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# Digital Communication

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A Philosopher Looks at Digital Communication  
Introduction to Wireless Digital Communication  
The Routledge Handbook of Language and Digital Communication  
Introduction to Digital Communication Systems  
Digital Communication Systems Engineering with Software-Defined Radio  
Digital Communication Performance Parameters for Proposed Federal Standard 1003  
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*A Philosopher Looks at Digital Communication* John Wiley & Sons  
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 cyclostationary 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.

**Introduction to Wireless Digital Communication** Cambridge University Press

The Routledge Handbook of Language and Digital Communication

provides a comprehensive, state of the art overview of language-focused research on digital communication, taking stock and registering the latest trends that set the agenda for future developments in this thriving and fast moving field. The contributors are all leading figures or established authorities in their areas, covering a wide range of topics and concerns in the following seven sections: • Methods and Perspectives; • Language Resources, Genres, and Discourses; • Digital Literacies; • Digital Communication in Public; • Digital Selves and Online-Offline Lives; • Communities, Networks, Relationships; • New debates and Further directions. This volume showcases critical syntheses of the established literature on key topics and issues and, at the same time, reflects upon and engages with cutting edge research and new directions for study (as emerging within social media). A wide range of languages are represented, from Japanese, Greek, German and Scandinavian languages, to computer-mediated Arabic, Chinese and African languages. The Routledge Handbook of Language and Digital Communication will be an essential resource for advanced undergraduates, postgraduates and researchers within English language and linguistics, applied linguistics and media and communication studies.

**The Routledge Handbook of Language and Digital Communication** Cambridge University Press

There have been considerable developments in information and communication technology. This has led to an increase in the number of applications available, as well as an increase in their variability. As such, it has become important to understand and master problems related to establishing radio links, the layout and flow of source data, the power available from antennas, the selectivity and sensitivity of receivers, etc. This book discusses digital modulations, their extensions and environment, as well as a few basic mathematical tools. An understanding of degree level mathematics or its equivalent is a prerequisite to reading this book. *Digital Communication Techniques* is aimed at licensed professionals, engineers, Masters students and researchers whose field is in related areas such as hardware, phase-locked loops, voltage-controlled oscillators or phase noise.

[Introduction to Digital Communication Systems](#) Academic Press

This book offers students, scientists, and engineers an extensive introduction to the theoretical fundamentals of digital

communications, covering single-input single-output (SISO), multiple-input multiple-output (MIMO), and time-variant systems. Further, the main content is supplemented by a wealth of representative examples and computer simulations. The book is divided into three parts, the first of which addresses the principles of wire-line and wireless digital transmission over SISO links. Digital modulation, intersymbol interference, and various detection methods are discussed; models for realistic time-variant, wireless channels are introduced; and the equivalent time-variant baseband system model is derived. This book covers two new topics such as blockwise signal transmission and multicarrier modulation with orthogonal frequency-division multiplexing (OFDM) systems. Since not all readers may be familiar with this topic, Part II is devoted to the theory of linear time-variant systems. The generalized convolution is derived, and readers are introduced to impulse response, the delay spread function, and system functions in the frequency domain. In addition, randomly changing systems are discussed. Several new examples and graphs have been added to this book. In turn, Part III deals with MIMO systems. It describes MIMO channel models with and without spatial correlation, including the Kronecker model. Both linear and nonlinear MIMO receivers are investigated. The question of how many bits per channel use can be transmitted is answered, and maximizing channel capacity is addressed. Principles of space-time coding are outlined in order to improve transmission quality and increase data rates. In closing, the book describes multi-user MIMO schemes, which reduce interference when multiple users in the same area transmit their signals in the same time slots and frequency bands. *Digital Communication Systems Engineering with Software-Defined Radio* John Wiley & Sons

Written by two distinguished experts in the field of digital communications, this classic text remains a vital resource three decades after its initial publication. Its treatment is geared toward advanced students of communications theory and to designers of channels, links, terminals, modems, or networks used to transmit and receive digital messages. The three-part approach begins with the fundamentals of digital communication and block coding, including an analysis of block code ensemble performance. The second part introduces convolutional coding, exploring ensemble performance and sequential decoding. The final section addresses

source coding and rate distortion theory, examining fundamental concepts for memoryless sources as well as precepts related to memory, Gaussian sources, and universal coding. Appendixes of useful information appear throughout the text, and each chapter concludes with a set of problems, the solutions to which are available online.

*Digital Communication Performance Parameters for Proposed Federal Standard 1003* Springer Science & Business Media

The renowned communications theorist Robert Gallager brings his lucid writing style to the study of the fundamental system aspects of digital communication for a one-semester course for graduate students. With the clarity and insight that have characterized his teaching and earlier textbooks, he develops a simple framework and then combines this with careful proofs to help the reader understand modern systems and simplified models in an intuitive yet precise way. A strong narrative and links between theory and practice reinforce this concise, practical presentation. The book begins with data compression for arbitrary sources. Gallager then describes how to modulate the resulting binary data for transmission over wires, cables, optical fibers, and wireless channels. Analysis and intuitive interpretations are developed for channel noise models, followed by coverage of the principles of detection, coding, and decoding. The various concepts covered are brought together in a description of wireless communication, using CDMA as a case study.

**Principles of Digital Communication and Coding** Routledge

This is a concise presentation of the concepts underlying the design of digital communication systems, without the detail that can overwhelm students. Many examples, from the basic to the cutting-edge, show how the theory is used in the design of modern systems and the relevance of this theory will motivate students. The theory is supported by practical algorithms so that the student can perform computations and simulations. Leading edge topics in coding and wireless communication make this an ideal text for students taking just one course on the subject. Fundamentals of Digital Communications has coverage of turbo and LDPC codes in sufficient detail and clarity to enable hands-on implementation and performance evaluation, as well as 'just enough' information theory to enable computation of performance benchmarks to compare them against. Other unique features include space-time communication and geometric insights into

noncoherent communication and equalization.

*Digital Communication* John Wiley & Sons

The director of communication is an impassioned profession that discovers which strategies are the best and the most intelligent. There are few manuals, and there are some that offer general and sparsely updated information about the change that new technologies imply. We find the literature isolated that can be directly useful. However, we will say that there is no single recipe for DirCom or communication consultants. Each one will offer different models according to the variables or factors that seem to them to be able to rectify the direction of a company according to his or her personal mood.

New Age International

Revised to reflect all the current trends in the digital communications field, this all-inclusive guide delivers an outstanding introduction to the analysis and design of digital communication systems. Includes expert coverage of new topics: TurboCodes, Turboequalization, Antenna Arrays, Digital Cellular Systems, and Iterative Detection. Convenient, sequential organization begins with a look at the history and classification of channel models and builds from there.

*Digital Communication Performance Parameters for Proposed Federal Standard 1003* Digital Communications

A comprehensive and detailed treatment of the program SIMULINK® that focuses on SIMULINK® for simulations in Digital and Wireless Communications Modeling of Digital Communication Systems Using SIMULINK® introduces the reader to SIMULINK®, an extension of the widely-used MATLAB modeling tool, and the use of SIMULINK® in modeling and simulating digital communication systems, including wireless communication systems. Readers will learn to model a wide selection of digital communications techniques and evaluate their performance for many important channel conditions. Modeling of Digital Communication Systems Using SIMULINK® is organized in two parts. The first addresses Simulink® models of digital communications systems using various modulation, coding, channel conditions and receiver processing techniques. The second part provides a collection of examples, including speech coding, interference cancellation, spread spectrum, adaptive signal processing, Kalman filtering and modulation and coding techniques currently implemented in mobile wireless systems.

Covers case examples, progressing from basic to complex Provides applications for mobile communications, satellite communications, and fixed wireless systems that reveal the power of SIMULINK modeling Includes access to useable SIMULINK® simulations online All models in the text have been updated to R2018a; only problem sets require updating to the latest release by the user Covering both the use of SIMULINK® in digital communications and the complex aspects of wireless communication systems, Modeling of Digital Communication Systems Using SIMULINK® is a great resource for both practicing engineers and students with MATLAB experience.

*Digital Communication Management* Elsevier

A comprehensive and detailed treatment of the program SIMULINK® that focuses on SIMULINK® for simulations in Digital and Wireless Communications Modeling of Digital Communication Systems Using SIMULINK® introduces the reader to SIMULINK®, an extension of the widely-used MATLAB modeling tool, and the use of SIMULINK® in modeling and simulating digital communication systems, including wireless communication systems. Readers will learn to model a wide selection of digital communications techniques and evaluate their performance for many important channel conditions. Modeling of Digital Communication Systems Using SIMULINK® is organized in two parts. The first addresses Simulink® models of digital communications systems using various modulation, coding, channel conditions and receiver processing techniques. The second part provides a collection of examples, including speech coding, interference cancellation, spread spectrum, adaptive signal processing, Kalman filtering and modulation and coding techniques currently implemented in mobile wireless systems. Covers case examples, progressing from basic to complex Provides applications for mobile communications, satellite communications, and fixed wireless systems that reveal the power of SIMULINK modeling Includes access to useable SIMULINK® simulations online All models in the text have been updated to R2018a; only problem sets require updating to the latest release by the user Covering both the use of SIMULINK® in digital communications and the complex aspects of wireless communication systems, Modeling of Digital Communication Systems Using SIMULINK® is a great resource for both practicing engineers and students with MATLAB experience.

**New Research, Approaches and Methodologies** John Wiley & Sons Incorporated

With The Global Trends In Communication And Data Networks, Leading To Idn And Isdn, There Is A Special Need For A Comprehensive Book On Thestate-Of-The-Art In Digital Communication. In The Absence Of Such A Reference Book, Most Of Our Senior Professionals And Academics Find It Very Hard To Keep Themselves Abreast Of The Recent Developments Leading To Information Revolution And Digital Revolution. The Present Volume Is An Attempt To Fill This Gap.The Book Consists Of Ten Chapters, And Discusses Such Topics As, Principles Of Digital Modulation, Source Encoding, Data Transmission Through Cables And Optical Fibres, Digital Radio Including Satellite Communication, Data Networks And Digital Switching, Information Theory And Coding, Survival Of Communication Including Spread Spectrum Techniques, And Future Trends Including Isdn. Conceptually The Chapters Attempt To Discuss From A System Point Of View, A Total Digital Communication Network, E.G., Idn, And The Total Range Of Signal Processing Techniques Has Been Presented In Subsequent Chapters, Thus Maintaining A Continuity Of Thought From End-To-End.The Book Is, Therefore, Addressed To Both Professionals In Telecommunications And Senior Students In This Area.

*Principles of Digital Communication* River Publishers

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.

Digital Communications Cambridge University Press

Do you need to know how to develop more efficient digital communication systems? Based on the author's experience of over thirty years in industrial design, this practical guide provides detailed coverage of synchronization subsystems and their relationship with other system components. Readers will gain a comprehensive understanding of the techniques needed for the design, performance analysis and implementation of synchronization functions for a range of different modern communication technologies. Specific topics covered include frequency-looked loops in wireless receivers, optimal OFDM timing phase determination and implementation, and interpolation filter design and analysis in digital resamplers. Numerous implementation examples help readers to develop the necessary practical skills, and slides summarizing key concepts accompany the book online. This is an invaluable guide and essential reference for both practicing engineers and graduate students working in digital communications.

*A Foundation in Digital Communication* John Wiley & Sons

Routledge Introductions to Applied Linguistics is a series of introductory level textbooks covering the core topics in Applied Linguistics, primarily designed for those beginning postgraduate studies or taking an introductory MA course, as well as advanced undergraduates. Titles in the series are also ideal for language professionals returning to academic study. The books take an innovative 'practice to theory' approach, with a 'back-to-front' structure. This leads the reader from real-world problems and issues, through a discussion of intervention and how to engage with these concerns, before finally relating these practical issues to theoretical foundations. Exploring Digital Communication aims to discuss real-world issues pertaining to digital communication, and to explore how linguistic research addresses these challenges. The text is divided into three sections (Problems and practices; Interventions; and Theory), each of which is further divided into two subsections which reflect linguistic issues relating to digital communication. The author seeks to demystify any

perceived divide between online and offline communication, arguing that issues raised in relation to digital communication throw light on language use and practices in general, and thus linguistic interventions in this area have implications not only for users of digital communication but for linguists' general understanding of language and society. Including relevant research examples, tasks and a glossary, this textbook is an invaluable resource for postgraduate and upper undergraduate students taking New Media or Communication Studies modules within Applied Linguistics and English Language courses.

Introduction to Digital Communications John Wiley & Sons

Do you need to know how to develop more efficient digital communication systems? Based on the author's experience of over thirty years in industrial design, this practical guide provides detailed coverage of synchronization subsystems and their relationship with other system components. Readers will gain a comprehensive understanding of the techniques needed for the design, performance analysis and implementation of synchronization functions for a range of different modern communication technologies. Specific topics covered include frequency-looked loops in wireless receivers, optimal OFDM timing phase determination and implementation, and interpolation filter design and analysis in digital resamplers. Numerous implementation examples help readers to develop the necessary practical skills, and slides summarizing key concepts accompany the book online. This is an invaluable guide and essential reference for both practicing engineers and graduate students working in digital communications.

Digital Communications Springer Science & Business Media

Digital communications plays an important role in numerical transmission systems due to the proliferation of radio beams, satellite, optic fibers, radar, and mobile wireless systems. This book provides the fundamentals and basic design techniques of digital communications with an emphasis on the systems of telecommunication and the principles of baseband transmission. With a focus on examples and exercises, this book will prepare you with a practical and real-life treatment of communication problems. A complete analysis of the structures used for emission or reception technology A set of approaches for implementation in current and future circuit design A summary of the design steps with examples and exercises for each circuit

Digital Communication over Fading Channels Prentice Hall

This textbook is for undergraduate students of electronics and telecommunication engineering and allied disciplines, as well as diploma and science courses. This book offers an introductory survey of the conceptual development of the subject. It provides simple and lucid presentations of the essential principles, formulae and definitions of Digital Communications.

**Digital Communications** McGraw-Hill College

Introduction to Digital Communications explores the basic principles in the analysis and design of digital communication systems, including design objectives, constraints and trade-offs. After portraying the big picture and laying the background material, this book lucidly progresses to a comprehensive and detailed discussion of all critical elements and key functions in digital communications. The first undergraduate-level textbook

exclusively on digital communications, with a complete coverage of source and channel coding, modulation, and synchronization. Discusses major aspects of communication networks and multiuser communications. Provides insightful descriptions and intuitive explanations of all complex concepts. Focuses on practical applications and illustrative examples. A companion Web site includes solutions to end-of-chapter problems and computer exercises, lecture slides, and figures and tables from the text.

**Modeling of Digital Communication Systems Using SIMULINK** Cambridge University Press

Providing the underlying principles of digital communication and the design techniques of real-world systems, this textbook prepares senior undergraduate and graduate students for the engineering practices required in industry. Covering the core

concepts, including modulation, demodulation, equalization, and channel coding, it provides step-by-step mathematical derivations to aid understanding of background material. In addition to describing the basic theory, the principles of system and subsystem design are introduced, enabling students to visualize the intricate connections between subsystems and understand how each aspect of the design supports the overall goal of achieving reliable communications. Throughout the book, theories are linked to practical applications with over 250 real-world examples, whilst 370 varied homework problems in three levels of difficulty enhance and extend the text material. With this textbook, students can understand how digital communication systems operate in the real world, learn how to design subsystems, and evaluate end-to-end performance with ease and confidence.

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