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Digital Radio System Design - Grigorios Kalivas 2009-10-23

A systematic explanation of the principles of radio systems, Digital Radio System Design offers a balanced treatment of both digital transceiver modems and RF front-end subsystems and circuits. It provides an in-depth examination of the complete transceiver chain which helps to connect the two topics in a unified system concept. Although the book tackles such diverse fields it treats them in sufficient depth to give the designer a solid foundation and an implementation perspective. Covering the key concepts and factors that characterise and impact radio transmission and reception, the book presents topics such as receiver design, noise and distortion. Information is provided about more advanced aspects of system design such as implementation losses due to non-idealities. Providing vivid examples, illustrations and detailed case-studies, this book is an ideal introduction to digital radio systems design. Offers a balanced treatment of digital modem and RF front-end design concepts for complete transceivers Presents a diverse range of topics related to digital radio design including advanced transmission and synchronization techniques with emphasis on implementation Provides guidance on imperfections and non-idealities in radio system design Includes detailed design case-studies incorporating measurement and simulation results to illustrate the theory in practice

Problem-Based Learning in Communication Systems Using MATLAB and Simulink - Kwonhue Choi 2016-02-29

Designed to help teach and understand communication systems using a classroom-tested, active learning approach. Discusses communication concepts and algorithms, which are explained using simulation projects, accompanied by MATLAB and Simulink Provides step-by-step code exercises and instructions to implement execution sequences Includes a companion website that has MATLAB and Simulink model samples and templates (password: matlab)

Handbook of Position Location - Reza Zekavat 2019-01-28

A comprehensive review of position location technology — from fundamental theory to advanced practical applications Positioning systems and location technologies have become significant components of modern life, used in a multitude of areas such as law enforcement and security, road safety and navigation, personnel and object tracking, and many more. Position location systems have greatly reduced societal vulnerabilities and enhanced the quality of life for billions of people around the globe — yet limited resources are available to researchers and students in this important field. The Handbook of Position Location: Theory, Practice, and Advances fills this gap, providing a comprehensive overview of both fundamental and cutting-edge techniques and introducing practical methods of advanced localization and positioning. Now in its second edition, this handbook offers broad and in-depth coverage of essential topics including Time of Arrival (TOA) and Direction of Arrival (DOA) based positioning, Received Signal Strength

(RSS) based positioning, network localization, and others. Topics such as GPS, autonomous vehicle applications, and visible light localization are examined, while major revisions to chapters such as body area network positioning and digital signal processing for GNSS receivers reflect current and emerging advances in the field. This new edition: Presents new and revised chapters on topics including localization error evaluation, Kalman filtering, positioning in inhomogeneous media, and Global Positioning (GPS) in harsh environments Offers MATLAB examples to demonstrate fundamental algorithms for positioning and provides online access to all MATLAB code Allows practicing engineers and graduate students to keep pace with contemporary research and new technologies Contains numerous application-based examples including the application of localization to drone navigation, capsule endoscopy localization, and satellite navigation and localization Reviews unique applications of position location systems, including GNSS and RFID-based localization systems The Handbook of Position Location: Theory, Practice, and Advances is valuable resource for practicing engineers and researchers seeking to keep pace with current developments in the field, graduate students in need of clear and accurate course material, and university instructors teaching the fundamentals of wireless localization.

Software-Defined Radio for Engineers - Alexander M. Wyglinski
2018-04-30

Based on the popular Artech House classic, Digital Communication Systems Engineering with Software-Defined Radio, this book provides a practical approach to quickly learning the software-defined radio (SDR) concepts needed for work in the field. This up-to-date volume guides readers on how to quickly prototype wireless designs using SDR for real-world testing and experimentation. This book explores advanced wireless communication techniques such as OFDM, LTE, WLA, and hardware targeting. Readers will gain an understanding of the core concepts behind wireless hardware, such as the radio frequency front-end, analog-to-digital and digital-to-analog converters, as well as various processing technologies. Moreover, this volume includes chapters on timing

estimation, matched filtering, frame synchronization message decoding, and source coding. The orthogonal frequency division multiplexing is explained and details about HDL code generation and deployment are provided. The book concludes with coverage of the WLAN toolbox with OFDM beacon reception and the LTE toolbox with downlink reception. Multiple case studies are provided throughout the book. Both MATLAB and Simulink source code are included to assist readers with their projects in the field.

Wireless LAN Radios - Arya Behzad 2007-12-14

Wireless LAN Radios presents a sophisticated overview of the subject, covering theory while also emphasizing the practical aspects of this promising technology. Coverage includes 802.11 flavors and system requirements; receiver and transmitter radio architectures; analog impairments and issues; key radio building blocks; calibration techniques; case studies; and a brief discussion of 802.11n. It offers a meaningful presentation of real-world issues facing designers, engineers, theorists, and researchers working in this industry.

Channel Equalization for Wireless Communications - Gregory E. Bottomley 2012-01-03

The most thorough, up-to-date reference on channelequalization—from basic concepts to complex modelingtechniques In today's instant-access society, a high premium is placed oninformation that can be stored and communicated effectively. As aresult, storage densities and communications rates are being pushedto capacity, causing information symbols to interfere with oneanother. To help unclog pathways for the clearer conveyance ofinformation, this book offers in-depth discussion of thesignificant contributions and future adaptability of channelequalization and a set of approaches for solving the problem ofintersymbol interference (ISI). Chapter explorations in ChannelEqualization include: Channel equalization topics presented with incremental learningmethodology—from the very fundamental concept to moreadvanced mathematical knowledge Coverage of technology used in second-, third- andfourth-generation cellular communication systems A set of homework problems that reinforce concepts discussed inthe book

Tutorial explanations of recent developments currently captured in IEEE technical journals Unlike existing digital communications books that devote cursory attention to channel equalization, this invaluable guide addresses a crucial need by focusing solely on the background, current state, and future direction of this increasingly important technology. A unique mix of basic concepts and complex frameworks for delivering digitized data make Channel Equalization a valuable reference for all practicing wireless communication engineers and students dealing with the pressing demands of the information age.

Wireless Technologies - Krzysztof Iniewski 2017-12-19

Advanced concepts for wireless technologies present a vision of technology that is embedded in our surroundings and practically invisible. From established radio techniques like GSM, 802.11 or Bluetooth to more emerging technologies, such as Ultra Wide Band and smart dust motes, a common denominator for future progress is the underlying integrated circuit technology. Wireless Technologies responds to the explosive growth of standard cellular radios and radically different wireless applications by presenting new architectural and circuit solutions engineers can use to solve modern design problems. This reference addresses state-of-the-art CMOS design in the context of emerging wireless applications, including 3G/4G cellular telephony, wireless sensor networks, and wireless medical application. Written by top international experts specializing in both the IC industry and academia, this carefully edited work uncovers new design opportunities in body area networks, medical implants, satellite communications, automobile radar detection, and wearable electronics. The book is divided into three sections: wireless system perspectives, chip architecture and implementation issues, and devices and technologies used to fabricate wireless integrated circuits. Contributors address key issues in the development of future silicon-based systems, such as scale of integration, ultra-low power dissipation, and the integration of heterogeneous circuit design style and processes onto one substrate. Wireless sensor network systems are now being applied in critical applications in commerce, healthcare, and security. This reference,

which contains 25 practical and scientifically rigorous articles, provides the knowledge communications engineers need to design innovative methodologies at the circuit and system level.

Information and Communication Theory - Stefan Host 2019-04-16

An important text that offers an in-depth guide to how information theory sets the boundaries for data communication In an accessible and practical style, Information and Communication Theory explores the topic of information theory and includes concrete tools that are appropriate for real-life communication systems. The text investigates the connection between theoretical and practical applications through a wide-variety of topics including an introduction to the basics of probability theory, information, (lossless) source coding, typical sequences as a central concept, channel coding, continuous random variables, Gaussian channels, discrete input continuous channels, and a brief look at rate distortion theory. The author explains the fundamental theory together with typical compression algorithms and how they are used in reality. He moves on to review source coding and how much a source can be compressed, and also explains algorithms such as the LZ family with applications to e.g. zip or png. In addition to exploring the channel coding theorem, the book includes illustrative examples of codes. This comprehensive text: Provides an adaptive version of Huffman coding that estimates source distribution Contains a series of problems that enhance an understanding of information presented in the text Covers a variety of topics including optimal source coding, channel coding, modulation and much more Includes appendices that explore probability distributions and the sampling theorem Written for graduate and undergraduate students studying information theory, as well as professional engineers, master's students, Information and Communication Theory offers an introduction to how information theory sets the boundaries for data communication.

Digital Communication for Practicing Engineers - Feng Ouyang 2019-08-28

Offers concise, practical knowledge on modern communication systems to help students transition smoothly into the workplace and beyond This

book presents the most relevant concepts and technologies of today's communication systems and presents them in a concise and intuitive manner. It covers advanced topics such as Orthogonal Frequency-Division Multiplexing (OFDM) and Multiple-Input Multiple-Output (MIMO) Technology, which are enabling technologies for modern communication systems such as WiFi (including the latest enhancements) and LTE-Advanced. Following a brief introduction to the field, *Digital Communication for Practicing Engineers* immerses readers in the theories and technologies that engineers deal with. It starts off with Shannon Theorem and Information Theory, before moving on to basic modules of a communication system, including modulation, statistical detection, channel coding, synchronization, and equalization. The next part of the book discusses advanced topics such as OFDM and MIMO, and introduces several emerging technologies in the context of 5G cellular system radio interface. The book closes by outlining several current research areas in digital communications. In addition, this text: Breaks down the subject into self-contained lectures, which can be read individually or as a whole Focuses on the pros and cons of widely used techniques, while providing references for detailed mathematical analysis Follows the current technology trends, including advanced topics such as OFDM and MIMO Touches on content this is not usually contained in textbooks such as cyclo-stationary symbol timing recovery, adaptive self-interference canceler, and Tomlinson-Harashima precoder Includes many illustrations, homework problems, and examples *Digital Communication for Practicing Engineers* is an ideal guide for graduate students and professionals in digital communication looking to understand, work with, and adapt to the current and future technology. *Nachrichtentechnik* - Martin Werner 2017-07-19

Das Buch *Nachrichtentechnik* richtet sich an Studierende mit Studienschwerpunkten oder auch nur einzelnen Modulen aus dem Bereich der Informationstechnik und Informatik. Es gibt Einblicke in wichtige Methoden und typische Anwendungen der Nachrichtentechnik. Dem einführenden Charakter entsprechend wird auf viele Beispiele und Abbildungen Wert gelegt. Wiederholungsfragen und kurze

Übungsaufgaben mit vollständigen Lösungen unterstützen den Lernerfolg. Für alle, die eine spätere nachrichtentechnische Vertiefung nicht ausschließen, liefert das Buch eine solide Grundlage.

Radio Frequency Integrated Circuit Design for Cognitive Radio Systems - Amr Fahim 2015-03-03

This book fills an information gap on cognitive radios, since the discussion focuses on the implementation issues that are unique to cognitive radios and how to solve them at both the architecture and circuit levels. This is the first book to describe in detail cognitive radio systems, as well as the circuit implementation and architectures required to implement such systems. Throughout the book, requirements and constraints imposed by cognitive radio systems are emphasized when discussing the circuit implementation details. This is a valuable reference for anybody with background in analog and radio frequency (RF) integrated circuit design, needing to learn more about integrated circuits requirements and implementation for cognitive radio systems.

Reference Data for Engineers - Mac E. Van Valkenburg 2001-09-26

This standard handbook for engineers covers the fundamentals, theory and applications of radio, electronics, computers, and communications equipment. It provides information on essential, need-to-know topics without heavy emphasis on complicated mathematics. It is a "must-have" for every engineer who requires electrical, electronics, and communications data. Featured in this updated version is coverage on intellectual property and patents, probability and design, antennas, power electronics, rectifiers, power supplies, and properties of materials. Useful information on units, constants and conversion factors, active filter design, antennas, integrated circuits, surface acoustic wave design, and digital signal processing is also included. This work also offers new knowledge in the fields of satellite technology, space communication, microwave science, telecommunication, global positioning systems, frequency data, and radar.

Wireless Phone Threat Assessment and New Wireless Technology Concerns for Aircraft Navigation Radios - Jay J. Ely 2003

Resource Allocation in Uplink OFDMA Wireless Systems - Elias Yaacoub 2012-03-13

Tackling problems from the least complicated to the most, *Resource Allocation in Uplink OFDMA Wireless Systems* provides readers with a comprehensive look at resource allocation and scheduling techniques (for both single and multi-cell deployments) in uplink OFDMA wireless networks—relying on convex optimization and game theory to thoroughly analyze performance. Inside, readers will find topics and discussions on: Formulating and solving the uplink ergodic sum-rate maximization problem Proposing suboptimal algorithms that achieve a close performance to the optimal case at a considerably reduced complexity and lead to fairness when the appropriate utility is used Investigating the performance and extensions of the proposed suboptimal algorithms in a distributed base station scenario Studying distributed resource allocation where users take part in the scheduling process, and considering scenarios with and without user collaboration Formulating the sum-rate maximization problem in a multi-cell scenario, and proposing efficient centralized and distributed algorithms for intercell interference mitigation Discussing the applicability of the proposed techniques to state-of-the-art wireless technologies, LTE and WiMAX, and proposing relevant extensions Along with schematics and figures featuring simulation results, *Resource Allocation in Uplink OFDMA Wireless Systems* is a valuable book for?wireless communications and cellular systems professionals and students.

Digital Filters - Fred Taylor 2011-09-20

The book is not an exposition on digital signal processing (DSP) but rather a treatise on digital filters. The material and coverage is comprehensive, presented in a consistent that first develops topics and subtopics in terms of their purpose, relationship to other core ideas, theoretical and conceptual framework, and finally instruction in the implementation of digital filter devices. Each major study is supported by Matlab-enabled activities and examples, with each Chapter culminating in a comprehensive design case study.

Switch/Router Architectures - Dr. James Aweya 2018-06-06

A practicing engineer's inclusive review of communication systems based on shared-bus and shared-memory switch/router architectures This book delves into the inner workings of router and switch design in a comprehensive manner that is accessible to a broad audience. It begins by describing the role of switch/routers in a network, then moves on to the functional composition of a switch/router. A comparison of centralized versus distributed design of the architecture is also presented. The author discusses use of bus versus shared-memory for communication within a design, and also covers Quality of Service (QoS) mechanisms and configuration tools. Written in a simple style and language to allow readers to easily understand and appreciate the material presented, *Switch/Router Architectures: Shared-Bus and Shared-Memory Based Systems* discusses the design of multilayer switches—starting with the basic concepts and on to the basic architectures. It describes the evolution of multilayer switch designs and highlights the major performance issues affecting each design. It addresses the need to build faster multilayer switches and examines the architectural constraints imposed by the various multilayer switch designs. The book also discusses design issues including performance, implementation complexity, and scalability to higher speeds. This resource also: Summarizes principles of operation and explores the most common installed routers Covers the design of example architectures (shared bus and memory based architectures), starting from early software based designs Provides case studies to enhance reader comprehension *Switch/Router Architectures: Shared-Bus and Shared-Memory Based Systems* is an excellent guide for advanced undergraduate and graduate level students, as well for engineers and researchers working in the field.

Trellis and Turbo Coding - Christian B. Schlegel 2015-08-12

This new edition has been extensively revised to reflect the progress in error control coding over the past few years. Over 60% of the material has been completely reworked, and 30% of the material is original. Convolutional, turbo, and low density parity-check (LDPC) coding and polar codes in a unified framework Advanced research-related

developments such as spatial coupling A focus on algorithmic and implementation aspects of error control coding

Frequency Stability - Venceslav F. Kroupa 2012-09-19

An in-depth look at the theory and applications of frequency stability An understanding of the acquisition of stable frequency is essential for anyone who needs to solve noise problems in wireless communications.

This book offers a thorough introduction to the principles and applications of frequency stability, arming practicing engineers with the tools they need to minimize noise in systems and devices that affect everyday communications for millions of people. With an emphasis on both practical and scientific points of view, *Frequency Stability: Introduction and Applications* examines frequency and time fluctuations

in resonators, as well as the stability of both standard and practical microwave oscillators. It explains noise properties of building circuit blocks, introducing time domain properties and how they relate to noise spectral densities. Including a special chapter devoted to the design and properties of phase locked loops—a crucial topic for frequency synthesizers—the book also: Examines in detail L/F noise, showing how power losses in the propagation material extend over a long period of time Covers sapphire, optoelectronics, MW, and ring oscillators with the discussion of noise in delay-line oscillators with lasers Offers an extended treatment of phase noise in semiconductors and amplifiers based on Van der Ziel investigations Emphasizes the modified Allan variance in the time domain, including exact computations Outlines the relationship between resonator frequency and output phase noises via the feedback theory Featuring numerous tables with actual data, *Frequency Stability: Introduction and Applications* is an invaluable guide for engineers wishing to rein in acoustic and electromagnetic interference in modern communications.

Electronic Media - Norman J. Medoff 2013-03-20

Electronic Media connects the traditional world of broadcasting with the contemporary universe of digital electronic media. It provides a synopsis of the beginnings of electronic media in broadcasting, and the subsequent advancements into digital media. Underlying the structure of

the book is a "See It Then, See It Now, See It Later approach that focuses on how past innovations lay the groundwork for changing trends in technology, providing the opportunity and demand for change in both broadcasting and digital media. FYI and Zoom-In boxes point to further information, tying together the immediate and long-ranging issues surrounding electronic media. Career Tracks feature the experiences of industry experts and share tips in how to approach this challenging industry. Check out the companion website at

<http://www.routledge.com/cw/medoff-9780240812564/> for materials for both students and instructors.

Reference Manual for Telecommunications Engineering, 2 Volume Set - Roger L. Freeman 2002

Contains a compendium of the most frequently used data in day-to-day telecommunications engineering work: tables, graphs, figures, formulae, nomograms, performance curves, standards highlights, constants and statistics. Designed for easy and rapid access. Comprehensive reference for designing, building, purchasing, using or maintaining all kinds of telecommunications systems. Central source of information on transmission, switching, traffic engineering, numbering, signaling, noise, modulation and forward error correction.

Radio and Television - Michael Teitelbaum 2004-12-30

Looks at the history of radio and television, their present-day use, and their evolution throughout the years.

The Digital Consumer Technology Handbook - Amit Dhir 2004-04-30

The consumer electronics market has never been as awash with new consumer products as it has over the last couple of years. The devices that have emerged on the scene have led to major changes in the way consumers listen to music, access the Internet, communicate, watch videos, play games, take photos, operate their automobiles—even live. Digital electronics has led to these leaps in product development, enabling easier exchange of media, cheaper and more reliable products, and convenient services. This handbook is a much-needed, comprehensive engineering guide to the dynamic world of today's digital consumer electronics. It provides complete details on key enabling

technologies, standards, delivery and reception systems, products, appliances and networking systems. Each chapter follows a logical progression from a general overview of each device, to market dynamics, to the core technologies and components that make up that particular product. The book thoroughly covers all of the key digital consumer product categories: digital TV, digital audio, mobile communications devices, gaming consoles, DVD players, PCs and peripherals, display devices, digital imaging devices, web terminals and pads, PDAs and other handhelds, screenphones/videophones, telematics devices, eBooks and readers, and many other current and future products. To receive a FREE daily newsletter on displays and consumer electronics, go to:

<http://www.displaydaily.com/> · Surveys crucial engineering information for every digital consumer product category, including cell phones, digital TVs, digital cameras, PDAs and many more—the only reference available to do so · Has extremely broad market appeal to embedded systems professionals, including engineers, programmers, engineering managers, marketing and sales personnel—1,000,000+ potential readers · Helps engineers and managers make the correct design decisions based on real-world data

Ultra-Low Power Wireless Technologies for Sensor Networks -

Brian Otis 2007-02-24

This book is written for academic and professional researchers designing communication systems for pervasive and low power applications. There is an introduction to wireless sensor networks, but the main emphasis of the book is on design techniques for low power, highly integrated transceivers. Instead of presenting a single design perspective, this book presents the design philosophies from three diverse research groups, providing three completely different strategies for achieving similar goals. By presenting diverse perspectives, this book prepares the reader for the countless design decisions they will be making in their own designs.

TRANSMISSION, SWITCHING and ROUTING in communication networks - Lucian IOAN 2021-07-14

The telecommunications network is a global system of equipment and

means that ensures the connections between the users of communication services, with the transmission and reception of the information involved. It is a set of communication nodes, in which processing procedures take place for the transmission and reception of information signals, switching connections and choosing routes between nodes to make connections between sources and destinations of communications, and a set of links between these nodes, made in a variety of technologies. This volume contains 5 chapters in which the different processes and types of systems within the telecommunications network are presented.

Wiley Encyclopedia of Electrical and Electronics Engineering - John G. Webster 2000

"Containing over 1, 400 articles, this is the most comprehensive encyclopedia of electrical engineering available. The articles were written and reviewed by an international group of engineers with academic or research affiliations. The entries are grouped into 64 broad categories such as solid-state circuits, fuzzy systems, and medical imaging. Mathematical explanations, tables, and graphics illustrate the articles. An extensive index by subject and keyword makes locating material easy. All of the articles have bibliographies. Larger public libraries and academic libraries with engineering majors will find this to be a useful source."-- "Outstanding reference sources 2000", American Libraries, May 2000. Comp. by the Reference Sources Committee, RUSA, ALA.

Visible Light Communications - Zhaocheng Wang 2017-11-29

A complete and comprehensive reference on modulation and signal processing for visible light communication This informative new book on state-of-the-art visible light communication (VLC) provides, for the first time, a systematic and advanced treatment of modulation and signal processing for VLC. Visible Light Communications: Modulation and Signal Processing offers a practical guide to designing VLC, linking academic research with commercial applications. In recent years, VLC has attracted attention from academia and industry since it has many advantages over the traditional radio frequency, including wide unregulated bandwidth, high security, and low cost. It is a promising

complementary technique in 5G and beyond wireless communications, especially in indoor applications. However, lighting constraints have not been fully considered in the open literature when considering VLC system design, and its importance has been underestimated. That's why this book—written by a team of experts with both academic research experience and industrial development experience in the field—is so welcome. To help readers understand the theory and design of VLC systems, the book: Details many modern techniques on both modulation and signal processing aspects Links academic research with commercial applications in visible light communications as well as other wireless communication systems Combines theoretical rigor with practical examples in presenting optical camera communication systems Visible Light Communications: Modulation and Signal Processing serves as a useful tool and reference book for visible light communication professionals, as well as wireless communication system professionals and project managers. It is also an important guide for undergraduates and graduates who want to conduct research in areas of wireless communications.

Millimeter Wave Communication Systems - Kao-Cheng Huang
2011-04-20

The aim of this book is to present the modern design and analysis principles of millimeter-wave communication system for wireless devices and to give postgraduates and system professionals the design insights and challenges when integrating millimeter wave personal communication system. Millimeter wave communication system are going to play key roles in modern gigabit wireless communication area as millimeter-wave industrial standards from IEEE, European Computer Manufacturing Association (ECMA) and Wireless High Definition (Wireless HD) Group, are on their way to the market. The book will review up-to-date research results and utilize numerous design and analysis for the whole system covering from Millimeter wave frontend to digital signal processing in order to address major topics in a high speed wireless system. This book emphasizes the importance and the requirements of high-gain antennas, low power transceiver, adaptive

equalizer/modulation, channeling coding and adaptive multi-user detection for gigabit wireless communications. In addition, the book will include the updated research literature and patents in the topics of transceivers, antennas, MIMO, channel capacity, coding, equalizer, Modem and multi-user detection. Finally the application of these antennas will be discussed in light of different forthcoming wireless standards at V-band and E-band.

Government Reports Announcements & Index - 1995

Energy and Bandwidth-Efficient Wireless Transmission - Wei Gao
2017-02-10

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.>

RF and Microwave Wireless Systems - Kai Chang 2004-04-05

A comprehensive introduction to the hardware, parameters, and architectures of RF/microwave wireless systems As the basis for some of the hottest technologies of the new millennium, radio frequency (RF) and microwave wireless systems rapidly propel us toward a future in which the transmission of voice, video, and data communications will be possible anywhere in the world through the use of simple, handheld devices. This book provides scientists and engineers with clear,

thorough, up-to-date explanations of all aspects of RF and microwave wireless systems, including general hardware components, system parameters, and architectures. Renowned authority Kai Chang covers both communication and radar/sensor systems and extends the discussion to other intriguing topics, from global positioning systems (GPS) to smart highways and smart automobiles. With an emphasis on basic operating principles, Dr. Chang reviews waves and transmission lines, examines modulation and demodulation and multiple access techniques, and helps bridge the gap between RF/microwave engineering and communication system design. Ample practical examples of components and system configurations and nearly 300 illustrations and photographs complete this timely and indispensable resource. An Instructor's Manual presenting detailed solutions to all the problems in the book is available from the Wiley editorial department.

Ground-Based Wireless Positioning - Kegen Yu 2009-06-24

Ground Based Wireless Positioning provides an in-depth treatment of non-GPS based wireless positioning techniques, with a balance between theory and engineering practice. The book presents the architecture, design and testing of a variety of wireless positioning systems based on the time-of-arrival, signal strength, and angle-of-arrival measurements. These techniques are essential for developing accurate wireless positioning systems which can operate reliably in both indoor and outdoor environments where the Global Positioning System (GPS) proves to be inadequate. The book covers a wide range of issues including radio propagation, parameter identification, statistical signal processing, optimization, and localization in large and multi-hop networks. A comprehensive study on the state-of-the-art techniques and methodologies in wireless positioning and tracking is provided, including anchor-based and anchor-free localisation in wireless sensor networks (WSN). The authors address real world issues such as multipath, non-line-of-sight (NLOS) propagation, accuracy limitations and measurement errors. Presenting the latest advances in the field, Ground Based Wireless Positioning is one of the first books to cover non-GPS based technologies for wireless positioning. It serves as an indispensable

reference for researchers and engineers specialising in the fields of localization and tracking, and wireless sensor networks. Provides a comprehensive treatment of methodologies and algorithms for positioning and tracking. Includes practical issues and case studies in designing real wireless positioning systems. Explains non-line-of-sight (NLOS) radio propagation and NLOS mitigation techniques. Balances solid theory with engineering practice of non-GPS wireless systems.

Intelligent Transportation Systems - Syed Faraz Hasan 2017-09-09

This new edition continues to focus on the nuts and bolts of wireless network access for devices on board vehicles. It has been updated to reflect on the most recent trends in the broad domain of Intelligent Transport Systems. It covers 802.11ac - a recent standard that is very useful in context where a large amount of information is to be sent in a limited time window. The new edition includes a thorough revision of the 'Vehicular Communication: Issues and Standards' chapter, with new citations and a new subsection on security. The new edition also cites numerous fresh research works to give readers an updated overview of the field. An update on the time delay incurred by applications that always run in the background (Skype, etc) is also covered. The 'Future Directions and Research Ideas' chapter is also largely re-written. An entirely new chapter on D2D communication keeping in view the vehicular context has been added in this edition. This volume will be a useful addition to the libraries for both the students of wireless communication and those studying applied probability.

Bandwidth Efficient Coding - John B. Anderson 2017-03-27

This book addresses coding, a new solution to the major challenge of communicating more bits of information in the same radio spectrum. Explores concepts and new transmission methods that have arisen in the last 15 years. Discusses the method of faster than Nyquist signaling. Provides self-education resources by including design parameters and short MATLAB routines. Bandwidth Efficient Coding takes a fresh look at classical information theory and introduces a different point of view for research and development engineers and graduate students in communication engineering and wireless communication.

Fundamentals of Convolutional Coding - Rolf Johannesson

2015-05-19

Fundamentals of Convolutional Coding, Second Edition, regarded as a bible of convolutional coding brings you a clear and comprehensive discussion of the basic principles of this field Two new chapters on low-density parity-check (LDPC) convolutional codes and iterative coding Viterbi, BCJR, BEAST, list, and sequential decoding of convolutional codes Distance properties of convolutional codes Includes a downloadable solutions manual

Wireless Sensor Networks - Jr., Edgar H. Callaway 2003-08-26

Because they provide practical machine-to-machine communication at a very low cost, the popularity of wireless sensor networks is expected to skyrocket in the next few years, duplicating the recent explosion of wireless LANs. *Wireless Sensor Networks: Architectures and Protocols* describes how to build these networks, from the layers of the

Wireless Communication Systems - Ke-Lin Du 2010-04-15

This practically-oriented, all-inclusive guide covers all the major enabling techniques for current and next-generation cellular communications and wireless networking systems. Technologies covered include CDMA, OFDM, UWB, turbo and LDPC coding, smart antennas, wireless ad hoc and sensor networks, MIMO, and cognitive radios, providing readers with everything they need to master wireless systems design in a single volume. Uniquely, a detailed introduction to the properties, design, and selection of RF subsystems and antennas is provided, giving readers a clear overview of the whole wireless system. It is also the first textbook to include a complete introduction to speech coders and video coders used in wireless systems. Richly illustrated with over 400 figures, and with a unique emphasis on practical and state-of-the-art techniques in system design, rather than on the mathematical foundations, this book is ideal for graduate students and researchers in wireless communications, as well as for wireless and telecom engineers.

Tech Terms - Jeff Rutenbeck 2012-11-12

An avalanche of acronyms, terms-of-art, buzz words, and short-hand phraseology confronts today's busy communications professionals. Now

in its 3rd edition, *Tech Terms* is an invaluable learning tool to help grasp key aspects of the television and video, PC hardware and software markets, multimedia authoring tools, and the exploding wireless Internet and mobile telecomputing worlds. With more than 1000 terms described in four sentences or less, *Tech Terms* is perfect the perfect desk reference.

Non-Gaussian Statistical Communication Theory - David Middleton
2012-05-11

The book is based on the observation that communication is the central operation of discovery in all the sciences. In its "active mode" we use it to "interrogate" the physical world, sending appropriate "signals" and receiving nature's "reply". In the "passive mode" we receive nature's signals directly. Since we never know a priori what particular return signal will be forthcoming, we must necessarily adopt a probabilistic model of communication. This has developed over the approximately seventy years since its beginning, into a Statistical Communication Theory (or SCT). Here it is the set or ensemble of possible results which is meaningful. From this ensemble we attempt to construct in the appropriate model format, based on our understanding of the observed physical data and on the associated statistical mechanism, analytically represented by suitable probability measures. Since its inception in the late '30's of the last century, and in particular subsequent to World War II, SCT has grown into a major field of study. As we have noted above, SCT is applicable to all branches of science. The latter itself is inherently and ultimately probabilistic at all levels. Moreover, in the natural world there is always a random background "noise" as well as an inherent a priori uncertainty in the presentation of deterministic observations, i.e. those which are specifically obtained, a posteriori. The purpose of the book is to introduce Non-Gaussian statistical communication theory and demonstrate how the theory improves probabilistic model. The book was originally planned to include 24 chapters as seen in the table of preface. Dr. Middleton completed first 10 chapters prior to his passing in 2008. Bibliography which represents remaining chapters are put together by the author's close colleagues; Drs. Vincent Poor, Leon Cohen and John

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Full-Duplex Wireless Communications Systems - Tho Le-Ngoc

2017-07-02

This book introduces the development of self-interference (SI)-cancellation techniques for full-duplex wireless communication systems. The authors rely on estimation theory and signal processing to develop SI-cancellation algorithms by generating an estimate of the received SI and subtracting it from the received signal. The authors also cover two new SI-cancellation methods using the new concept of active signal injection (ASI) for full-duplex MIMO-OFDM systems. The ASI approach

adds an appropriate cancelling signal to each transmitted signal such that the combined signals from transmit antennas attenuate the SI at the receive antennas. The authors illustrate that the SI-pre-cancelling signal does not affect the data-bearing signal. This book is for researchers and professionals working in wireless communications and engineers willing to understand the challenges of deploying full-duplex and practical solutions to implement a full-duplex system. Advanced-level students in electrical engineering and computer science studying wireless communications will also find this book useful as a secondary textbook.

Dictionary of Information Technology - Ramesh Bangia 2010