

Solution Manual Coding For MIMO Communication Systems

Includes a solution manual for problems. Provides MATLAB code for examples and solutions. Deals with robust systems in both theory and practice.

About the Book This Official Study Guide for the CWTS exam features complete coverage of the exam objectives, as well as hands-on exercises, Real World Scenarios, chapter review questions, a detailed glossary, objective map, and a pre-assessment test. The enhanced CD includes two bonus exams, 150 flashcards, Case Studies, and demo software. Exam coverage includes: Wi-Fi Technology, Standards, and Certifications Hardware and Software Radio Frequency (RF) Fundamentals Site Surveying and Installation Applications, Support, and Troubleshooting Security & Compliance About the CWTS Certification The Certified Wireless Technology Specialist (CWTS) is a vendor-neutral certification administered by CWNP. This brand new certification is the only entry-level vendor neutral wireless certification for IT Professionals, and was developed for IT support staff who work with wireless technologies. It is a springboard to the foundation-level Certified Wireless Network Administrator (CWNA), and more advanced Certified Wireless Security Professional (CWSP) and Certified Wireless Network Expert (CWNE) certifications. The exam is offered in over 100 countries through both Prometric and Pearson VUE testing centers. The cost of the exam is \$125. Note: CD-ROM materials for eBook purchases can be downloaded from CWNP ' s website at www.cwnp.com/sybex

Covers the fundamental principles of space-time coding for wireless communications over MIMO channels.

The absence of training signals from many kinds of transmission necessitates the widespread use of blind equalization and system identification. There have been many algorithms developed for these purposes, working with one- or two-dimensional signals and with single-input single-output or multiple-input multiple-output, real or complex systems. It is now time for a unified treatment of this subject, pointing out the common characteristics of these algorithms as well as learning from their different perspectives. "Blind Equalization and System Identification" provides such a unified treatment presenting theory, performance analysis, simulation, implementation and applications. This is a textbook for graduate courses in discrete-time random processes, statistical signal processing, and blind equalization and system identification. It contains material which will also interest researchers and engineers working in digital communications, source separation, speech processing, and other, similar applications.

Massive MIMO Detection Algorithm and VLSI Architecture

Scientific and Technical Aerospace Reports

Technical Abstract Bulletin

Theory and Practice

OFDM Baseband Receiver Design for Wireless Communications

Spread spectrum and CDMA are cutting-edge technologies widely used in operational radar, navigation and telecommunication systems and play a pivotal role in the development of the forthcoming generations of systems and networks. This

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comprehensive resource presents the spread spectrum concept as a product of the advancements in wireless IT, shows how and when the classical problems of signal transmission/processing stimulate the application of spread spectrum, and clarifies the advantages of spread spectrum philosophy. Detailed coverage is provided of the tools and instruments for designing spread spectrum and CDMA signals answering why a designer will prefer one solution over another. The approach adopted is wide-ranging, covering issues that apply to both data transmission and data collection systems such as telecommunications, radar, and navigation. Presents a theory-based analysis complemented by practical examples and real world case studies resulting in a self-sufficient treatment of the subject Contains detailed discussions of new trends in spread spectrum technology such as multi-user reception, multicarrier modulation, OFDM, MIMO and space-time coding Provides advice on designing discrete spread spectrum signals and signal sets for time-frequency measuring, synchronization and multi-user communications Features numerous Matlab-based problems and other exercises to encourage the reader to initiate independent investigations and simulations This valuable text provides timely guidance on the current status and future potential of spread spectrum and CDMA and is an invaluable resource for senior undergraduates and postgraduate students, lecturers and practising engineers and researchers involved in the deployment and development of spread spectrum and CDMA technology. Supported by a Companion website on which instructors and lecturers can find a solutions manual for the problems and Matlab programming, electronic versions of some of the figures and other useful resources such as a list of abbreviations.

Lists citations with abstracts for aerospace related reports obtained from world wide sources and announces documents that have recently been entered into the NASA Scientific and Technical Information Database.

Combining theoretical knowledge and practical applications, this advanced-level textbook covers the most important aspects of contemporary digital communication systems. Introduction to Digital Communication Systems focuses on the rules of functioning digital communication system blocks, starting with the performance limits set by the information theory. Drawing on information relating to turbo codes and LDPC codes, the text presents the basic methods of error correction and detection, followed by baseband transmission methods, and single- and multi-carrier digital modulations. The basic properties of several physical communication channels used in digital communication systems are explained, showing the transmission and reception methods on channels suffering from intersymbol interference. The text also describes the most recent developments in the transmission techniques specific to wireless communications used both in wireline and wireless systems. The case studies are a unique feature of this book, illustrating elements of the theory developed in each chapter. Introduction to Digital Communication Systems provides a concise approach to digital communications, with practical examples and problems to supplement the text. There is also a companion website featuring an instructors' solutions manual and presentation slides to aid understanding. Offers theoretical and practical knowledge in a self-contained textbook on digital communications Explains basic rules of recent achievements in digital communication systems such as MIMO, turbo codes, LDPC codes, OFDMA, SC-FDMA Provides problems at the end of each chapter with an instructors' solutions manual on the companion website Includes case studies and representative communication system examples such as DVB-S, GSM, UMTS, 3GPP-LTE

This book investigates in detail the antenna optimization method with binary coding and

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their applications to antenna design. It introduces the binary coding principle and optimization method, the method of binary coding corresponding to geometry structure. In further, the designs by binary coding optimization method of following items are introduced, including multi-frequency antenna based on binary coding, low profile RFID tag antenna on metal, wideband directional antenna with low profile, mmWave antenna and UWB antenna. Additionally, improved hexagon unit to antenna optimization by binary coding method is given, and a new method of antenna design based on optimization of linear motion trajectory is presented in the end. This book proposes an automatic optimization method of meshed antenna based on binary coding, reduce the artificial a priori influence and find the best antenna. The book is intended for undergraduate and graduate students who are interested in antenna technology, researchers investigating high performance antenna, and antenna design engineers working on new antenna and the applications.

Antenna Optimization and Design Based on Binary Coding

Advanced Optical Communication Systems and Networks

A Practical Perspective

Programming Heterogeneous MPSoCs

Batch Processing Algorithms, Performance and Applications

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

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

video coding, 3GPP Long Term Evolution, and WiMax; plus significant new sections on multi-user MIMO, 802.11n, and information theory. Companion website featuring: supplementary material on 'DECT', solutions manual and presentation slides for instructors, appendices, list of abbreviations and other useful resources.

Orthogonal frequency-division multiplexing (OFDM) access schemes are becoming more prevalent among cellular and wireless broadband systems, accelerating the need for smaller, more energy efficient receiver solutions. Up to now the majority of OFDM texts have dealt with signal processing aspects. To address the current gap in OFDM integrated circuit (IC) instruction, Chiueh and Tsai have produced this timely text on baseband design. OFDM Baseband Receiver Design for Wireless Communications covers the gamut of OFDM technology, from theories and algorithms to architectures and circuits. Chiueh and Tsai give a concise yet comprehensive look at digital communications fundamentals before explaining modulation and signal processing algorithms in OFDM receivers. Moreover, the authors give detailed treatment of hardware issues -- from design methodology to physical IC implementation. Closes the gap between OFDM theory and implementation Enables the reader to transfer communication receiver concepts into hardware design wireless receivers with acceptable implementation loss achieve low-power designs Contains numerous figures to illustrate techniques Features concrete design examples of MC-CDMA systems and cognitive radio applications Presents theoretical discussions that focus on concepts rather than mathematical derivation Provides a much-needed single source of material from numerous papers Based on course materials for a class in digital communication IC design, this book is ideal for advanced undergraduate or post-graduate students from either VLSI design or signal processing backgrounds. New and experienced engineers in industry working on algorithms or hardware for wireless communications devices will also find this book to be a key reference.

An accessible undergraduate textbook introducing key fundamental principles behind modern communication systems, supported by exercises, software problems and lab exercises. This book concerns digital communication. Specifically, we treat the transport of bit streams from one geographical location to another over various physical media, such as

wire pairs, coaxial cable, optical fiber, and radio waves. Further, we cover the multiplexing, multiple access, and synchronization issues relevant to constructing communication networks that simultaneously transport bit streams from many users. The material in this book is thus directly relevant to the design of a multitude of digital communication systems, including for example local and metropolitan area data networks, voice and video telephony systems, the integrated services digital network (ISDN), computer communication systems, voiceband data modems, and satellite communication systems. We extract the common principles underlying these and other applications and present them in a unified framework. This book is intended for designers and would-be designers of digital communication systems. To limit the scope to manageable proportions we have had to be selective in the topics covered and in the depth of coverage. In the case of advanced information, coding, and detection theory, for example, we have not tried to duplicate the in-depth coverage of many advanced textbooks, but rather have tried to cover those aspects directly relevant to the design of digital communication systems.

Blind Equalization and System Identification

Principles, Theory and Methodology

Fundamentals of Wireless Communication

Tool Flows to Close the Software Productivity Gap

Principles and Applications

This book introduces readers to a reconfigurable chip architecture for future wireless communication systems, such as 5G and beyond. The proposed architecture perfectly meets the demands for future mobile communication solutions to support different standards, algorithms, and antenna sizes, and to accommodate the evolution of standards and algorithms. It employs massive MIMO detection algorithms, which combine the advantages of low complexity and high parallelism, and can fully meet the requirements for detection accuracy. Further, the architecture is implemented using ASIC, which offers high energy efficiency, high area efficiency and low detection error. After introducing massive MIMO detection algorithms and circuit architectures, the book describes the ASIC implementation for verifying the massive MIMO detection. In turn, it provides detailed information on the proposed reconfigurable architecture: the data path and configuration path for massive MIMO detection algorithms, including the processing unit, interconnections, storage mechanism, configuration information format, and configuration method.

An accessible, comprehensive and coherent treatment of MIMO communication, drawing on ideas from information theory and signal processing.

In this complete introduction to the theory of finding derivatives of scalar-, vector- and matrix-valued functions with respect to complex matrix variables, Hjørungnes describes an

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essential set of mathematical tools for solving research problems where unknown parameters are contained in complex-valued matrices. The first book examining complex-valued matrix derivatives from an engineering perspective, it uses numerous practical examples from signal processing and communications to demonstrate how these tools can be used to analyze and optimize the performance of engineering systems. Covering unpatterned and certain patterned matrices, this self-contained and easy-to-follow reference deals with applications in a range of areas including wireless communications, control theory, adaptive filtering, resource management and digital signal processing. Over 80 end-of-chapter exercises are provided, with a complete solutions manual available online. This textbook takes a unified view of the fundamentals of wireless communication and explains cutting-edge concepts in a simple and intuitive way. An abundant supply of exercises make it ideal for graduate courses in electrical and computer engineering and it will also be of great interest to practising engineers.

Practical QFT Solutions

Introduction to Digital Communication Systems

Channel Coding Techniques for Wireless Communications

Digital Communication

Fundamentals of MIMO Wireless Communications

"Provides a solid understanding of the essential concepts of MIMO wireless communications"--

Wireless technology is a truly revolutionary paradigm shift, enabling multimedia communications between people and devices from any location. It also underpins exciting applications such as sensor networks, smart homes, telemedicine, and automated highways. This book provides a comprehensive introduction to the underlying theory, design techniques and analytical tools of wireless communications, focusing primarily on the core principles of wireless system design. The book begins with an overview of wireless systems and standards. The characteristics of the wireless channel are then described, including their fundamental capacity limits. Various modulation, coding, and signal processing schemes are then discussed in detail, including state-of-the-art adaptive modulation, multicarrier, spread spectrum, and multiple antenna techniques. The concluding chapters deal with multiuser communications, cellular system design, and ad-hoc network design. Design insights and tradeoffs are emphasized throughout the book. It contains many worked examples, over 200 figures, almost 300 homework exercises, over 700 references, and is an ideal textbook for students.

This book concerns digital communication. Specifically, we treat the transport of bit streams from one geographical location to another over various physical media, such as wire pairs, coaxial cable, optical fiber, and radio. We also treat multiple-access channels, where there are potentially multiple transmitters and receivers sharing a common medium. Ten years have elapsed since the Second Edition, and there have been remarkable advances in wireless communication, including cellular telephony and wireless local-area networks. This Third Edition expands treatment of communication theories underlying wireless, and especially advanced techniques involving multiple antennas, which turn the traditional single-input single-output channel into a multiple-input multiple-output (MIMO) channel. This is more than a trivial advance, as it stimulates many advanced techniques such as adaptive antennas and coding techniques that take advantage of space as well as time. This is reflected in the addition of two new chapters, one on the theory of MIMO channels, and the other on diversity techniques for mitigating fading. The field of error-control coding has similarly undergone tremendous changes in the past decade, brought on by the invention of turbo codes in 1993 and the subsequent rediscovery of Gallager's low-density parity-check codes. Our treatment of error-control coding has been rewritten to reflect the current state of the art. Other materials have been reorganized and reworked, and three chapters from the previous edition have been moved to the book's Web site to make room.

Coding for MIMO Communication Systems is a comprehensive introduction and overview to the various emerging coding techniques developed for MIMO communication systems. The basics of wireless communications and fundamental issues of MIMO channel capacity are introduced and the

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space-time block and trellis coding techniques are covered in detail. Other signaling schemes for MIMO channels are also considered, including spatial multiplexing, concatenated coding and iterative decoding for MIMO systems, and space-time coding for non-coherent MIMO channels. Practical issues including channel correlation, channel estimation and antenna selection are also explored, with problems at the end of each chapter to clarify many important topics. A comprehensive book on coding for MIMO techniques covering main strategies Theories and practical issues on MIMO communications are examined in detail Easy to follow and accessible for both beginners and experienced practitioners in the field References at the end of each chapter for further reading Can be used with ease as a research book, or a textbook on a graduate or advanced undergraduate level course This book is aimed at advanced undergraduate and postgraduate students, researchers and practitioners in industry, as well as individuals working for government, military, science and technology institutions who would like to learn more about coding for MIMO communication systems.

Principles of Communications

Wireless Communications

Introduction to MIMO Communications

Exam PW0-070

Exams PW0-071, CWS-100, CWT-100

This accessible guide contains everything you need to get up to speed on the theory and implementation of MIMO techniques.

A self-contained guide to OCDMA for Next-Generation FTTH systems, from the fundamentals to cutting-edge research and practical perspectives.

Massive MIMO Networks is the first book on the subject to cover the spatial channel correlation and consider rigorous signal processing design essential for the complete understanding by the students, practicing engineers and researchers working on modern day communication systems.

This book provides embedded software developers with techniques for programming heterogeneous Multi-Processor Systems-on-Chip (MPSoCs), capable of executing multiple applications simultaneously. It describes a set of algorithms and methodologies to narrow the software productivity gap, as well as an in-depth description of the underlying problems and challenges of today's programming practices. The authors present four different tool flows: A parallelism extraction flow for applications written using the C programming language, a mapping and scheduling flow for parallel applications, a special mapping flow for baseband applications in the context of Software Defined Radio (SDR) and a final flow for analyzing multiple applications at design time. The tool flows are evaluated on Virtual Platforms (VPs), which mimic different characteristics of state-of-the-art heterogeneous MPSoCs.

Introduction to Communication Systems

Network Information Theory

Paper

Stable Adaptive Control and Estimation for Nonlinear Systems

Space-Time Coding

This book is for designers and would-be designers of digital communication systems. The general approach of this book is to extract the common principles underlying a range of media and applications and present them in a unified framework.

Digital Communication is relevant to the design of a variety

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of systems, including voice and video digital cellular telephone, digital CATV distribution, wireless LANs, digital subscriber loop, metallic Ethernet, voiceband data modems, and satellite communication systems. New in this Third Edition: New material on recent advances in wireless communications, error-control coding, and multi-user communications has been added. As a result, two new chapters have been added, one on the theory of MIMO channels, and the other on diversity techniques for mitigating fading. Error-control coding has been rewritten to reflect the current state of the art. Chapters 6 through 9 from the Second Edition have been reorganized and streamlined to highlight pulse-amplitude modulation, becoming the new Chapters 5 through 7. Readability is increased by relegating many of the more detailed derivations to appendices and exercise solutions, both of which are included in the book.

Exercises, problems, and solutions have been revised and expanded. Three chapters from the previous edition have been moved to the book's Web site to make room for new material.

This book is ideal as a first-year graduate textbook, and is essential to many industry professionals. The book is

attractive to both audiences through the inclusion of many practical examples and a practical flavor in the choice of

topics. Digital Communication has a Web site at :

<http://www.ece.gatech.edu/~barry/digital/>, where the reader may find additional information from the Second Edition, other supplementary materials, useful links, a problem solutions manual, and errata.

This book thoroughly covers the fundamentals of the QFT robust control, as well as practical control solutions, for unstable, time-delay, non-minimum phase or distributed parameter systems, plants with large model uncertainty, high-performance specifications, nonlinear components, multi-input multi-output characteristics or asymmetric topologies.

The reader will discover practical applications through a collection of fifty successful, real world case studies and projects, in which the author has been involved during the last twenty-five years, including commercial wind turbines, wastewater treatment plants, power systems, satellites with flexible appendages, spacecraft, large radio telescopes, and industrial manufacturing systems. Furthermore, the book presents problems and projects with the popular QFT Control Toolbox (QFTCT) for MATLAB, which was developed by the

author.

Providing straightforward practical guidance, this highly accessible resource presents today's most advanced topics on photonic communications. You get the latest details on 5th generation photonic systems that can be readily applied to your projects in the field. Moreover, the book provides valuable, time-saving tools for network simulation and modeling. You find in-depth coverage of optical signal transmission systems and networks. The book includes coverage of a wide range of critical methods and techniques, such as MIMO (multiple-input and multiple-output), OFDM (Orthogonal frequency-division multiplexing), and advanced modulation and coding. You find detailed discussions on the basic principles and applications of high-speed digital signal processing. Other key topics include advanced concepts on coded-modulation, turbo equalization, polarization-time coding, spatial-domain-based modulation and coding, and multidimensional signaling. This comprehensive book includes a complete set of problems at the end of each chapter to help you master the material. Written by pioneers of the concept, this is the first complete guide to the physical and engineering principles of Massive MIMO. Assuming only a basic background in communications and statistical signal processing, it will guide readers through key topics in multi-cell systems such as propagation modeling, multiplexing and de-multiplexing, channel estimation, power control, and performance evaluation. The authors' unique capacity-bounding approach will enable readers to carry out effective system performance analyses and develop advanced Massive MIMO techniques and algorithms. Numerous case studies, as well as problem sets and solutions accompanying the book online, will help readers put knowledge into practice and acquire the skill set needed to design and analyze complex wireless communication systems. Whether you are a graduate student, researcher, or industry professional working in the field of wireless communications, this will be an indispensable guide for years to come.

MIMO-OFDM Wireless Communications with MATLAB
Space-Time Block Coding for Wireless Communications
Foundations of MIMO Communication
Robust Control Engineering
Neural and Fuzzy Approximator Techniques

Towards location aware mobile ad hoc sensors A Systems Engineering Approach to Wireless Information Networks The Second Edition of this internationally respected textbook brings readers fully up to date with the myriad of developments in wireless communications. When first published in 1995, wireless communications was synonymous with cellular telephones. Now wireless information networks are the most important technology in all branches of telecommunications. Readers can learn about the latest applications in such areas as ad hoc sensor networks, home networking, and wireless positioning. Wireless Information Networks takes a systems engineering approach: technical topics are presented in the context of how they fit into the ongoing development of new systems and services, as well as the recent developments in national and international spectrum allocations and standards. The authors have organized the myriad of current and emerging wireless technologies into logical categories:

- * Introduction to Wireless Networks presents an up-to-the-moment discussion of the evolution of the cellular industry from analog cellular technology to 2G, 3G, and 4G, as well as the emergence of WLAN and WPAN as broadband ad hoc networks*
- * Characteristics of Radio Propagation includes new coverage of channel modeling for space-time, MIMO, and UWB communications and wireless geolocation networks*
- * Modem Design offers new descriptions of space-time coding, MIMO antenna systems, UWB communications, and multi-user detection and interference cancellation techniques used in CDMA networks*
- * Network Access and System Aspects incorporates new chapters on UWB systems and RF geolocations, with a thorough revision of wireless access techniques and wireless systems and standards*

Exercises that focus on real-world problems are provided at the end of each chapter. The mix of assignments, which includes computer projects and questionnaires in addition to traditional problem sets, helps readers focus on key issues and develop the skills they need to solve actual engineering problems. Extensive references are provided for those readers who would like to explore particular topics in greater depth. With its emphasis on knowledge-building to solve problems, this is an excellent graduate-level textbook. Like the previous edition, this latest edition will also be a standard reference for the telecommunications industry.

A comprehensive introduction to the fundamentals of design and applications of wireless communications Wireless Communications Systems starts by explaining the fundamentals needed to understand, design, and deploy wireless communications systems. The author, a noted expert on the topic, explores the basic concepts of signals, modulation, antennas, and propagation with a MATLAB emphasis. The book emphasizes practical applications and concepts needed by wireless engineers. The author introduces applications of wireless communications and includes information on satellite communications, radio frequency identification, and offers an overview with practical insights into the topic of multiple input multiple output (MIMO). The book also explains the security and health effects of wireless systems concerns on users and designers. Designed as a practical resource, the text contains a range of examples and pictures that illustrate many different aspects of wireless technology. The book relies on MATLAB for most of the computations and graphics. This important text: Reviews the basic information needed to understand and design wireless communications systems Covers topics such as MIMO systems, adaptive antennas, direction finding, wireless security, internet of things (IoT), radio frequency identification (RFID), and software

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defined radio (SDR) Provides examples with a MATLAB emphasis to aid comprehension Includes an online solutions manual and video lectures on selected topics Written for students of engineering and physics and practicing engineers and scientists, Wireless Communications Systems covers the fundamentals of wireless engineering in a clear and concise manner and contains many illustrative examples.

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.

Space-time coding is a technique that promises greatly improved performance in wireless networks by using multiple antennas at the transmitter and receiver. Space-Time Block Coding for Wireless Communications is an introduction to the theory of this technology. The authors develop the topic using a unified framework and cover a variety of topics ranging from information theory to performance analysis and state-of-the-art space-time coding methods for both flat and frequency-selective fading multiple-antenna channels. The authors concentrate on key principles rather than specific practical applications, and present the material in a concise and accessible manner. Their treatment reviews the fundamental aspects of multiple-input, multiple output communication theory, and guides the reader through a number of topics at the forefront of current research and development. The book includes homework exercises and is aimed at graduate students and researchers working on wireless communications, as well as practitioners in the wireless industry.

Optical Code Division Multiple Access

Wireless Communications Systems

An Introduction

Wireless Information Networks

CWTS: Certified Wireless Technology Specialist Official Study Guide

MIMO-OFDM is a key technology for next-generation cellular communications (3GPP-LTE, Mobile WiMAX, IMT-Advanced) as well as wireless LAN (IEEE 802.11a, IEEE 802.11n), wireless PAN (MB-OFDM), and broadcasting (DAB, DVB, DMB). In MIMO-OFDM Wireless Communications with MATLAB®, the authors provide a comprehensive introduction to the theory and practice of wireless channel modeling, OFDM, and MIMO, using MATLAB® programs to simulate the various techniques on MIMO-OFDM systems. One of the only books in the area dedicated to explaining simulation aspects Covers implementation to help cement the key concepts Uses materials that have been classroom-tested in numerous universities Provides the analytic solutions and practical examples with downloadable MATLAB® codes Simulation examples based on actual industry and research projects Presentation slides with key equations and figures for instructor use MIMO-OFDM Wireless Communications with MATLAB® is a key text for graduate students in wireless

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communications. Professionals and technicians in wireless communication fields, graduate students in signal processing, as well as senior undergraduates majoring in wireless communications will find this book a practical introduction to the MIMO-OFDM techniques. Instructor materials and MATLAB® code examples available for download at www.wiley.com/go/chomimo

This comprehensive treatment of network information theory and its applications provides the first unified coverage of both classical and recent results. With an approach that balances the introduction of new models and new coding techniques, readers are guided through Shannon's point-to-point information theory, single-hop networks, multihop networks, and extensions to distributed computing, secrecy, wireless communication, and networking. Elementary mathematical tools and techniques are used throughout, requiring only basic knowledge of probability, whilst unified proofs of coding theorems are based on a few simple lemmas, making the text accessible to newcomers. Key topics covered include successive cancellation and superposition coding, MIMO wireless communication, network coding, and cooperative relaying. Also covered are feedback and interactive communication, capacity approximations and scaling laws, and asynchronous and random access channels. This book is ideal for use in the classroom, for self-study, and as a reference for researchers and engineers in industry and academia.

This book discusses the latest channel coding techniques, MIMO systems, and 5G channel coding evolution. It provides a comprehensive overview of channel coding, covering modern techniques such as turbo codes, low-density parity-check (LDPC) codes, space-time coding, polar codes, LT codes, and Raptor codes as well as the traditional codes such as cyclic codes, BCH, RS codes, and convolutional codes. It also explores MIMO communications, which is an effective method for high-speed or high-reliability wireless communications. It also examines the evolution of 5G channel coding techniques. Each of the 13 chapters features numerous illustrative examples for easy understanding of the coding techniques, and MATLAB-based programs are integrated in the text to enhance readers' grasp of the underlying theories. Further, PC-based MATLAB m-files for illustrative examples are included for students and researchers involved in advanced and current concepts of coding theory.

Keeping up to date with the most current technologies in the field is essential for all effective electrical and computer engineers. The updated 7th edition of Principles of Communications presents the reader with more in-chapter examples, providing for a more supportive framework for learning. Readers are exposed to digital data transmission techniques earlier in the book, so they can appreciate the characteristics of digital communication systems prior to learning about probability and stochastic processes. They will also find expanded forward error correction code examples, and additional MATLAB problems.

Spread Spectrum and CDMA

With Applications in Signal Processing and Communications

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Complex-Valued Matrix Derivatives

Coding for MIMO Communication Systems

Fundamentals of Massive MIMO

The must-have guide to the CWTS exam, updated for 2017 CWTS Certified Wireless Technology Specialist Study Guide is your number-one resource for comprehensive exam preparation. Updated to study in 2017 and beyond, this book takes a multi-modal approach to ensure your complete confidence and ability for the big day: full coverage of all CWTS exam objectives reinforces your conceptual knowledge, hands-on exercises help hone your practical skills, and the Sybex online learning environment provides flashcards, a glossary, and review questions to help you test your understanding along the way. An objective map and pre-assessment test allow for more efficient preparation by showing you what you already know and what you need to review—and the companion website's complete practice exams give you a "dry run" so you can pinpoint weak areas while there's still time to improve. If you're serious about earning your CWTS certification, this book is your ideal companion for complete and thorough preparation. Learn critical concepts and apply essential skills in areas like hardware and software, radio frequency fundamentals, surveying and installation, support, troubleshooting, security, and more. This guide gives you everything you need to approach the exam with confidence. Master 100 percent of the CWTS exam objectives Use effective planning tools to get the most out of your study time Practice your skills with hands-on exercises and real-world scenarios Access online study aids that let you review any time, any place The CWTS certification gets your foot in the door of a growing industry, and is a stepping stone to the industry standard CWNP certification. The exam will test your abilities in all fundamental areas of Wi-Fi technology, so it's important that your study plan be complete and up-to-date. CWTS Certified Wireless Technology Specialist Study Guide is your ideal solution for comprehensive preparation.

Massive MIMO Networks

Spectral, Energy, and Hardware Efficiency

CWTS, CWS, and CWT Complete Study Guide