Distributed Antenna Systems Open Architecture For Future Wireless Communications Wireless Networks And Le Communications

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Wireless Ad Hoc Networking - Shih-Lin Wu 2007-03-28
The rapid progress of mobile, wireless communication and embedded micro-sensing MEMS technologies has brought about the rise of pervasive computing. Wireless local-area networks (WLANs) and wireless personal-area networks (WPANs) are now common tools for many people, and it is predicted that wearable sensor networks will greatly improve everyday life as we know it. By integrating these technologies into a pervasive system, we can access information and use computing resources anytime, anywhere, and with any device. Wireless Ad Hoc Networking: Personal-Area, Local-Area, and the Sensory-Area Networks covers these key technologies used in wireless ad hoc networks. The book is divided into three parts, each providing self-contained chapters written by international experts. Topics include networking architectures and protocols, cross-layer architectures, localization and location tracking, time synchronization, QoS and real-time, security and dependability, applications, modeling and performance evaluation, implementation and experience, and much more. The book is novel in its single source presentation of ad hoc networking and related key technologies and applications over the platforms of personal area, sensory area, and local area networks. It is a valuable resource for those who work in or are interested in learning about the pervasive computing environment.
Ionosphere and Applied Aspects of Radio Communication and Radar - Nathan Blaunstein 2008-05-13
A Complete Reference for the 21st Century Until recently, much of the communications technology in the former Eastern bloc countries was largely unknown. Due to the historically competitive nature of East/West relations, scientific groups operated independently, without the benefit of open communication on theoretical frameworks and experimental technologies. As these countries have begun to bridge the gap and work in a more cooperative environment, the need has grown for a comprehensive guide which assimilates all the information in this vast knowledge bank. Ionosphere and Applied Aspects of Radio Communication and Radar meets the demand for an updated reference on this continually evolving global technology. This book examines the changes that have occurred in the past two or three decades. It thoroughly reviews ionospheric radio propagation, over-horizon and above-horizon radars, and miniature ionospheric stations used for investigating nonregular phenomena occurring in the ionosphere. In addition, it also comprehensively discusses land-satellite and satellite-satellite communications. This volume also reviews an area that has been all but ignored in previous works: the effects of plasma irregularities on radio waves propagation through the inhomogeneous ionosphere. Here, a heavy focus is placed on the effects of these irregular phenomena. And due to the recent wireless revolution, more attention than ever has been aimed on improving the efficiency of land-satellite and satellite-satellite communication networks, which are fully addressed. Included are—Transport processes and photochemistry reactions occurring in the regular homogeneous ionosphere Nonlinear phenomena occurring in the irregular ionosphere Instabilities in the inhomogeneous disturbed ionosphere Various ambient natural and artificial sources and corresponding plasma irregularities Written by two leading scientists, this book will be an invaluable guide to anyone working in this ever-changing field.
RFID and Sensor Networks - Yan Zhang 2009-11-04
The escalating demand for ubiquitous computing along with the complementary and flexible natures of Radio Frequency Identification (RFID) and Wireless Sensor Networks (WSNs) have sparked an increase in the integration of these two dynamic technologies. Although a variety of applications can be observed under development and in practical use, there
Next Generation Wireless Communications Using Radio over Fiber - Nathan J. Gomes 2012-08-15
Taking a coherent and logical approach, this book describesthe potential use of co-ordinated multipoint systems supportedby radio over fiber. It covers an impressive breadth of topics,ranging from components, subsystem and system architecture, tonetwork management and business perspectives. The authors showthe importance of radio over fiber in eliminating or mitigatingagainst the current, perceived barriers to the use of co-ordinatedmultipoint, and the drivers for standardisation activities infuture mobile/wireless systems over the next few years. The book brings together the system concept for centralizedprocessing, including what is required for co-existence with legacywireless systems, the algorithms that can be used for improvingwireless bandwidth utilization at physical and MAC layers and theradio over fiber network and link design necessary to support thewireless system. Other important research is alsocovered as the authors look at compensating for radio over fiberimpairments and providing simple network managementfunctions. A study of service provision and the businesscase for such a future wireless system is also fullyconsidered. This book comes at an important time for future wireless systemswith standardization of fourth generation wireless systems stillongoing. The content enables readers to make key decisions aboutfuture standardisation and their own research work. The businessanalysis also makes the book useful to those involved in decidingthe future directions of telecoms organisations. This informationwill be core to their decision-making as it provides technicalknowledge of the state-of-the-art but also system level assessmentsof what is possible in a business environment.
Optical Wireless Communications - Roberto Ramirez-Iniguez 2008-04-03
Over the last three decades, interest in Infrared (IR) technology as a medium to convey information has grown considerably. This is reflected by the increasing number of devices such as laptops, PDAs, and mobile phones that incorporate optical wireless transceivers and also by the increasing number of optical wireless links available for indoor and
RFID Security - Paris Kitsos 2008-09-08
This is an edited book covering fundamentals, security theories and protocols, and hardware implementations for cryptography algorithms and security techniques in RFID. It is the first book to comprehensively cover RFID security issues and solutions. Part 1 deals with RFID fundamentals. Part 2 addresses RFID security protocols and techniques. Finally, the book discusses hardware implementation of security algorithms and protocols dedicated to RFID platforms and chips.
Commerce Business Daily - 2000

Resource, Mobility, and Security Management in Wireless Networks and Mobile Communications - Yan Zhang 2006-10-25
Organized into three parts, Resource, Mobility, and Security Management in Wireless Networks and Mobile Communications examines the inherent constraint of limited bandwidth and unreliable time-varying physical link in the wireless system, discusses the demand to realize the service continuity in the single-hop or multi-hop wireless networks, and explores trusted communication in mobile computing

scenarios. Focusing on the background, technique survey, protocol design, and analytical methods, the book discusses standards in 802.11x/3G/4G, HotSpot Wireless, Bluetooth sensor networks, and access control in wireless Ad Hoc networks. Other topics include call admission control (CAC), routing, multicast, medium access control (MAC), scheduling, bandwidth adaptation, handoff management, location management, network mobility, secure routing, key management, authentication, security, privacy, and performance simulation and analysis. This book is a comprehensive source of information on basic concepts, major issues, design approaches, future research directions, and the interaction between these components. With its broad coverage allowing for easy cross reference, the book also provides detailed techniques for eliminating bandwidth insufficiency, increasing location management performance, and decreasing the associated authentication traffic. Features: Offers competitive, self-contained information on resource, mobility, and security management in wireless networks Explains the interaction and coupling among the most important components in wireless networks Examines background, applications, and standard protocols Addresses challenges and solutions in key management of wireless sensor networks Covers how to provide effective and efficient authentication and key agreements for cellular access security

Physical Layer Security in Wireless Communications - Xiangyun Zhou 2016-04-19

Physical layer security has recently become an emerging technique to complement and significantly improve the communication security of wireless networks. Compared to cryptographic approaches, physical layer security is a fundamentally different paradigm where secrecy is achieved by exploiting the physical layer properties of the communication system, such as thermal noise, interference, and the time-varying nature of fading channels. Written by pioneering researchers, Physical Layer Security in Wireless Communications supplies a systematic overview of the basic concepts, recent advancements, and open issues in providing communication security at the physical layer. It introduces the key concepts, design issues, and solutions to physical layer security in single-user and multi-user communication systems, as well as large-scale wireless networks. The book starts with a brief introduction to physical layer security. The rest of the book is organized into four parts based on the different approaches used for the design and analysis of physical layer security techniques: Information Theoretic Approaches: introduces capacity-achieving methods and coding schemes for secure communication, as well as secret key generation and agreement over wireless channels Signal Processing Approaches: covers recent progress in applying signal processing techniques to design physical layer security enhancements Game Theoretic Approaches: discusses the applications of game theory to analyze and design wireless networks with physical layer security considerations Graph Theoretic Approaches: presents the use of tools from graph theory and stochastic geometry to analyze and design large-scale wireless networks with physical layer security constraints Presenting high-level discussions along with specific examples, illustrations, and references to conference and journal articles, this is an ideal reference for postgraduate students, researchers, and engineers that need to obtain a macro-level understanding of physical layer security and its role in future wireless communication systems.

The British National Bibliography - Arthur James Wells 2007

The Future of Wireless Networks - Mohesen Guizani 2015-09-22

The exponential increase in mobile device users and high-bandwidth applications has pushed the current 3G and 4G wireless networks to their capacity. Moreover, it is predicted that mobile data traffic will continue to grow by over 300 percent by 2017. To handle this spectacular growth, the development of improved wireless networks for the future ha

Distributed MIMO and Cell-Free Mobile Communication - Xiaohu You 2020-12-21

Distributed MIMO and cell-free mobile communication are emerging technologies of wireless communication. This book introduces the fundamental theory, key technology and the prototype system of distributed MIMO and cellular free mobile communication system, including the unified system model, capacity and spectral efficiency analysis under imperfect channel information, cell edge effect, optimal power allocation and energy efficiency optimization, cache optimization, low complexity wireless transmission technology and new network assisted full duplex technology. In addition, the implementation of software and hardware and test results of distributed MIMO and cell free system based on cloud architecture are introduced in detail.This book will benefit senior undergraduates, postgraduates, scholars and engineers who are engaged in wireless mobile communication research. It can also be used as a reference book for postgraduates and researchers in the field of electronic and information engineering.

Cooperative Wireless Communications - Yan Zhang 2009-03-10

Cooperative devices and mechanisms are increasingly important to enhance the performance of wireless communications and networks, with their ability to decrease power consumption and packet loss rate and increase system capacity, computation, and network resilience. Considering the wide range of applications, strategies, and benefits associated with cooperative wireless communications, researchers and product developers need a succinct understanding of relevant theory, fundamentals, and techniques to navigate this challenging field. Cooperative Wireless Communications provides just that. Assesses Applications, Benefits, and Methods of Cooperative Strategies This comprehensive reference handbook contains useful background to develop and implement cooperative mechanisms for infrastructure-based wireless systems and self-organizing multi-hop wireless networks (e.g., ad hoc, mesh, peer-to-peer, and sensor networks). It introduces key cooperative strategies and details recent improvements to a variety of cooperative mechanisms and frameworks applicable in diverse scenarios. Addressing fundamentals and techniques, this invaluable reference: Offers comprehensive guidance on technical, practical, and deployment aspects of cooperative strategies and the latest IEEE standard specifications Explores key challenges and solutions in 3G, B3G, 4G WiMAX, and ad hoc, mesh, and sensor networks Covers cooperative diversity, virtual MIMO, cognitive radio networks, and resource and mobility management Discusses energy efficiency, relaying strategy, routing, MAC, topology control, and security Provides Guidance to Resolve Key Challenges A distinct introduction to different cooperative mechanisms, cooperation frameworks in diverse scenarios, and recent improvements to wireless network performance, this one-stop reference consolidates the essential information and guidance that readers will need to resolve key challenges in various protocol issues from a cooperation perspective.

Cognitive Radio Networks - Yan Zhang 2016-04-19

While still in the early stages of research and development, cognitive radio is a highly promising communications paradigm with the ability to effectively address the spectrum insufficiency problem. Written by those pioneering the field, Cognitive Radio Networks: Architectures, Protocols, and Standards offers a complete view of cognitive radio-incl

Distributed Antenna Systems - Honglin Hu 2007-06-27

A technical guide that covers the fundamental concepts, advances and open issues of the Distributed Antenna Systems (DAS). It explores the topic with various key challenges in diverse scenarios, including architecture, capacity, connectivity, scalability, medium access control, scheduling, dynamic channel assignment and cross-layer optimization.

Orthogonal Frequency Division Multiple Access Fundamentals and Applications - Tao Jiang 2010-04-21

Supported by the expert-level advice of pioneering researchers, Orthogonal Frequency Division Multiple Access Fundamentals and Applications provides a comprehensive and accessible introduction to the foundations and applications of one of the most promising access technologies for current and future wireless networks. It includes authoritative coverage of the history, fundamental principles, key techniques, and critical design issues of OFDM systems. Covering various techniques of effective resource management for OFDM/OFDMA-based wireless communication systems, this cutting-edge reference: Addresses open problems and supplies possible solutions Provides a concise overview of key techniques for adaptive modulation Investigates radio channel modeling in OFDMA-based wireless communication systems Details detection strategies of frequency-domain equalization for broadband communications Introduces a novel combination of OFDM and the orbital angular momentum of the electromagnetic field to improve performance Contains extensive treatment of adaptive MIMO beamforming suitable for multiuser access This valuable resource supplies readers with a macro-level understanding of OFDMA and its key issues, while providing a systematic manual for those whose work is directly related to practical OFDMA and other multiuser communication systems projects.

Network Design for IP Convergence - Yezid Donoso 2009-02-23

The emergence of quality-of-service (QoS) mechanisms continues to propel the development of real-time multimedia services such as VoIP

and videoconferencing. However, many challenges remain in achieving optimized standardization convergence. Network Design for IP Convergence is a comprehensive, global guide to recent advances in IP network implementation. Providing an introduction to basic LAN/WAN/MAN network design, the author covers the latest equipment and architecture, addressing, QoS policies, and integration of services, among other topics. The book explains how to integrate the different layers of reference models and various technological platforms to mirror the harmonization that occurs in the real world of carrier networks. It furnishes appropriate designs for traditional and critical services in the LAN and carrier networks (both MAN and WAN), and it clarifies how a specific layer or technology can cause those services to malfunction. This book lays a foundation for understanding with concepts and applicability of QoS parameters under the multilayer scheme, and a solid explanation of service infrastructure. It goes on to describe integration in both real time and "not real time," elaborating on how both processes can co-exist within the same IP network and concluding with the designs and configurations of service connections. Learn How to Overcome Obstacles to Improve Technology This sweeping analysis of the implementation of IP convergence and QoS mechanisms helps designers and operators get past key obstacles, such as integrating platform layers and technologies and implementing various associated QoS concepts, to improve technology and standards.

Converging NGN Wireline and Mobile 3G Networks with IMS - Rebecca Copeland 2008-12-22

Focusing on the future network architecture and its main principles, Converging NGN Wireline and Mobile 3G Networks with IMS provides a comprehensive view of the methods, functions, network elements, and the interfaces among them that enable the building of a service agnostic and access agnostic session control layer based on the IMS standards. After an introduction to IMS principles with market trends, technological innovations, migration issues, and global standards, the book describes converged session control and multimedia handling with ID management, service profiles, and event and applications triggering as well as admission procedures for different types of access networks. Subsequent chapters tackle the all-important aspects of IP charging mechanisms, service-based quality of service, security, border control, and legacy services, enabling a thorough appreciation of the full network requirements. Wherever possible, the author points out the convergence of standards and details different specifications and terminology for TISPAN and 3GPP. Delivering deep insight into the role of IMS in fixed line and mobile networks, this book explains the new technologies from concepts to detailed techniques to give a clear understanding of how the next generation of converged communication can be achieved with managed quality, security, and chargeability.

Wireless Communications - Keith Q. T. Zhang 2015-12-14

Understand the mechanics of wireless communication Wireless Communications: Principles, Theory and Methodology offers a detailed introduction to the technology. Comprehensive and well-rounded coverage includes signaling, transmission, and detection, including the mathematical and physics principles that underlie the technology's mechanics. Problems with modern wireless communication are discussed in the context of applied skills, and the various approaches to solving these issues offer students the opportunity to test their understanding in a practical manner. With in-depth explanations and a practical approach to complex material, this book provides students with a clear understanding of wireless communication technology.

The Internet of Things - Lu Yan 2008-03-05

Ubiquitous and pervasive technologies such as RFID and smart computing promise a world of networked and interconnected devices. Everything from tires to toothbrushes could soon be in communications range, heralding the dawn of an era in which today's Internet of People gives way to tomorrow's Internet of Things- where billions of obje

Antenna Theory and Design - Warren L. Stutzman 2012-05-22

Stutzman's 3rd edition of Antenna Theory and Design provides a more pedagogical approach with a greater emphasis on computational methods. New features include additional modern material to make the text more exciting and relevant to practicing engineers; new chapters on systems, low-profile elements and base station antennas; organizational changes to improve understanding; more details to selected important topics such as microstrip antennas and arrays; and expanded measurements topic.

Green Communications - Jinsong Wu 2016-04-19

Nowadays energy crisis and global warming problems are hanging over everyone's head, urging much research work on energy saving. In the ICT industry, which is becoming a major consumer of global energy triggered by the telecommunication network operators experiencing energy cost as a significant factor in profit calculations, researchers have start

Millimeter Wave Technology in Wireless PAN, LAN, and MAN - Shao-Qiu Xiao 2008-05-28

Driven by the demand for high-data-rate, millimeter wave technologies with broad bandwidth are being explored in high-speed wireless communications. These technologies include gigabit wireless personal area networks (WPAN), high-speed wireless local area networks (WLAN), and high-speed wireless metropolitan area networks (WMAN). As a result of this technological push, standard organizations are actively calling for specifications of millimeter wave applications in the above wireless systems. Providing the guidance needed to help you navigate through these new technologies, Millimeter Wave Technology in Wireless PAN, LAN, and MAN covers the fundamental concepts, recent advances, and potential that these millimeter wave technologies will offer with respect to circuits design, system architecture, protocol development, and standardization activities. The book presents essential challenges and solutions related to topics that include millimeter wave monolithic integrated circuit (MMIC), packaging technology of millimeter wave system and circuits, and millimeter wave channel models. With numerous figures, tables and references, this text allows speedy access to the fundamental problems, key challenges, open issues, future directions, and further readings on millimeter wave technologies in relation to WPAN, WLAN, and WMAN.

Cyber Physical Systems - Chi (Harold) Liu 2015-12-02

Cyber Physical Systems: Architectures, Protocols and Applications helps you understand the basic principles and key supporting standards of CPS. It analyzes different CPS applications from the bottom up, extracting the common characters that form a vertical structure. It presents mobile sensing platforms and their applications toward interrelated paradigms, highlighting and briefly discussing different types of mobile sensing platforms and the functionalities they offer. It then looks at the naming, addressing, and profile services of CPS and proposes a middleware component to meet the requirements of dynamic applications and sensors/actuators deployment/configurations across different platforms. The middle chapters of the book present a context-aware sensor search, selection, and ranking model which addresses the challenge of efficiently selecting a subset of relevant sensors out of a large set of sensors with similar functionality and capabilities. The authors consider various topics in the energy management of CPS and propose a novel energy-efficient framework. They also present the fundamental networking technologies of CPS and focus on machine-to-machine communications for CPS, specifically the open technologies such as IPv6-based solutions that can be integrated into IoT and enable wireless sensor communications. In the book's final chapters, the authors bring you up to date on mobile cloud computing (MCC) research activities that enhance the capabilities of resource-constrained smart devices in CPS sensory environments. They also present a few representative CPS applications, including connected healthcare, gaming in public transport crowds, and a series of MCC-enabled emerging CPS applications. You will find that these application fields fully demonstrate the great potential of applying CPS in public life.

Game Theory for Wireless Communications and Networking - Yan Zhang 2011-06-21

Used to explain complicated economic behavior for decades, game theory is quickly becoming a tool of choice for those serious about optimizing next generation wireless systems. Illustrating how game theory can effectively address a wide range of issues that until now remained unresolved, Game Theory for Wireless Communications and Networking provides a systematic introduction to the application of this powerful and dynamic tool. This comprehensive technical guide explains game theory basics, architectures, protocols, security, models, open research issues, and cutting-edge advances and applications. It describes how to employ game theory in infrastructure-based wireless networks and multihop networks to reduce power consumption—while improving system capacity, decreasing packet loss, and enhancing network resilience. Providing for complete cross-referencing, the text is organized into four parts: Fundamentals—introduces the fundamental issues and solutions in applying different games in different wireless domains, including wireless sensor networks, vehicular networks, and OFDM-based wireless systems Power Control Games—considers issues and solutions in power control games Economic Approaches—reviews applications of different economic approaches, including bargaining and

auction-based approaches Resource Management—explores how to use the game theoretic approach to address radio resource management issues The book explains how to apply the game theoretic model to address specific issues, including resource allocation, congestion control, attacks, routing, energy management, packet forwarding, and MAC. Facilitating quick and easy reference to related optimization and algorithm methodologies, it supplies you with the background and tools required to use game theory to drive the improvement and development of next generation wireless systems.

Security in Wireless Mesh Networks - Yan Zhang 2008-08-21

Wireless mesh networks (WMN) encompass a new area of technology set to play an important role in the next generation wireless mobile networks. WMN is characterized by dynamic self-organization, self-configuration, and self-healing to enable flexible integration, quick deployment, easy maintenance, low costs, high scalability, and reliable services.

IMS - Mark Wuthnow 2009-07-28

IP Multimedia Subsystem (IMS) technology, which merges the Internet with interactive telecommunications, represents the here and now for today’s packet-switched networks. Consequently, anyone working with or around these converging fields needs to possess a fundamental understanding of IMS and how this technology is poised to change the way new applications are designed and deployed. IMS: A New Model for Blending Applications goes beyond most references in this field. Rather than offer the usual explanation of the standard itself, the authors address how IMS-based services might be deployed in an operator’s network. Leveraging the inside knowledge gained from years of working at the forefront of IMS research, the authors delineate the application layers and the applications that can be implemented using an IMS network. For those unfamiliar with IMS, they provide an overview of its key components and the signaling standards used for the implementation of an end-to-end IMS service. Significant concepts are conveyed through real-life vignettes that describe how end users might actually use interactive IMS applications in the course of their day. This approach mimics the way an operator’s marketing organization might go about building a business case for IMS application deployment. While technical enough to meet the needs of engineers, this approach will greatly assist marketing, sales, and managerial professionals with gaining a basic understanding of IMS, as well as a sense of the numerous applications driving the field forward.

Security in an IPv6 Environment - Daniel Minoli 2016-04-19

Analyze Key Security Mechanisms and Approaches with this practical primer, the first book on the market to cover critical IPv6 security considerations. Dan Minoli, author of over 50 books on telecommunications and networks, and Jake Kouns, Chairman, CEO and CFO of the Open Security Foundation, discuss IPv6 security vulnerabilities, considerations, and mechanisms, and survey approaches for ensuring reliable and controlled IPv6 migration. The authors pool knowledge from industry resources, RFCs, and their own considerable security experience, discussing key IPv6 features, security issues, and potential exploitation of IPv6 protocol. They examine use of firewalls and encryption, and the fundamental topic of IPSec in IPv6 environments. Protect Networks from New and Growing Threats An increasing amount of mission-critical commercial and military operations are supported by distributed, mobile, always-connected, hybrid public-private networks, especially IPv6-based networks. The number of attackers or inimical agents continues to grow, and all computing environments must feature high-assurance security mechanisms. Even administrators in pure IPv4 environments require at least a rudimentary understanding of IPv6 security principles to safeguard traditional networks. This comprehensive book explains why security savvy approaches are indispensible and includes considerations for mixed IPv4 and IPv6 migration environments. More than an exhaustive treatment of IPv6 and security topics, this text is a point of departure for anyone adjusting to this technological transition and subtending security considerations. About the Authors Daniel Minoli, director of terrestrial systems engineering for SES Americom, has done extensive work with IPv6, including four books on the subject. Jake Kouns (CISSP, CISA, CISM), director of information security and network services for Markel Corporation, is also co-founder and president of the Open Security Foundation.

Novel Applications of the UWB Technologies - Boris Lembrikov 2011-08-01

Ultra wideband (UWB) communication systems are characterized by high data rates, low cost, multipath immunity, and low power transmission. In 2002, the Federal Communication Commission (FCC) legalized low power UWB emission between 3.1 GHz and 10.6 GHz for indoor communication devices stimulating rapid development of UWB technologies and applications. The proposed book Novel Applications of the UWB Technologies consists of 5 parts and 20 chapters concerning the general problems of UWB communication systems, and novel UWB applications in personal area networks (PANs), medicine, radars and localization systems. The book will be interesting for engineers and researchers occupied in the field of UWB technology.

LTE-Advanced - Sassan Ahmadi 2013-10-10

This book is an in-depth, systematic and structured technical reference on 3GPP's LTE-Advanced (Releases 10 and 11), covering theory, technology and implementation, written by an author who has been involved in the inception and development of these technologies for over 20 years. The book not only describes the operation of individual components, but also shows how they fit into the overall system and operate from a systems perspective. Uniquely, this book gives in-depth information on upper protocol layers, implementation and deployment issues, and services, making it suitable for engineers who are implementing the technology into future products and services. Reflecting the author's 25 plus years of experience in signal processing and communication system design, this book is ideal for professional engineers, researchers, and graduate students working in cellular communication systems, radio air-interface technologies, cellular communications protocols, advanced radio access technologies for beyond 4G systems, and broadband cellular standards. An end-to-end description of LTE/LTE-Advanced technologies using a top-down systems approach, providing an in-depth understanding of how the overall system works Detailed algorithmic descriptions of the individual components’ operation and inter-connection Strong emphasis on implementation and deployment scenarios, making this a very practical book An in-depth coverage of theoretical and practical aspects of LTE Releases 10 and 11 Clear and concise descriptions of the underlying principles and theoretical concepts to provide a better understanding of the operation of the system’s components Covers all essential system functionalities, features, and their inter-connections based on a clear protocol structure, including detailed signal flow graphs and block diagrams Includes methodologies and results related to link-level and system-level evaluations of LTE-Advanced Provides understanding and insight into the advanced underlying technologies in LTE-Advanced up to and including Release 11: multi-antenna signal processing, OFDM, carrier aggregation, coordinated multi-point transmission and reception, eICIC, multi-radio coexistence, E-MBMS, positioning methods, real-time and non-real-time wireless multimedia applications

Multimedia Content Encryption - Shiguo Lian 2008-09-17

The widespread use of image, audio, and video data makes media content protection increasingly necessary and urgent. For maximum safety, it is no longer sufficient to merely control access rights. In order to fully protect multimedia data from piracy or unauthorized use, it must be secured through encryption prior to its transmission or distribution. Multimedia Content Encryption: Techniques and Applications presents the latest research results in this dynamic field. The book begins with the history of multimedia encryption and then examines general performance requirements of encryption and fundamental encrypting techniques. It discusses common techniques of complete, partial, and compression-combined encryption; as well as the more specialized forms, including perception, scalable, and commutative encryption. In addition, the author reviews watermarking and joint fingerprint embedding and decryption. Later chapters discuss typical attacks on multimedia encryption, as well as the principles for designing secure algorithms and various applications. An exploration of open issues, up-and-coming topics, and areas for further research rounds out the coverage. Shiguo Lian is the author or co-author of more than fifty peer-reviewed journal and conference articles covering topics of network security and multimedia content protection, including cryptography, secure P2P content sharing, digital rights management (DRM), encryption, watermarking, digital fingerprinting, and authentication. By following the techniques outlined in this book, users will be better able to protect the integrity of their multimedia data and develop greater confidence that their data will not be misappropriated.

Distributed Antenna Systems - Yan Zhang 2007-06-27

The rapid growth in mobile communications has led to an increasing demand for wideband high data rate communications services. In recent years, the Distributed Antenna System (DAS) has emerged as a promising candidate beyond 3G and 4G mobile communications.

Distributed Antenna Systems: Open Architecture for Future Wireless Communications is a comprehensive technical guide that covers the fundamental concepts, recent advances and open issues of the DAS. The topic is explored with various key challenges in diverse scenarios, including architecture, capacity, connectivity, scalability, medium access control, scheduling, dynamic channel assignment and cross-layer optimization. The primary focus of this book is the introduction of concepts, effective protocols, system integration, performance analysis techniques, simulations and experiments, and more importantly, future research directions in the DAS. The first part of the book introduces DAS fundamentals, including channel models and theoretical issues, examining the capacity of the DAS with different structures. Concentrating on the MAC and protocols for the DAS, the second part of the book includes information on distributed signal processing, optimal resource allocation, cooperative MAC protocols, cross layer design, and distributed organization. The third part presents case studies and applications of the DAS, including experiment, RF engineering, and applications.

Enabling 6G Mobile Networks - Jonathan Rodriguez 2021-11-05

This book tackles the 6G odyssey, providing a concerted technology roadmap towards the 6G vision focused on the interoperability between the wireless and optical domain, including the benefits that are introduced through virtualization and software defined radio. The authors aim to be at the forefront of beyond 5G technologies by reflecting the integrated works of several major European collaborative projects (H2020-ETN-SECRET, 5GSTEPFWD, and SPOTLIGHT). The book is structured so as to provide insights towards the 6G horizon, reporting on the most recent developments on the international 6G research effort. The authors address a variety of telecom stakeholders, which includes practicing engineers on the field developing commercial solutions for 5G and beyond products; postgraduate researchers that require a basis on which to build their research by highlighting the current challenges on radio, optical and cloud-based networking for ultra-dense networks, including novel approaches; and project managers that could use the principles and applications for shaping new research proposals on this highly dynamic field.

Mobile WiMAX - Yan Zhang 2007-12-10

The Wireless Metropolitan Area Network (WirelessMAN) is a promising Broadband Wireless Access (BWA) technology that provides high-speed, high-bandwidth efficiency and high-capacity multimedia services for both residential and enterprise applications. Mobile WiMAX: Toward Broadband Wireless Metropolitan Area Networks examines the basic concepts, rec

Wireless Quality of Service - Maode Ma 2008-09-09

Focusing on an important and complicated topic in wireless network design, Wireless Quality of Service: Techniques, Standards, and Applications systematically addresses the quality-of-service (QoS) issues found in many types of popular wireless networks. In each chapter, the book presents numerous QoS challenges encountered in real-world applications and delineates ways to overcome these obstacles. Some of the challenges explored are performance impairments in WLAN hotspots, video streaming applications, and broadband wireless access. The techniques and mechanisms covered to tackle these problems include medium access and call admission control techniques, a parameter tuning algorithm, the QoS-enabling features of IEEE 802.11e, a Markov chain model, a probe-based distributed admission control mechanism, topology-transparent scheduling protocols, and a novel multicast congestion control mechanism. Addressing advanced topics and future directions, the expert contributors acknowledge the need for more research to solve several open issues. In the meantime, they offer innovative solutions to solve current QoS problems.

Game Theory for Wireless Communications and Networking - Yan Zhang 2011-06-23

Used to explain complicated economic behavior for decades, game theory is quickly becoming a tool of choice for those serious about optimizing next generation wireless systems. Illustrating how game theory can effectively address a wide range of issues that until now remained unresolved, Game Theory for Wireless Communications and Networking provid

WiMAX Network Planning and Optimization - Yan Zhang 2009-04-23

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.

Broadband Mobile Multimedia - Yan Zhang 2008-06-03

Multimedia service provisioning is believed to be one of the prerequisites to guarantee the success of next-generation wireless networks. Examining the role of multimedia in state-of-the-art wireless systems and networks, Broadband Mobile Multimedia: Techniques and Applications presents a collection of introductory concepts, fundamental tech

Fundamentals of LTE - Arunabha Ghosh 2010-09-09

The Definitive Guide to LTE Technology Long-Term Evolution (LTE) is the next step in the GSM evolutionary path beyond 3G technology, and it is strongly positioned to be the dominant global standard for 4G cellular networks. LTE also represents the first generation of cellular networks to be based on a flat IP architecture and is designed to seamlessly support a variety of different services, such as broadband data, voice, and multicast video. Its design incorporates many of the key innovations of digital communication, such as MIMO (multiple input multiple output) and OFDMA (orthogonal frequency division multiple access), that mandate new skills to plan, build, and deploy an LTE network. In Fundamentals of LTE , four leading experts from academia and industry explain the technical foundations of LTE in a tutorial style—providing a comprehensive overview of the standards. Following the same approach that made their recent Fundamentals of WiMAX successful, the authors offer a complete framework for understanding and evaluating LTE. Topics include Cellular wireless history and evolution: Technical advances, market drivers, and foundational networking and communications technologies Multicarrier modulation theory and practice: OFDM system design, peak-to-average power ratios, and SC-FDE solutions Frequency Domain Multiple Access: OFDMA downlinks, SC-FDMA uplinks, resource allocation, and LTE-specific implementation Multiple antenna techniques and tradeoffs: spatial diversity, interference cancellation, spatial multiplexing, and multiuser/networked MIMO LTE standard overview: air interface protocol, channel structure, and physical layers Downlink and uplink transport channel processing: channel encoding, modulation mapping, Hybrid ARQ, multi-antenna processing, and more Physical/MAC layer procedures and scheduling: channel-aware scheduling, closed/open-loop multi-antenna processing, and more Packet flow, radio resource, and mobility management: RLC, PDCP, RRM, and LTE radio access network mobility/handoff procedures

Security in RFID and Sensor Networks - Paris Kitsos 2016-04-19

In the past several years, there has been an increasing trend in the use of Radio Frequency Identification (RFID) and Wireless Sensor Networks (WSNs) as well as in the integration of both systems due to their complementary nature, flexible combination, and the demand for ubiquitous computing. As always, adequate security remains one of the open areas of concern before wide deployment of RFID and WSNs can be achieved. Security in RFID and Sensor Networks is the first book to offer a comprehensive discussion on the security challenges and solutions in RFID, WSNs, and integrated RFID and WSNs, providing an essential reference for those who regularly interface with these versatile technologies. Exposes Security Risks The book begins with a discussion of current security issues that threaten the effective use of RFID technology. The contributors examine multi-tag systems, relay attacks, authentication protocols, lightweight cryptography, and host of other topics related to RFID safety. The book then shifts the focus to WSNs, beginning with a background in sensor network security before moving on to survey intrusion detection, malicious node detection, jamming, and other issues of concern to WSNs and their myriad of applications. Offers Viable Solutions In each chapter, the contributors propose effective solutions to the plethora of security challenges that confront users, offering practical examples to aid in intuitive understanding. The last part of the book reviews the security problems inherent in integrated RFID & WSNs. The book ends with a glimpse of the future possibilities in these burgeoning technologies and provides recommendations for the proactive design of secure wireless embedded systems.