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"This detailed, up-to-date introduction to heterogeneous cellular networking introduces its characteristic features, the technology underpinning it, and the issues surrounding its use. Comprehensive and in-depth coverage of core topics catalogs the most advanced, innovative technologies used in designing and deploying heterogeneous cellular networks, including system-level simulation and evaluation, self-organization, range expansion, cooperative relaying, network MIMO, network coding, and cognitive radio. Practical design considerations and engineering tradeoffs are also discussed in detail, including handover management, energy efficiency, and interference management techniques. A range of real-world case studies, provided by industrial partners, illustrates the latest trends in heterogeneous cellular network development. Written by leading figures from industry and academia, this is an invaluable resource for all researchers and practitioners working in the field of mobile communications"--

A comprehensive reference giving a thorough explanation of propagation mechanisms, channel characteristics results, measurement approaches and the modelling of channels Thoroughly covering channel characteristics and parameters, this book provides the knowledge needed to design various wireless systems, such as cellular communication systems, RFID and ad hoc wireless communication systems. It gives a detailed introduction to aspects of channels before presenting the novel estimation and modelling techniques which can be used to achieve accurate models. To systematically guide readers through the topic, the book is organised in three distinct parts. The first part covers the fundamentals of the characterization of propagation channels, including the conventional single-input single-output (SISO) propagation channel characterization as well as its extension to multiple-input multiple-output (MIMO) cases. Part two focuses on channel measurements and channel data post-processing. Wideband channel measurements are introduced, including the equipment, technology and advantages and disadvantages of different data acquisition schemes. The channel parameter estimation methods are then presented, which include conventional spectral-based estimation, the specular-path-model based high-resolution method, and the newly derived power spectrum estimation methods. Measurement results are used to compare the performance of the different estimation methods. The third part gives a complete introduction to different modelling approaches. Among them, both scattering theoretical channel modelling and measurement-based channel modelling approaches are detailed. This part also approaches how to utilize these two modelling approaches to investigate wireless channels for conventional cellular systems and some new emerging communication systems. This three-part approach means the book caters for the requirements of the audiences at different levels, including readers needing introductory knowledge, engineers who are looking for more advanced understanding, and expert researchers in wireless system design as a reference. Presents technical explanations, illustrated with examples of the theory in practice Discusses results applied to 4G communication systems and other emerging communication systems, such as relay, CoMP, and vehicle-to-vehicle rapid time-variant channels Can be used as comprehensive tutorial for students or a complete reference for engineers in industry Includes selected illustrations in color Program downloads available for readers

Companion website with program downloads for readers and presentation slides and solution manual for instructors Essential reading for Graduate students and researchers interested in the characteristics of propagation channel, or who work in areas related to physical layer architectures, air interfaces, navigation, and wireless sensing

This book offers a comprehensive explanation on how to dimension, plan, and optimize WiMAX networks. The first part of the text introduces WiMAX networks architecture, physical layer, standard, protocols, security mechanisms, and highly related radio access technologies. It covers system framework, topology, capacity, mobility management, handoff management, congestion control, medium access control (MAC), scheduling, Quality of Service (QoS), and WiMAX mesh networks and security.

Enabling easy understanding of key concepts and technologies, the second part presents practical examples and illustrative figures to explain planning techniques and optimization algorithms. The author provides both theoretical and practical information to ensure in-depth, realistic results.

Research of discrete event systems is strongly motivated by applications in flexible manufacturing, in traffic control and in concurrent and real-time software verification and design, just to mention a few important areas. Discrete event system theory is a promising and dynamically developing area of both control theory and computer science. Discrete event systems are systems with non-numerically-valued states, inputs, and outputs. The approaches to the modelling and control of these systems can be roughly divided into two groups. The first group is concerned with the automatic design of controllers from formal specifications of logical requirements. This research owes much to the pioneering work of P.J. Ramadge and W.M. Wonham at the beginning of the eighties. The second group deals with the analysis and optimization of system throughput, waiting time, and other performance measures for discrete event systems. The present book contains selected papers presented at the Joint Workshop on Discrete Event Systems (WODES'92) held in Prague, Czechoslovakia, on August 26-28, 1992 and organized by the Institute of Information Theory and Automation of the Czechoslovak Academy of Sciences, Prague, Czechoslovakia, by the Automatic Control Laboratory of the Swiss Federal Institute of Technology (ETH), Zurich, Switzerland, and by the Department of Computing Science of the University of Groningen, Groningen, the Netherlands.

This second volume covers the following blocks in the chain of communication: the modulation baseband and transposed band, synchronization and channel estimation as well as detection. Variants of these blocks, the multicarrier modulation and coded modulations are used in current systems or future.

This book shares key insights into system performance and management analytics, demonstrating how the field of analytics is currently changing and how it is used to monitor companies' efforts to drive performance. Managing business performance facilitates the effective accomplishment of strategic and operational goals, and there is a clear and direct correlation between using performance management applications and improved business and organizational results. As such, performance and management analytics can yield a range of direct and indirect benefits, boost operational efficiency and unlock employees' latent potential, while at the same time aligning services with overarching goals. The book addresses a range of topics, including software reliability assessment, testing, quality management, system-

performance management, analysis using soft-computing techniques, and management analytics. It presents a balanced, holistic approach to viewing the world from both a technical and managerial perspective by considering performance and management analytics. Accordingly, it offers a comprehensive guide to one of the most pressing issues in today's technology-dominated world, namely, that most companies and organizations find themselves awash in a sea of data, but lack the human capital, appropriate tools and knowledge to use it to help them create a competitive edge. Reflecting recent advancements, *Security of Self-Organizing Networks: MANET, WSN, WMN, VANET* explores wireless network security from all angles. It begins with a review of fundamental security topics and often-used terms to set the foundation for the following chapters. Examining critical security issues in a range of wireless networks, the book proposes specific solutions to security threats. Ideal for those with a basic understanding of network security, the text provides a clear examination of the key aspects of security in self-organizing networks and other networks that use wireless technology for communications. The book is organized into four sections for ease of reference: General Topics—Security of Wireless and Self-Organizing Networks Mobile Ad-Hoc Network and Vehicular Ad-Hoc Network Security Wireless Sensor Network Security Wireless Mesh Network Security Highlighting potential threats to network security, most chapters are written in a tutorial manner. However, some of the chapters include mathematical equations and detailed analysis for advanced readers. Guiding you through the latest trends, issues, and advances in network security, the text includes questions and sample answers in each chapter to reinforce understanding. "This book presents state-of-the-art research, developments, and integration activities in combined platforms of heterogeneous wireless networks"--Provided by publisher. Annotation This book documents the scientific outcome and constitutes the final report of the Japanese research project on discovery science. During three years more than 60 scientists participated in the project and developed a wealth of new methods for knowledge discovery and data mining. The 52 revised full papers presented were carefully reviewed and span the whole range of knowledge discovery from logical foundations and inductive reasoning to statistical inference and computational learning. A broad variety of advanced applications are presented including knowledge discovery and data mining in very large databases, knowledge discovery in network environments, text mining, information extraction, rule mining, Web mining, image processing, and pattern recognition. This book introduces key modulation and predistortion techniques for approaching power and spectrum-efficient transmission for wireless communication systems. The book presents a combination of theoretical principles, practical implementations, and actual tests. It focuses on power and spectrally efficient modulation and transmission techniques in the portable wireless communication systems, and introduces currently developed and designed RF transceivers in the latest wireless markets. Most materials, design examples, and design strategies used are based on the author's two decades of work in the digital communication fields, especially in the areas of the digital modulations, demodulations, digital signal processing, and linearization of power amplifiers. The applications of these practical products and equipment cover the satellite communications on earth station systems, microwave communication systems, 2G GSM and 3G WCDMA mobile communication systems, and 802.11 WLAN

systems.>

The Handbook of Information Security is a definitive 3-volume handbook that offers coverage of both established and cutting-edge theories and developments on information and computer security. The text contains 180 articles from over 200 leading experts, providing the benchmark resource for information security, network security, information privacy, and information warfare.

Why the Internet was designed to be the way it is, and how it could be different, now and in the future. How do you design an internet? The architecture of the current Internet is the product of basic design decisions made early in its history. What would an internet look like if it were designed, today, from the ground up? In this book, MIT computer scientist David Clark explains how the Internet is actually put together, what requirements it was designed to meet, and why different design decisions would create different internets. He does not take today's Internet as a given but tries to learn from it, and from alternative proposals for what an internet might be, in order to draw some general conclusions about network architecture. Clark discusses the history of the Internet, and how a range of potentially conflicting requirements—including longevity, security, availability, economic viability, management, and meeting the needs of society—shaped its character. He addresses both the technical aspects of the Internet and its broader social and economic contexts. He describes basic design approaches and explains, in terms accessible to nonspecialists, how networks are designed to carry out their functions. (An appendix offers a more technical discussion of network functions for readers who want the details.) He considers a range of alternative proposals for how to design an internet, examines in detail the key requirements a successful design must meet, and then imagines how to design a future internet from scratch. It's not that we should expect anyone to do this; but, perhaps, by conceiving a better future, we can push toward it.

This book constitutes the refereed proceedings of the Second International Workshop on Self-Organizing Systems, IWSOS 2007. The 17 revised full papers and five revised short papers presented together with two invited talks were carefully selected from more than 36 submissions. The papers are organized in topical sections on ad hoc routing, peer-to-peer networking, network topology, adaptive and self-organizing networks and multicast and mobility protocols.

Fully revised and updated version of the successful "Advanced Wireless Communications" Wireless communications continue to attract the attention of both research community and industry. Since the first edition was published significant research and industry activities have brought the fourth generation (4G) of wireless communications systems closer to implementation and standardization. "Advanced Wireless Communications" continues to provide a comparative study of enabling technologies for 4G. This second edition has been revised and updated and now includes additional information on the components of common air interface, including the area of space time coding , multicarrier modulation especially OFDM, MIMO, cognitive radio and cooperative transmission. Ideal for students and engineers in research and development in the field of wireless communications, the second edition of Advanced Wireless Communications also gives an understanding to current approaches for engineers in telecomm operators, government and regulatory institutions. New features include: Brand new chapter covering linear precoding in

MIMO channels based on convex optimization theory. Material based on game theory modelling encompassing problems of adjacent cell interference, flexible spectra sharing and cooperation between the nodes in ad hoc networks. Presents and discusses the latest schemes for interference suppression in ultra wide band (UWB) cognitive systems. Discusses the cooperative transmission and more details on positioning. This review volume provides from both theoretical and application points of views, recent developments and state-of-the-art reviews in various areas of pattern recognition, image processing, machine learning, soft computing, data mining and web intelligence. Machine Interpretation of Patterns: Image Analysis and Data Mining is an essential and invaluable resource for professionals and advanced graduates in computer science, mathematics and life sciences. It can also be considered as an integrated volume to researchers interested in doing interdisciplinary research where computer science is a component.

Advanced communication scenarios demand the development of new systems where antenna theory, channel propagation and communication models are seen from a common perspective as a way to understand and optimize the system as a whole. In this context, a comprehensive multiantenna formulation for multiple-input multiple-output systems is presented with a special emphasis on the connection of the electromagnetic and communication principles. Starting from the capacity for a multiantenna system, the book reviews radiation, propagation, and communication mechanisms, paying particular attention to the vectorial, directional, and time-frequency characteristics of the wireless communication equation for low- and high-scattering environments. Based on the previous concepts, different space-time methods for diversity and multiplexing applications are discussed, multiantenna modeling is studied, and specific tools are introduced to analyze the antenna coupling mechanisms and formulate appropriate decorrelation techniques. Miniaturization techniques for closely spaced antennas are studied, and its fundamental limits and optimization strategies are reviewed. Finally, different practical multiantenna topologies for new communication applications are presented, and its main parameters discussed. A relevant feature is a collection of synthesis exercises that review the main topics of the book and introduces state-of-the-art system architectures and parameters, facilitating its use either as a text book or as a support tool for multiantenna systems design. Table of Contents: Principles of Multiantenna Communication Systems / The Radio Channel for MIMO Communication Systems / Coding Theory for MIMO Communication Systems / Antenna Modeling for MIMO Communication Systems / Design of MPAs for MIMO Communication Systems / Design Examples and Performance Analysis of Different MPAs / References / List of Acronyms / List of Symbols / Operators and Mathematical Symbols

A wireless sensor network (WSN) uses a number of autonomous devices to cooperatively monitor physical or environmental conditions via a wireless network. Since its military beginnings as a means of battlefield surveillance,

practical use of this technology has extended to a range of civilian applications including environmental monitoring, natural disaster prediction and relief, health monitoring and fire detection. Technological advancements, coupled with lowering costs, suggest that wireless sensor networks will have a significant impact on 21st century life. The design of wireless sensor networks requires consideration for several disciplines such as distributed signal processing, communications and cross-layer design. *Wireless Sensor Networks: Signal Processing and Communications* focuses on the theoretical aspects of wireless sensor networks and offers readers signal processing and communication perspectives on the design of large-scale networks. It explains state-of-the-art design theories and techniques to readers and places emphasis on the fundamental properties of large-scale sensor networks. *Wireless Sensor Networks: Signal Processing and Communications : Approaches WSNs from a new angle – distributed signal processing, communication algorithms and novel cross-layer design paradigms. Applies ideas and illustrations from classical theory to an emerging field of WSN applications. Presents important analytical tools for use in the design of application-specific WSNs. Wireless Sensor Networks will be of use to signal processing and communications researchers and practitioners in applying classical theory to network design. It identifies research directions for senior undergraduate and graduate students and offers a rich bibliography for further reading and investigation.*

Constant false alarm rate detection processes are important in radar signal processing. Such detection strategies are used as an alternative to optimal Neyman-Pearson based decision rules, since they can be implemented as a sliding window process running on a radar range-Doppler map. This book examines the development of such detectors in a modern framework. With a particular focus on high resolution X-band maritime surveillance radar, recent approaches are outlined and examined. Performance is assessed when the detectors are run in real X-band radar clutter. The book introduces relevant mathematical tools to allow the reader to understand the development, and follow its implementation.

The uniqueness of this book is that it covers such important aspects of modern signal processing as block transforms from subband filter banks and wavelet transforms from a common unifying standpoint, thus demonstrating the commonality among these decomposition techniques. In addition, it covers such "hot" areas as signal compression and coding, including particular decomposition techniques and tables listing coefficients of subband and wavelet filters and other important properties. The field of this book (Electrical Engineering/Computer Science) is currently booming, which is, of course, evident from the sales of the previous edition. Since the first edition came out there has been much development, especially as far as the applications. Thus, the second edition addresses new developments in applications-related chapters, especially in chapter 4 "Filterbank Families: Design and Performance," which is greatly

expanded. Unified and coherent treatment of orthogonal transforms, subbands, and wavelets Coverage of emerging applications of orthogonal transforms in digital communications and multimedia Duality between analysis and synthesis filter banks for spectral decomposition and synthesis and analysis transmultiplexer structures Time-frequency focus on orthogonal decomposition techniques with applications to FDMA, TDMA, and CDMA

This book focuses on next generation data technologies in support of collective and computational intelligence. The book brings various next generation data technologies together to capture, integrate, analyze, mine, annotate and visualize distributed data – made available from various community users – in a meaningful and collaborative for the organization manner. A unique perspective on collective computational intelligence is offered by embracing both theory and strategies fundamentals such as data clustering, graph partitioning, collaborative decision making, self-adaptive ant colony, swarm and evolutionary agents. It also covers emerging and next generation technologies in support of collective computational intelligence such as Web 2.0 social networks, semantic web for data annotation, knowledge representation and inference, data privacy and security, and enabling distributed and collaborative paradigms such as P2P, Grid and Cloud Computing due to the geographically dispersed and distributed nature of the data. The book aims to cover in a comprehensive manner the combinatorial effort of utilizing and integrating various next generations collaborative and distributed data technologies for computational intelligence in various scenarios. The book also distinguishes itself by assessing whether utilization and integration of next generation data technologies can assist in the identification of new opportunities, which may also be strategically fit for purpose. This book constitutes the refereed proceedings of the Third International Conference on Wireless, Mobile Networks, WiMo 2011, and of The Third International Conference on Computer Networks and Communications, CoNeCo 2011, held in Ankara, Turkey, in June 2011. The 40 revised full papers presented were carefully reviewed and selected from 202 submissions.

INTERNATIONAL WORKSHOPS (at IAREC'17) (This book includes English (main) and Turkish languages) International Workshop on Mechanical Engineering International Workshop on Mechatronics Engineering International Workshop on Energy Systems Engineering International Workshop on Automotive Engineering and Aerospace Engineering International Workshop on Material Engineering International Workshop on Manufacturing Engineering International Workshop on Physics Engineering International Workshop on Electrical and Electronics Engineering International Workshop on Computer Engineering and Software Engineering International Workshop on Chemical Engineering International Workshop on Textile Engineering International Workshop on Architecture International Workshop on Civil Engineering International Workshop on Geomatics Engineering International Workshop on Industrial Engineering International Workshop on Food Engineering International Workshop on Aquaculture Engineering International Workshop on Agriculture Engineering International Workshop on Mathematics Engineering International Workshop on Bioengineering Engineering International Workshop on Biomedical Engineering International Workshop on Genetic Engineering International Workshop on Environmental Engineering International Workshop on

Other Engineering Science

Benefiting from both time-domain and frequency-domain signal processing techniques, multicarrier systems have the potential for achieving high spectral-efficiency, high-flexibility and low-complexity wireless communications. Multicarrier techniques therefore constitute the promising techniques for implementation of future generations of wideband, broadband and ultra-wideband systems. Multicarrier Communications offers comprehensive and in-depth evaluation of numerous topics in the area, covering the fundamental principles of spread-spectrum and multicarrier CDMA as well as more advanced topics such as multiuser detection (MUD), multiuser transmitter preprocessing (MUTP), MIMO and space-time processing. It examines OFDM and various multicarrier CDMA within an unified framework and provides analytical approaches and formulas for error-performance evaluation of numerous multicarrier systems. Examines MUD and MUTP in parallel to illustrate the strong duality between receiver optimization and transmitter optimization. Comprehensively establishes the theory of noncoherent MUD and noncoherent interference suppression. Details the body of knowledge on MIMO theory and space-time multicarrier communications. Contains tables, diagrams and figures to illustrate the performance results. Practicing electrical engineers and researchers in wireless communications will find Multicarrier Communications an invaluable guide. It will also be of interest to senior undergraduate and graduate students on wireless communications courses.

Microwave and Millimeter Wave Circuits and Systems: Emerging Design, Technologies and Applications provides a wide spectrum of current trends in the design of microwave and millimeter circuits and systems. In addition, the book identifies the state-of-the-art challenges in microwave and millimeter wave circuits systems design such as behavioral modeling of circuit components, software radio and digitally enhanced front-ends, new and promising technologies such as substrate-integrated-waveguide (SIW) and wearable electronic systems, and emerging applications such as tracking of moving targets using ultra-wideband radar, and new generation satellite navigation systems. Each chapter treats a selected problem and challenge within the field of Microwave and Millimeter wave circuits, and contains case studies and examples where appropriate. Key Features: Discusses modeling and design strategies for new appealing applications in the domain of microwave and millimeter wave circuits and systems. Written by experts active in the Microwave and Millimeter Wave frequency range (industry and academia). Addresses modeling/design/applications both from the circuit as from the system perspective. Covers the latest innovations in the respective fields. Each chapter treats a selected problem and challenge within the field of Microwave and Millimeter wave circuits, and contains case studies and examples where appropriate. This book serves as an excellent reference for engineers, researchers, research project managers and engineers working in R&D, professors, and post-graduates studying related courses. It will also be of interest to professionals working in product development and PhD students.

Providing an all-encompassing self-contained treatment of Near-Capacity Multi-Functional MIMO Systems, the book starts by categorizing the family of Multiple-Input Multiple-Output (MIMO) schemes as diversity techniques, multiplexing schemes, multiple access arrangements and beam-forming techniques. Sophisticated coherent and low-complexity non-coherent MIMO receivers dispensing with channel estimation are considered in both classic and cooperation-aided scenarios. It is demonstrated that in the presence of correlated shadow-fading, cooperation-assisted systems may be expected to outperform their non-cooperative counterparts. The book contains a 100-page chapter on the unified treatment of all block codes in the context of high-flexibility, cutting-edge irregular Linear Dispersion Codes (LDC), which approach the MIMO-capacity. The majority of the book's solutions are in the optimum sphere-packing frame-work. Sophisticated amalgam of five year's near-capacity MIMO research. Detailed examination of wireless landscape, including the fields of channel coding, spacetime

coding and turbo detection techniques Novel tool of Extrinsic Information Transfer Charts (EXIT) used to address recent developments Material presented logically, allowing advanced readers to turn directly to any specific chapter of interest One of the only books to cover these subjects, giving equal weighting to each

An authoritative and comprehensive guide to managing energy conservation in infrastructures Energy Conservation in Residential, Commercial, and Industrial Facilities offers an essential guide to the business models and engineering design frameworks for the implementation of energy conservation in infrastructures. The presented models of both physical and technological systems can be applied to a wide range of structures such as homes, hotels, public facilities, industrial facilities, transportation, and water/energy supply systems. The authors—noted experts in the field—explore the key performance indicators that are used to evaluate energy conservation strategies and the energy supply scenarios as part of the design and operation of energy systems in infrastructures. The text is based on a systems approach that demonstrates the effective management of building energy knowledge and supports the simulation, evaluation, and optimization of several building energy conservation scenarios. In addition, the authors explore new methods of developing energy semantic network (ESN) superstructures, energy conservation optimization techniques, and risk-based life cycle assessments. This important text: Defines the most effective ways to model the infrastructure of physical and technological systems Includes information on the most widely used techniques in the validation and calibration of building energy simulation Offers a discussion of the sources, quantification, and reduction of uncertainty Presents a number of efficient energy conservation strategies in infrastructure systems, including HVAC, lighting, appliances, transportation, and industrial facilities Describes illustrative case studies to demonstrate the proposed energy conservation framework, practices, methods, engineering designs, control, and technologies Written for students studying energy conservation as well as engineers designing the next generation of buildings, Energy Conservation in Residential, Commercial, and Industrial Facilities offers a wide-ranging guide to the effective management of energy conservation in infrastructures.

Parallel and distributed computing in the 1980s and 1990s had great influence on application development in science, engineering and business computing. The improvements in computation and communication capabilities have enabled the creation of demanding applications in critical domains such as the environment, health, aerospace, and other areas of science and technology. Similarly, new classes of applications are enabled by the availability of heterogeneous large-scale distributed systems which are becoming available nowadays (based on technologies such as grid and peer-to-peer systems). Parallel computing systems exploit a large diversity of computer architectures, from supercomputers, shared-memory or distributed-memory multi processors, to local networks and clusters of personal computers. With the recent emergence of multi core architectures, parallel computing is now set to achieve “mainstream” status. Approaches that have been advocated by parallel computing researchers in the past are now being utilized in a number of software libraries and hardware systems that are available for everyday use. Parallel computing ideas have also come to dominate areas such as multi user gaming (especially in the development of gaming engines based on “cell” architectures) – often ignored by many “serious” researchers in the past, but which now are set to have a growing user base of tens of millions across the world. In recent years, focus has also shifted to support energy efficiency in computation, with some researchers proposing a new metric of performance based on Flops/Watt.

Mobile ad-hoc networks have attracted considerable attention and interest from the commercial sector as well as the standards community. Many new ad-hoc networking applications have been conceived to help enable new commercial and personal

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communication beyond the domain of tactical networks, including personal area networking, home networking, law enforcement operations, search and rescue operations, commercial and educational applications, and sensor networks. Emerging Technologies in Wireless Ad-hoc Networks: Applications and Future Development provides the rationale, state-of-the-art studies and practical applications, proof-of-concepts, experimental studies, and future development on the use of emerging technologies in wireless ad-hoc networks. In addition, this work explores emerging wireless ad hoc technologies based on communication coverage areas: body sensor networks, personal area networks, local area networks, and metropolitan area networks and their applications in critical sectors, for example, agriculture, environment, public health and public transportation.

The latest edition provides a comprehensive foundation for image and video compression. It covers HEVC/H.265 and future video coding activities, in addition to Internet Video Coding. The book features updated chapters and content, along with several new chapters and sections. It adheres to the current international standards, including the JPEG standard.

This is a self-contained book on the foundations and applications of optical and microwave technologies to telecommunication networks application, with an emphasis on access, local, road, cars, trains, vessels and airplanes, indoor and in-car data transmission as well as for long-distance fiber-systems and application in outer space and automation technology. The book provides a systematic discussion of physics/optics, electromagnetic wave theory, optical fibre technology, and the potential and limitations of optical and microwave transmission.

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.

Collecting and processing data is a necessary aspect of living in a technologically advanced society. Whether it's monitoring events, controlling different variables, or using decision-making applications, it is important to have a system that is both inexpensive and capable of coping with high amounts of data. Technological Breakthroughs in Modern Wireless Sensor Applications brings together new ways to process and monitor data, and to put it to work in everything from intelligent transportation systems to healthcare to multimedia applications. This book is an essential reference source for research and development engineers, graduate students, academics, and researchers interested in intelligent engineering, internetworking, routing, and network planning algorithms.

This book constitutes the refereed proceedings of the First Annual International Conference on Wireless Algorithms, Systems, and Applications, WASA 2006, held in Xi'an, China in August 2006. The book presents 63 revised full papers together with 2 invited keynote speech abstracts, organized in topical sections on wireless PAN and wireless LAN, wireless MAN and pervasive computing, data management, mobility, localization and topology control, performance modeling and analysis, security and more.

With 26 entirely new and 5 extensively revised chapters out of the total of 39, the Mobile Communications Handbook, Third Edition presents an in-depth and up-to-date overview of the full range of wireless and mobile technologies that we rely on every day. This includes, but is not limited to, everything from digital cellular mobile radio and evolving personal communication systems to wireless data and wireless networks. Illustrating the extraordinary evolution of wireless communications and networks in the last 15 years, this book is divided into five sections: Basic Principles provides the essential underpinnings for the wide-ranging mobile communication technologies currently in use throughout the world. Wireless Standards contains technical details of the standards we use every day, as well as insights into their development. Source Compression and Quality Assessment covers the compression techniques used to represent voice and video for transmission over mobile communications systems as well as how the delivered voice and video quality are assessed. Wireless Networks examines the wide range of current and developing wireless networks and wireless methodologies. Emerging Applications explores newly developed areas of vehicular communications and 60 GHz wireless communications. Written by experts from industry and academia, this book provides a succinct overview of each topic, quickly bringing the reader up to date, but with sufficient detail and references to enable deeper investigations. Providing much more than a "just the facts" presentation, contributors use their experience in the field to provide insights into how each topic has emerged and to point toward forthcoming developments in mobile communications.

An overwhelming development has taken place in voice and data communication over the last twenty years as the industry evolved from fixed to mobile and wireless communication. This development is supported with new technologies and evolving networks from the first generation (1G), 2G, 3G and the fourth generation (4G) mobile wireless communications. During this evolution and revolution in telecommunications, the industry also changed from circuit switched networks to packet switched networks in 3G and 3G. Hence the planning of telecommunication networks has equally changed significantly. By providing the necessary background and technical content to understand and stay abreast of how to plan the new network types, Planning and Optimisation of 3G and 4G Wireless Networks explores the idiosyncrasies of how to plan the various types of wireless networks. Packed with details of the technologies that support each network type, this cutting-edge reference leads the reader step by step on how to plan and optimize various types of wireless networks. It examines current and emerging network planning and enhancement techniques through examples in HSPA, B3G, WiMAX, mesh networks, personal area networks and wireless sensor networks. It clearly provides the different architectures of these networks along with their support design methods. It includes coverage of the latest wireless network types, planning and optimization methods in the form of: 3G HSPA and Beyond 3G WiMAX (fixed and mobile) and LTE OFDM Wireless mesh networks Personal area networks Propagation models and link budgets Cognitive radio and spectrum sensing Planning of wireless sensor networks Synchronisation of CDMA systems Interference suppression Cross-layer optimisation Topology control Resource management The illustrative planning and optimization methods provide the reader with a clear foot path into future networks. This book provides educators, industry practitioners, regulators, researchers and subscribers with the ideal foundation for developing the understanding required to

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design, deploy, train, and use wireless networks of various types.

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