy to solve for the statistics of many quantities of interest: penetration into cavities (and shielding effectiveness), field strengths far from and close to cavity walls, and power received by antennas within cavities. It includes all modes and shows you how to utilize fairly simple statistical formulae to apply to your particular problem, whether it's interference calculations, electromagnetic compatibility testing in reverberation chambers, measurement of shielding materials using multiple cavities, or efficiency of test

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book will also better equip postgraduates, senior undergraduate students in electrical engineering. Although the existing layering infrastructure--used globally for designing computers, data networks, and intelligent distributed systems and which connects various local and global communication services--is conceptually correct and pedagogically elegant, it is now well over 30 years old has started create a serious bottleneck. Using Cross-Layer Techniques for Communication Systems: Techniques and Applications explores how cross-layer methods provide ways to escape from the current communications model and overcome the challenges imposed by restrictive boundaries between layers. Written exclusively by well-established researchers, experts, and professional engineers, the book will present basic concepts, address different approaches for solving the cross-layer problem, investigate recent developments in cross-layer problems and solutions, and present the latest applications of the cross-layer in a variety of systems and networks. The two volume set LNCS 10424 and 10425 constitutes the refereed proceedings of the 17th International Conference on Computer Analysis of Images and Patterns, CAIP 2017, held in Ystad, Sweden, in August 2017. The 72 papers presented were carefully reviewed and selected from 144 submissions The papers are organized in the following topical sections: Vision for Robotics; Motion and Tracking; Segmentation; Image/Video Indexing and Retrieval; Shape Representation and Analysis; Biomedical Image Analysis; Biometrics; Machine Learning; Image

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"Professor Andreas F. Molisch, renowned researcher and educator, has put together the comprehensive book, *Wireless Communications*. The second edition, which includes a wealth of new material on important topics, ensures the role of the text as the key resource for every student, researcher, and practitioner in the field."

—Professor Moe Win, MIT, USA *Wireless communications* has grown rapidly over the past decade from a niche market into one of the most important, fast moving industries. Fully updated to incorporate the latest research and developments, *Wireless Communications, Second Edition* provides an authoritative overview of the principles and applications of mobile communication technology. The author provides an in-depth analysis of current treatment of the area, addressing both the traditional elements, such as Rayleigh fading, BER in flat fading channels, and equalisation, and more recently emerging topics such as multi-user detection in CDMA systems, MIMO systems, and cognitive radio. The dominant wireless standards; including cellular, cordless and wireless LANs; are discussed. Topics featured include: wireless propagation channels, transceivers and signal processing, multiple access and advanced transceiver schemes, and standardised wireless systems. Combines mathematical descriptions with intuitive explanations of the physical facts, enabling readers to acquire a deep understanding of the subject. Includes new chapters on cognitive radio, cooperative communications and relaying, video coding, 3GPP Long Term Evolution, and WiMax; plus significant new

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sections on multi-user MIMO, 802.11n, and information theory. Companion website featuring: supplementary material on 'DECT', solutions manual and presentation slides for instructors, appendices, list of abbreviations and other useful resources.

"This book spans a number of interdependent and emerging topics in streaming media, offering a comprehensive collection of topics including media coding, wireless/mobile video, P2P media streaming, and applications of streaming media"--Provided by publisher.

This volume includes extended and revised versions of a set of selected papers from the International Conference on Electric and Electronics (EEIC 2011) , held on June 20-22 , 2011, which is jointly organized by Nanchang University, Springer, and IEEE IAS Nanchang Chapter. The objective of EEIC 2011 Volume 2 is to provide a major interdisciplinary forum for the presentation of new approaches from Electrical engineering and controls, to foster integration of the latest developments in scientific research. 133 related topic papers were selected into this volume. All the papers were reviewed by 2 program committee members and selected by the volume editor Prof. Min Zhu. We hope every participant can have a good opportunity to exchange their research ideas and results and to discuss the state of the art in the areas of the Electrical engineering and controls.

This book examines how two distinct strands of research on autonomous robots, evolutionary robotics and humanoid robot research, are converging. The book will be valuable for

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researchers and postgraduate students working in the areas of evolutionary robotics and bio-inspired computing.

Going beyond classic networking principles and architectures for better wireless performance Written by authors with vast experience in academia and industry, *Wireless Mesh Networks* provides its readers with a thorough overview and in-depth understanding of the state-of-the-art in wireless mesh networking. It offers guidance on how to develop new ideas to advance this technology, and how to support emerging applications and services. The contents of the book follow the TCP/IP protocol stack, starting from the physical layer. Functionalities and existing protocols and algorithms for each protocol layer are covered in depth. The book is written in an accessible textbook style, and contains supporting materials such as problems and exercises to assist learning. Key Features: Presents an in-depth explanation of recent advances and open research issues in wireless mesh networking, and offers concrete and comprehensive material to guide deployment and product development Describes system architectures and applications of wireless mesh networks (WMNs), and discusses the critical factors influencing protocol design Explores theoretical network capacity and the state-of-the-art protocols related to WMNs Surveys standards that have been specified and standard drafts that are

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being specified for WMNs, in particular the latest standardization results in IEEE 802.11s, 802.15.5, 802.16 mesh mode, and 802.16 relay mode Includes an accompanying website with PPT-slides, further reading, tutorial material, exercises, and solutions Advanced students on networking, computer science, and electrical engineering courses will find Wireless Mesh Networks an essential read. It will also be of interest to wireless networking academics, researchers, and engineers at universities and in industry.

"This book is designed to provide readers with relevant theoretical frameworks and latest technical and institutional solutions for transcoding multimedia in mobile and wireless networks"--Provided by publisher.

This fully revised and expanded edition gives readers the necessary understanding of image and video processing concepts to contribute to this hot technology's future advances. Important new topics include introductory random processes, image enhancement and analysis, and the new MPEG scalable video coding standard.

This book describes the design of optical receivers that use the most economical integration technology, while enabling performance that is typically only found in very expensive devices. To achieve this, all necessary functionality, from light detection to digital output, is integrated on a single piece of silicon. All

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building blocks are thoroughly discussed, including photodiodes, transimpedance amplifiers, equalizers and post amplifiers.

A timely addition to the understanding of IMT-Advanced, this book places particular emphasis on the new areas which IMT-Advanced technologies rely on compared with their predecessors. These latest areas include Radio Resource Management, Carrier Aggregation, improved MIMO support and Relaying. Each technique is thoroughly described and illustrated before being surveyed in context of the LTE-Advanced standards. The book also presents state-of-the-art information on the different aspects of the work of standardization bodies (such as 3GPP and IEEE), making global links between them. Explores the latest research innovations to assess the future of the LTE standard Covers the latest research techniques for beyond IMT-Advanced such as Coordinated multi-point systems (CoMP), Network Coding, Device-to-Device and Spectrum Sharing Contains key information for researchers from academia and industry, engineers, regulators and decision makers working on LTE-Advanced and beyond

Radio systems capable of localization have emerging applications in homeland security, law enforcement, emergency response, defense command and control, multi-robot coordination and vehicle-to-vehicle and vehicle-to-

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pedestrian collision avoidance. In fact, high resolution localization is vital for many applications, including: traffic alert, emergency services, e.g., indoor localization for firefighters, and battlefield command and control. These systems promise to dramatically reduce society's vulnerabilities to catastrophic events and improve its quality of life. While work in this important area is progressing, limited resources are available to support graduate students and researchers in this important area. Specifically, a limited number of books has been published in this area covering selected subjects. This comprehensive handbook offers gaps of available localization books presenting in-depth coverage from fundamentals of coordinates to advanced application examples.

This book provides the foundations for understanding hardware security and trust, which have become major concerns for national security over the past decade. Coverage includes issues related to security and trust in a variety of electronic devices and systems related to the security of hardware, firmware and software, spanning system applications, online transactions and networking services. This serves as an invaluable reference to the state-of-the-art research that is of critical significance to the security of and trust in, modern society's microelectronic-supported infrastructures. This handbook offers a comprehensive source for

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electrical power professionals. It covers all elementary topics related to the design, development, operation and management of power systems, and provides an insight from worldwide key players in the electrical power systems industry. Edited by a renowned leader and expert in Power Systems, the book highlights international professionals' longstanding experiences and addresses the requirements of practitioners but also of newcomers in this field in finding a solution for their problems. The structure of the book follows the physical structure of the power system from the fundamentals through components and equipment to the overall system. In addition the handbook covers certain horizontal matters, for example "Energy fundamentals", "High voltage engineering", and "High current and contact technology" and thus intends to become the major one-stop reference for all issues related to the electrical power system.

Contains the latest research, case studies, theories, and methodologies within the field of wireless technologies. This book shows how networking research and quality engineering can be combined to successfully manage the transmission quality when speech and video telephony is delivered in heterogeneous wireless networks. Nomadic use of services requires intelligent management of ongoing transmission, and to make the best of available resources many fundamental trade-offs must be considered. Network coverage versus throughput and reliability of a connection is one key aspect, efficiency versus robustness of signal compression is another. However, to successfully

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manage services, user-perceived Quality of Experience (QoE) in heterogeneous networks must be known, and the perception of quality changes must be understood. These issues are addressed in this book, in particular focusing on the perception of quality changes due to switching between diverse networks, speech and video codecs, and encoding bit rates during active calls. This brief presents several enhancement modules to Multipath Transmission Control Protocol (MPTCP) in order to support stable and efficient multipath transmission with user cooperation in the Long Term Evolution (LTE) network. The text explains how these enhancements provide a stable aggregate throughput to the upper-layer applications; guarantee a steady goodput, which is the real application-layer perceived throughput; and ensure that the local traffic of the relays is not adversely affected when the relays are forwarding data for the destination. The performance of the proposed solutions is extensively evaluated using various scenarios. The simulation results demonstrate that the proposed modules can achieve a stable aggregate throughput and significantly improve the goodput by 1.5 times on average. The brief also shows that these extensions can well respect the local traffic of the relays and motivate the relay users to provide the relaying service.

It gives me immense pleasure to introduce this timely handbook to the research/- velopment communities in the ?eld of signal processing systems (SPS). This is the ?rst of its kind and represents state-of-the-arts coverage of research in this ?eld. The driving force behind

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information technologies (IT) hinges critically upon the major advances in both component integration and system integration. The major breakthrough for the former is undoubtedly the invention of IC in the 50's by Jack S. Kilby, the Nobel Prize Laureate in Physics 2000. In an integrated circuit, all components were made of the same semiconductor material. Beginning with the pocket calculator in 1964, there have been many increasingly complex applications followed. In fact, processing gates and memory storage on a chip have since then grown at an exponential rate, following Moore's Law. (Moore himself admitted that Moore's Law had turned out to be more accurate, longer lasting and deeper in impact than he ever imagined.) With greater device integration, various signal processing systems have been realized for many killer IT applications. Further breakthroughs in computer sciences and Internet technologies have also catalyzed large-scale system integration. All these have led to today's IT revolution which has profound impacts on our lifestyle and overall prospect of humanity. (It is hard to imagine life today without mobiles or Internets!) The success of SPS requires a well-concerted integrated approach from multiple disciplines, such as device, design, and application.

This practical resource provides you with a comprehensive understanding of error control coding, an essential and widely applied area in modern digital communications. The goal of error control coding is to encode information in such a way that even if the channel (or storage medium) introduces errors, the receiver can correct the errors and recover the original

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transmitted information. This book includes the most useful modern and classic codes, including block, Reed Solomon, convolutional, turbo, and LDPC codes. You find clear guidance on code construction, decoding algorithms, and error correcting performances.

Moreover, this unique book introduces computer simulations integrally to help you master key concepts. Including a companion DVD with MATLAB programs and supported with over 540 equations, this hands-on reference provides you with an in-depth treatment of a wide range of practical implementation issues.

Last few years have seen rapid acceptance of high-definition television (HDTV) technology around the world. This technology has been hugely successful in delivering more realistic television experience at home and accurate imaging for professional applications. Adoption of high definition continues to grow as consumers demand enhanced features and greater quality of content. Following this trend, natural evolution of visualisation technologies will be in the direction of fully realistic visual experience and highly precise imaging. However, using the content of even higher resolution and quality is not straightforward as such videos require significantly higher access bandwidth and more processing power. Therefore, methods for radical reduction of video bandwidth are crucial for realisation of high visual quality. Moreover, it is desirable to look into other ways of accessing visual content, solution to which lies in innovative schemes for content delivery and consumption. This book presents selected chapters covering technologies that will enable greater flexibility in

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video content representation and allow users to access
content from any device and to interact with it.

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