

Communication Engineering And Coding Theory Wbut

During the sixteenth century, Cardano wrote a fascinating work called *The Book on Games of Chance*. In it he gives an extremely candid recounting and personal appraisal of some aspects of his most remarkable life. * One feature of the book is striking for the modern scientist or mathematician accustomed to current publishing practices. It is brought out during Cardano's discussion of his investigations of certain special questions of applied probability, namely, the question of how to win at gambling. His technique is simplicity itself: in fine reportorial style he reveals his proposed strategy for a particular gambling game, giving marvelous motivating arguments which induce the reader to feel warm, heartfelt support for the projected strategy. Then with all the drama that only a ringside seat observation can bring, Cardano announces that he tried the strategy at the casino and ended up borrowing his taxi fare. Undaunted by failure, he analyzes his now fire-tested strategy in detail, mounts new and persuasive arguments, and, ablaze with fresh optimism and replenished resources, charges off to the fray determined to now succeed where he had so often failed before. Along the way, Cardano developed a number of valuable insights about games of chance and produced useful research results which presumably would be of interest in our present-day society. However, he could never publish the results today in journals with all the flair, the mistakes, the failures and minor successes which he exhibits in his book.

Providing a complete description of modern tactical military communications and networks technology, this book systematically compares tactical military communications techniques with their commercial equivalents, pointing out similarities and differences. In particular it examines each layer of the protocol stack and shows how specific tactical and security requirements result in changes from the commercial approach. The author systematically leads readers through this complex topic, firstly providing background on the architectural approach upon which the analysis will be based, and then going into detail on tactical wireless communications and networking technologies and techniques. Structured progressively: for readers needing an overall view; for those looking at the communications aspects (lower layers of the protocol stack); and for users interested in the networking aspects (higher layers of the protocol stack) Presents approaches to alleviate the challenges faced by the engineers in the field today Furnished throughout with illustrations and case studies to clarify the notional and architectural approaches Includes a list of problems for each chapter to emphasize the important aspects of the topics covered Covers the current state of tactical networking as well as the future long term evolution of tactical wireless communications and networking in the next 50 years Written at an advanced level with scope as a reference tool for engineers and scientists as well as a graduate text for advanced courses

The *Encyclopedia of Communication Theory* provides students and researchers with a comprehensive two-volume overview of contemporary communication theory. Reference librarians report that students frequently approach them seeking a source that will provide them with a quick overview of a particular theory or theorist - just enough to help them grasp the general concept or theory and its relation to the discipline as a whole. Communication scholars and teachers also occasionally need a quick reference for theories. Edited by the co-authors of the best-selling textbook on communication theory and drawing on the expertise of an advisory board of 10 international scholars and nearly 200 contributors from 10 countries, this work finally provides such a resource. More than 300 entries address topics related not only to paradigms, traditions, and schools, but also metatheory, methodology, inquiry, and applications and contexts. Entries cover several orientations, including psycho-cognitive; social-interactional; cybernetic and systems; cultural; critical; feminist; philosophical; rhetorical; semiotic, linguistic, and discursive; and non-Western. Concepts relate to interpersonal communication, groups and organizations, and media and mass communication. In sum, this encyclopedia offers the student of communication a sense of the history, development, and current status of the discipline, with an emphasis on the theories that comprise it.

Graduate-level study for engineering students presents elements of modern probability theory, information theory, coding theory, more. Emphasis on sample space, random variables, capacity, etc. Many reference tables and extensive bibliography. 1961 edition.

An accessible undergraduate textbook introducing key fundamental principles behind modern communication systems, supported by exercises, software problems and lab exercises.

Highlighted with individual contributions from eminent specialists, these multiauthored volumes combine authority, inspiration and state-of-the-art knowledge. Both informative and inspiring they are designed to appeal to scientists and interested laypeople alike. Volume 2 complements and extends the scope of the first, with the biological viewpoint being stressed. Following an introductory chapter on design as understood in biology, the various aspects of the biological information revolution are addressed. Areas discussed include molecular structure, the genome, development, and neural networks. A section on information theory provides a link with engineering, and the scope is also broadened to include the implications of motion in nature and engineering.

Software Engineer's Reference Book provides the fundamental principles and general approaches, contemporary information, and applications for developing the software of computer systems. The book is comprised of three main parts, an epilogue, and a comprehensive index. The first part covers the theory of computer science and relevant mathematics. Topics under this section include logic, set theory, Turing machines, theory of computation, and computational complexity. Part II is a discussion of software development methods, techniques and technology primarily based around a conventional view of the software life cycle. Topics discussed include methods such as CORE, SSADM, and SREM, and formal methods including VDM and Z. Attention is also given to other technical activities in the life cycle including testing and prototyping. The final part describes the techniques and standards which are relevant in producing particular classes of application. The text will be of great use to software engineers, software project managers, and students of computer science.

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.

This book is intended to attract the attention of practitioners and researchers in academia and industry interested in challenging paradigms of coding theory and computer vision. The chapters in this comprehensive reference explore the latest developments, methods, approaches, and applications of coding theory in a wide variety of fields and endeavours. This book is compiled with a view to provide researchers, academicians, and readers with an in-depth discussion of the latest advances in this field. It consists of twelve chapters from academicians, practitioners, and researchers from different disciplines of life. All the chapters are authored by various researchers around the world covering the field of coding theory and image and video processing.

This book mainly focusses on researchers who can do quality research in the area of coding theory and image and video processing and related fields. Each chapter is an independent research study, which will motivate young researchers to think about. These twelve chapters are presented in three sections and will be an eye-opener for all who systematic researchers in these fields.

Delay-Doppler Communications: Principles and Applications covers the fundamental concepts and underlying principles of delay-Doppler communications. Readers familiar with OFDM will be able to quickly understand the key differences in delay-Doppler domain waveforms that can overcome some of the challenges of high-mobility communications. For the broader readership with a basic knowledge of wireless communications principles, the book provides sufficient background to be self-contained. In each chapter, the book provides a general overview of future search directions and discusses a range of applications of delay-Doppler domain signal processing. With this book, the reader will be able to recognize the challenges of high mobility channels affected by both multipath and multiple Doppler shifts in physical layer waveform design and performance, understand the limitations of current multicarrier techniques such as OFDM in high mobility channels, recognize the mathematical and physical relations between the different domains for representing channels and waveforms: time-frequency, time-delay, delay-Doppler, and understand the operation of the key blocks of a delay-Doppler modulator and demodulator, both analytically and by hands-on MATLAB examples. Presents the first book to cover Delay Doppler Communications Written by two of the leading authorities in the field Includes a wide range of applications

The International Encyclopedia of Communication Theory and Philosophy is the definitive single-source reference work on the subject, with state-of-the-art and in-depth scholarly reflection on key issues from leading international experts. It is available both online and in print. A state-of-the-art and in-depth scholarly reflection on the key issues raised by communication, covering the history, systematics, and practical potential of communication theory Articles by leading experts offer an unprecedented level of accuracy and balance Provides comprehensive, clear entries which are both cross-national and cross-disciplinary in nature The Encyclopedia presents a truly international perspective with authors and positions representing not just Europe and North America, but also Latin America and Asia Published both online and in print Part of The Wiley Blackwell-ICA International Encyclopedias of Communication series, published in conjunction with the International Communication Association

Error detecting codes are very popular for error control in practical systems for two reasons. First, such codes can be used to provide any desired reliability of communication over any noisy channel. Second, implementation is usually much simpler than for a system using error correcting codes. To consider a particular code for use in such a system, it is very important to be able to calculate or estimate the probability of undetected error. For the binary symmetric channel, the probability of undetected error can be expressed in terms of the weight distribution of the code. The first part of the book gives a detailed description of all known methods to calculate or estimate the probability of undetected error, for the binary symmetric channel in particular, but a number of other channel models are also considered. The second part of the book describes a number of protocols for feedback communication systems (ARQ systems), with methods for optimal choice of error detecting codes for the protocols. Results have been collected from many sources and given a unified presentation. The results are presented in a form which make them accessible to the telecommunication system designer as well as the coding theory researcher and student. The system designer may find the presentation of CRC codes as well as the system performance analysis techniques particularly useful. The coding theorist will find a detailed account of a part of coding theory which is usually just mentioned in most text books and which contains a number of interesting and useful results as well as many challenging open problems. Audience: Essential for students, practitioners and researchers working in communications and coding theory. An excellent text for an advanced course on the subject.

Since the main principles of applied information theory were formulated in the 1940s, the science has been greatly developed and today its areas of application range from traditional communication engineering problems to humanities and the arts. Interdisciplinary in scope, this book is a single-source reference for all applications areas, including engineering, radar, computing technology, television, the life sciences (including biology, physiology and psychology) and arts criticism. A review of the current state of information theory is provided; the author also presents several generalized and original results, and gives a treatment of various problems. This is a reference for both specialists and non-professionals in information theory and general cybernetics.

Modern error control coding methods based on turbo coding have essentially solved the problem of reliable data communications over noisy channels. Contemporary Coding Techniques and Applications for Mobile Communications provides a clear, comprehensive, and practical grounding on the subject matter, examining the fundamentals, theory, and application of contemporary coding techniques and the applications for mobile communications. Written from the perspective that error control coding techniques will facilitate future digital data links, the book provides in-depth coverage on topics such as modulation techniques, multiplexing, channel models, MIMO systems, fundamental coding techniques, trellis coding modulation, turbo codes, and multilevel turbo codes. The first part of the text presents fundamental information on modulation, multiplexing, channel models, and traditional coding methods. The second part explains advanced coding techniques, provides simulation results, and compares them with related methods. It also provides new coding algorithms and new research areas such as image transmission with step-by-step guidelines.

This easy-to-read guide provides a concise introduction to the engineering background of modern communication systems, from mobile phones to data compression and storage. Background mathematics and specific engineering techniques are kept to a minimum so that only a basic knowledge of high-school mathematics is needed to understand the material covered. The authors begin with many practical applications in coding, including the repetition code, the Hamming code and the Huffman code. They then explain the corresponding information theory, from entropy and mutual information to channel capacity and the information transmission theorem. Finally, they provide insights into the connections between coding theory and other fields. Many worked examples are given throughout the book, using practical applications to illustrate theoretical definitions. Exercises are also included, enabling readers to double-check what they have learned and gain glimpses into more advanced topics, making this perfect for anyone who needs a quick introduction to the subject.

With the increase in human population worldwide, the need for efficient global connectivity is immense. Telecommunication plays a crucial role in providing solution to this problem. The widespread applications of telecommunication in the fields of microwave, radars, satellites, mobiles, wireless networks, defence, bio-medical systems, imaging sensors, etc., render immense service to mankind. The

book, especially designed for the students of WBSCTE, is the second in Communication Engineering series and written keeping in mind the necessary sequence for exploring the subject. Starting from the basics of multiplexing and its techniques, RF modulation for baseband signals, the discussion in the book extends to advanced topics like microwave amplifiers and antennas and wave propagation. KEY FEATURES • Strict adherence to the WBSCTE syllabus • Questions appeared in the examination of past 10 years provided along with their solution • Large number of MCQs provided at the end of the book Reference Data for Engineers is the most respected, reliable, and indispensable reference tool for technical professionals around the globe. Written by professionals for professionals, this book is a complete reference for engineers, covering a broad range of topics. It is the combined effort of 96 engineers, scientists, educators, and other recognized specialists in the fields of electronics, radio, computer, and communications technology. By providing an abundance of information on essential, need-to-know topics without heavy emphasis on complicated mathematics, Reference Data for Engineers is an absolute "must-have" for every engineer who requires comprehensive electrical, electronics, and communications data at his or her fingertips. Featured in the Ninth Edition is updated 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. The Ninth Edition also offers new knowledge in the fields of satellite technology, space communication, microwave science, telecommunication, global positioning systems, frequency data, and radar. * Widely acclaimed as the most practical reference ever published for a wide range of electronics and computer professionals, from technicians through post-graduate engineers. * Provides a great way to learn or review the basics of various technologies, with a minimum of tables, equations, and other heavy math.

Using a simple yet rigorous approach, Algebraic and Stochastic Coding Theory makes the subject of coding theory easy to understand for readers with a thorough knowledge of digital arithmetic, Boolean and modern algebra, and probability theory. It explains the underlying principles of coding theory and offers a clear, detailed description of each code. More advanced readers will appreciate its coverage of recent developments in coding theory and stochastic processes. After a brief review of coding history and Boolean algebra, the book introduces linear codes, including Hamming and Golay codes. It then examines codes based on the Galois field theory as well as their application in BCH and especially the Reed–Solomon codes that have been used for error correction of data transmissions in space missions. The major outlook in coding theory seems to be geared toward stochastic processes, and this book takes a bold step in this direction. As research focuses on error correction and recovery of erasures, the book discusses belief propagation and distributions. It examines the low-density parity-check and erasure codes that have opened up new approaches to improve wide-area network data transmission. It also describes modern codes, such as the Luby transform and Raptor codes, that are enabling new directions in high-speed transmission of very large data to multiple users. This robust, self-contained text fully explains coding problems, illustrating them with more than 200 examples. Combining theory and computational techniques, it will appeal not only to students but also to industry professionals, researchers, and academics in areas such as coding theory and signal and image processing.

Principles of Digital Communication and Coding Courier Corporation

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. Um den Übertragungsaufwand bei der Nachrichtenübermittlung zu minimieren, werden die einzelnen Nachrichten durch eine Quellencodierung von überflüssiger Redundanz befreit (Daten-Kompression). Mit der Kanalcodierung wird den Nachrichten wieder redundante Information angefügt, mit dem Ziel, durch Kanalstörungen verursachte Übertragungsfehler zu erkennen oder zu korrigieren (Daten-Sicherung). In diesem einführenden Buch werden die üblicherweise getrennt dargestellte probabilistische Informationstheorie und die algebraische Codierungstheorie in einheitlicher Weise behandelt. Die Ergebnisse werden durchgehend streng bewiesen und die mathematischen Hilfsmittel werden an den Stellen bereitgestellt, an denen sie benötigt werden. An Vorkenntnissen wird beim Leser daher nur eine solide mathematische Schulbildung vorausgesetzt. Das Buch ist aus Vorlesungen, Proseminaren und Seminaren an der Technischen Universität München und der Universität Modena entstanden und richtet sich vornehmlich an Studenten der Informatik, aber auch der an den mathematischen Grundlagen seines Gebietes interessierte Nachrichtentechniker wird es mit Gewinn in die Hand nehmen können. Mathematikern bieten die Kapitel über algebraische Codierungstheorie eine Anwendung der Theorie der endlichen Körper. Die vorliegende 2. Auflage stellt eine völlige Neubearbeitung der 1. Auflage dar. Insbesondere wurden die Kapitel über algebraische Codierungstheorie grundlegend überarbeitet, ergänzt und dem heutigen Stand angepaßt.

Orthogonal Frequency Division Multiplexing (OFDM) has been the waveform of choice for most wireless communications systems in the past 25 years. This book addresses "the what comes next?" question by presenting the recently proposed waveform known as 'Orthogonal Time-Frequency-Space' (OTFS), which offers a better alternative for high mobility environments. The OTFS waveform is based on the idea that the mobile wireless channels can be effectively modelled in the delay-Doppler domain. The information is encoded in such domain, in order to exploit all the multipaths even they are affected by Doppler shifts present in high mobility environments. Delay-Doppler Communications: Principles and Applications covers the fundamental concepts and the underlying principles of delay-Doppler communications. Readers familiar with OFDM will be able to quickly understand the key differences in delay-Doppler domain waveforms that can overcome some of the challenges of high-mobility communications. For the broader readership with a basic knowledge of wireless communications principles, the book provides sufficient background to be self-contained. In each chapter, the book provides a general overview of future search directions and discusses a range of applications of delay-Doppler domain signal processing. With this book the reader will be able to: Recognize the challenges of high mobility channels affected by both multipath and multiple Doppler shifts in physical layer waveform design and performance Understand the limitations of current multicarrier techniques such as OFDM in high mobility channels Recognize the mathematical and physical relations between the different domains for representing channels and waveforms: time-frequency, time-delay, delay-Doppler Understand the operation of the key blocks of a delay-Doppler modulator and demodulator both analytically and by hands-on Matlab examples Master the special features and advantages of OTFS with regard to channel estimation, MIMO, multiuser MIMO, and performance Realize the importance of delay-Doppler communications for current and future applications, e.g., 5G and beyond First book on Delay Doppler Communications Written by two of the leading authorities in the field Includes a wide range of applications

How should coded communication be approached? Is it about probability theorems and bounds, or about algorithms and structures? The traditional course in information theory and coding teaches these together in one course in which the Shannon theory, a probabilistic theory of information, dominates. The theory's predictions and bounds to performance are valuable to the coding engineer, but coding today is mostly about structures and algorithms and their size, speed and error performance. While coding has a theoretical basis, it has a practical side as well, an engineering side in which costs and benefits matter. It is safe to say that most of the recent advances in information theory and coding are in the engineering of coding. These thoughts motivate the present text book: A coded communication book based on methods and algorithms, with information theory in a necessary but supporting role. There has been much recent progress in coding, both in the theory and the practice, and these pages report many new advances. Chapter 2 covers traditional source coding, but also the coding of real one-dimensional sources like speech and new techniques like vector quantization. Chapter 4 is a unified treatment of trellis codes, beginning with binary convolutional codes and passing to the new trellis modulation codes.

Although several books cover the coding theory of wireless communications and the hardware technologies and coding techniques of optical CDMA, no book has been specifically dedicated to optical coding theory—until now. Written by renowned authorities in the field, *Optical Coding Theory with Prime* gathers together in one volume the fundamentals and developments of optical coding theory, with a focus on families of prime codes, supplemented with several families of non-prime codes. The book also explores potential applications to coding-based optical systems and networks. *Learn How to Construct and Analyze Optical Codes* The authors use a theorem-proof approach, breaking down theories into digestible form so that readers can understand the main message without searching through tedious proofs. The book begins with the mathematical tools needed to understand and apply optical coding theory, from Galois fields and matrices to Gaussian and combinatorial analytical tools. Using a wealth of examples, the authors show how optical codes are constructed and analyzed, and detail their performance in a variety of applications. The book examines families of 1-D and 2-D asynchronous and synchronous, multilength, and 3-D prime codes, and some non-prime codes. *Get a Working Knowledge of Optical Coding Theory to Help You Design Optical Systems and Networks* Prerequisites include a basic knowledge of linear algebra and coding theory, as well as a foundation in probability and communications theory. This book draws on the authors' extensive research to offer an authoritative reference on the emerging field of optical coding theory. In addition, it supplies a working knowledge of the theory and optical codes to help readers in the design of coding-based optical systems and networks. For more on the technological aspects of optical CDMA, see *Optical Code Division Multiple Access: Fundamentals and Applications* (CRC Press 2005).

A concise introduction to the core concepts in digital communication, providing clarity and depth through examples, problems and MATLAB exercises. Its simple structure maps a logical route to understand the most basic principles in digital communication, and also leads students through more in-depth treatment with examples and step-by-step instructions.

The book discusses modern channel coding techniques for wireless communications such as turbo codes, low parity check codes (LDPC), space-time coding, Reed Solomon (RS) codes and convolutional codes. Many illustrative examples are included in each chapter for easy understanding of the coding techniques. The text is integrated with MATLAB-based programs to enhance the understanding of the subject's underlying theories. It includes current topics of increasing importance such as turbo codes, LDPC codes, LT codes, Raptor codes and space-time coding in detail, in addition to the traditional codes such as cyclic codes, BCH and RS codes and convolutional codes. MIMO communications is a multiple antenna technology, which is an effective method for high-speed or high-reliability wireless communications. PC-based MATLAB m-files for the illustrative examples are included and also provided on the accompanying CD, which will help students and researchers involved in advanced and current concepts in coding theory. Channel coding, the core of digital communication and data storage, has undergone a major revolution as a result of the rapid growth of mobile and wireless communications. The book is divided into 11 chapters. Assuming no prior knowledge in the field of channel coding, the opening chapters (1 - 2) begin with basic theory and discuss how to improve the performance of wireless communication channels using channel coding. Chapters 3 and 4 introduce Galois fields and present detailed coverage of BCH codes and Reed-Solomon codes. Chapters 5–7 introduce the family of convolutional codes, hard and soft-decision Viterbi algorithms, turbo codes, BCJR algorithm for turbo decoding and studies trellis coded modulation (TCM), turbo trellis coded modulation (TTCM), bit-interleaved coded modulation (BICM) as well as iterative BICM (BICM-ID) and compares them under various channel conditions. Chapters 8 and 9 focus on low-density parity-check (LDPC) codes, LT codes and Raptor codes. Chapters 10 and 11 discuss MIMO systems and space-time (ST) coding.

First published in 1979. Routledge is an imprint of Taylor & Francis, an informa company.

Error-correction coding is being used on an almost routine basis in most new communication systems. Not only is coding equipment being used to increase the energy efficiency of communication links, but coding ideas are also providing innovative solutions to many related communication problems. Among these are the elimination of intersymbol interference caused by filtering and multipath and the improved demodulation of certain frequency modulated signals by taking advantage of the "natural" coding provided by a continuous phase. Although several books and numerous articles have been written on coding theory, there are still noticeable deficiencies. First, the practical aspects of translating a specific decoding algorithm into actual hardware have been largely ignored. The information that is available is sketchy and is widely dispersed. Second, the information required to evaluate a particular technique under situations that are encountered in practice is available for the most part only in private company reports. This book

is aimed at correcting both of these problems. It is written for the design engineer who must build the coding and decoding equipment and for the communication system engineer who must incorporate this equipment into a system. It is also suitable as a senior-level or first-year graduate text for an introductory one-semester course in coding theory. The book uses a minimum of mathematics and entirely avoids the classical theorem/proof approach that is often seen in coding texts.

During the past 20 years, the field of mechanical engineering has undergone enormous changes. These changes have been driven by many factors, including: the development of computer technology worldwide competition in industry improvements in the flow of information satellite communication real time monitoring increased energy efficiency robotics automatic control increased sensitivity to environmental impacts of human activities advances in design and manufacturing methods These developments have put more stress on mechanical engineering education, making it increasingly difficult to cover all the topics that a professional engineer will need in his or her career. As a result of these developments, there has been a growing need for a handbook that can serve the professional community by providing relevant background and current information in the field of mechanical engineering. The CRC Handbook of Mechanical Engineering serves the needs of the professional engineer as a resource of information into the next century.

This book provides an up-to-date introduction to information theory. In addition to the classical topics discussed, it provides the first comprehensive treatment of the theory of I-Measure, network coding theory, Shannon and non-Shannon type information inequalities, and a relation between entropy and group theory. ITIP, a software package for proving information inequalities, is also included. With a large number of examples, illustrations, and original problems, this book is excellent as a textbook or reference book for a senior or graduate level course on the subject, as well as a reference for researchers in related fields.

This book is an evolution from my book A First Course in Information Theory published in 2002 when network coding was still at its infancy. The last few years have witnessed the rapid development of network coding into a research field of its own in information science. With its root in information theory, network coding has not only brought about a paradigm shift in network communications at large, but also had significant influence on such specific research fields as coding theory, networking, switching, wireless communications, distributed data storage, cryptography, and optimization theory. While new applications of network coding keep emerging, the fundamental results that lay the foundation of the subject are more or less mature. One of the main goals of this book therefore is to present these results in a unifying and coherent manner. While the previous book focused only on information theory for discrete random variables, the current book contains two new chapters on information theory for continuous random variables, namely the chapter on differential entropy and the chapter on continuous-valued channels. With these topics included, the book becomes more comprehensive and is more suitable to be used as a textbook for a course in an electrical engineering department.

One of the most important key technologies for digital communication systems as well as storage media is coding theory. It provides a means to transmit information across time and space over noisy and unreliable communication channels. Coding Theory: Algorithms, Architectures and Applications provides a concise overview of channel coding theory and practice, as well as the accompanying signal processing architectures. The book is unique in presenting algorithms, architectures, and applications of coding theory in a unified framework. It covers the basics of coding theory before moving on to discuss algebraic linear block and cyclic codes, turbo codes and low density parity check codes and space-time codes. Coding Theory provides algorithms and architectures used for implementing coding and decoding strategies as well as coding schemes used in practice especially in communication systems. Features of the book include: Unique presentation-like style for summarising main aspects Practical issues for implementation of coding techniques Sound theoretical approach to practical, relevant coding methodologies Covers standard coding schemes such as block and convolutional codes, coding schemes such as Turbo and LDPC codes, and space time codes currently in research, all covered in a common framework with respect to their applications. This book is ideal for postgraduate and undergraduate students of communication and information engineering, as well as computer science students. It will also be of use to engineers working in the industry who want to know more about the theoretical basics of coding theory and their application in currently relevant communication systems

This book is aimed at the undergraduate course on Digital Communication. Written from the perspective of geometrical representation of signals, the book lays emphasis on clarifying concepts from the fundamental level.

Publisher Description

Für das Grundlagenstudium der Nachrichtentechnik und Technischen Informatik bestimmtes Lehrbuch, das ausführlich Theorie und Anwendung in der digitalen Kommunikationstechnik aufzeigt.

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