Key Papers In The Development Of Coding Theory Ieee Press Selected Reprint Series

#coding theory #IEEE Press #information theory #error correction codes #foundational papers

Explore the foundational milestones in digital communication with this esteemed collection of key papers from IEEE Press, meticulously tracing the development of coding theory. This selected reprint series offers invaluable insights into the principles of error correction codes and information theory, essential for students and researchers in the field.

Key Papers in the Development of Coding Theory

Handbook of Algebra defines algebra as consisting of many different ideas, concepts and results. Even the nonspecialist is likely to encounter most of these, either somewhere in the literature, disguised as a definition or a theorem or to hear about them and feel the need for more information. Each chapter of the book combines some of the features of both a graduate-level textbook and a research-level survey. This book is divided into eight sections. Section 1A focuses on linear algebra and discusses such concepts as matrix functions and equations and random matrices. Section 1B cover linear dependence and discusses matroids. Section 1D focuses on fields, Galois Theory, and algebraic number theory. Section 1F tackles generalizations of fields and related objects. Section 2A focuses on category theory, including the topos theory and categorical structures. Section 2B discusses homological algebra, cohomology, and cohomological methods in algebra. Section 3A focuses on commutative rings and algebras. Finally, Section 3B focuses on associative rings and algebras. This book will be of interest to mathematicians, logicians, and computer scientists.

Key Papers in the Development of Coding Theory

The book is devoted to the theory of algebraic geometric codes, a subject formed on the border of several domains of mathematics. On one side there are such classical areas as algebraic geometry and number theory; on the other, information transmission theory, combinatorics, finite geometries, dense packings, etc. The authors give a unique perspective on the subject. Whereas most books on coding theory build up coding theory from within, starting from elementary concepts and almost always finishing without reaching a certain depth, this book constantly looks for interpretations that connect coding theory to algebraic geometry and number theory. There are no prerequisites other than a standard algebra graduate course. The first two chapters of the book can serve as an introduction to coding theory and algebraic geometry respectively. Special attention is given to the geometry of curves

over finite fields in the third chapter. Finally, in the last chapter the authors explain relations between all of these: the theory of algebraic geometric codes.

Handbook of Algebra

Basic Algebra and Advanced Algebra systematically develop concepts and tools in algebra that are vital to every mathematician, whether pure or applied, aspiring or established. Together, the two books give the reader a global view of algebra and its role in mathematics as a whole. The presentation includes blocks of problems that introduce additional topics and applications to science and engineering to guide further study. Many examples and hundreds of problems are included, along with a separate 90-page section giving hints or complete solutions for most of the problems.

Key Papers in the Development of Information Theory

The authors give a detailed summary about the fundamentals and the historical background of digital communication. This includes an overview of the encoding principles and algorithms of textual information, audio information, as well as images, graphics, and video in the Internet. Furthermore the fundamentals of computer networking, digital security and cryptography are covered. Thus, the book provides a well-founded access to communication technology of computer networks, the internet and the WWW. Numerous pictures and images, a subject-index and a detailed list of historical personalities including a glossary for each chapter increase the practical benefit of this book that is well suited as well as for undergraduate students as for working practitioners.

Algebraic Geometric Codes: Basic Notions

David Middleton was a towering figure of 20th Century engineering and science and one of the founders of statistical communication theory. During the second World War, the young David Middleton, working with Van Fleck, devised the notion of the matched filter, which is the most basic method used for detecting signals in noise. Over the intervening six decades, the contributions of Middleton have become classics. This collection of essays by leading scientists, engineers and colleagues of David are in his honor and reflect the wide influence that he has had on many fields. Also included is the introduction by Middleton to his forthcoming book, which gives a wonderful view of the field of communication, its history and his own views on the field that he developed over the past 60 years. Focusing on classical noise modeling and applications, Classical, Semi-Classical and Quantum Noise includes coverage of statistical communication theory, non-stationary noise, molecular footprints, noise suppression, Quantum error correction, and other related topics.

Basic Algebra

This text offers an introduction to error-correcting linear codes for researchers and graduate students in mathematics, computer science and engineering. The book differs from other standard texts in its emphasis on the classification of codes by means of isometry classes. The relevant algebraic are developed rigorously. Cyclic codes are discussed in great detail. In the last four chapters these isometry classes are enumerated, and representatives are constructed algorithmically.

Digital Communication

Internet und World Wide Web basieren auf dem Vermögen, Informationen und Medien jeder Art in digitalisierter Form über Nachrichtenkanäle zu transportieren und zu verbreiten. Die Autoren erläutern Grundlagen und geschichtliche Hintergründe der digitalen Kommunikation und geben einen Überblick über Methoden und Verfahren der Kodierung von Text-, Audio-, Grafik- und Videoinformation, die im Internet zur Anwendung kommen. Zahlreiche Abbildungen sowie Sachindex, Personenindex und Glossar zu jedem Kapitel erhöhen den praktischen Nutzen dieses Handbuchs.

Classical, Semi-classical and Quantum Noise

Dieses Handbuch bietet für alle Nutzer und Entwickler des World Wide Web einen fundierten Einblick in dessen Aufbau und Funktionsweise. Die Autoren stellen die Internet-Technologie ausführlich dar und geben einen umfassenden Überblick über die relevanten Teilbereiche des WWW. Neben den allgemeinen theoretischen und praktischen Grundlagen der Netzwerktechnik und einer Darstellung der TCP/IP-Protokolle werden auch die vielfältigen Medientypen und deren Kodierung im WWW erläutert. Darauf aufbauend wird auf spezielle Web-Technologien im WWW wie HTTP, HTML, CSS,

XML/XSL aber auch Skriptsprachen und CGI-Programmierung eingegangen. Dabei werden die allgemeinverständlich angelegten Kapitel punktuell durch relevante Schwerpunktthemen technischer Natur ergänzt und vertieft. Zahlreiche Abbildungen sowie Index und Glossar zu jedem Kapitel erhöhen den praktischen Nutzen des Handbuchs.

Key Papers in the Development of Coding Theory

Several years ago when I began consulting full time, I quickly discovered that despite three advanced academic degrees my practical industrial experience had some significant gaps. It thus was necessary initially to spend considerable (nonbillable) time collecting and organizing a great deal of essential information on the various aspects of modern data communica tions. The task was made more difficult by the highly interdisciplinary nature of the field, with the required information scattered throughout the vast international literature of telecommunications, computers, electrical engineering, military systems, mathematics, operations research, optimiza tion, speech processing, and the murky world oflegal and regulatory policy. Although there were a number of fine books and periodicals in each of these specialized disciplines, I was unable to find a single comprehensive text that covered the entire field at even a modestly attractive technical and mathematical level. After going to the trouble of organizing all this diverse material for my clients and students, it seemed rather natural to put it into book form and thus share it with those professionals working with computer data communi cations who need a comprehensive coverage of the subject at a level immediately applicable to their work and yet easily accessible for self-study. The project was facilitated by an agreeable publisher and an incredibly understanding and cooperative family, and Practical Computer Data Com munications is the result.

Error-Correcting Linear Codes

In deterministic identification the identified system is determined on the basis of a complexity measure of models and a misfit measure of models with respect to data. The choice of these measures and corresponding notions of optimality depend on the objectives of modelling. In this monograph, the cases of exact modelling, model reduction and approximate modelling are investigated. For the case of exact modelling a procedure is presented which is inspired by objectives of simplicity and corroboration. This procedure also gives a new solution for the partial realization problem. Further, appealing measures of complexity and distance for linear systems are defined and explicit numerical expressions are derived. A simple and new procedure for approximating a given system by one of less complexity is described. Finally, procedures and algorithms for deterministic time series analysis are presented. The procedures and algorithms are illustrated by simple examples and by numerical simulations.

Reviews in Number Theory 1973-83

Here's quick access to more than 490,000 titles published from 1970 to 1984 arranged in Dewey sequence with sections for Adult and Juvenile Fiction. Author and Title indexes are included, and a Subject Guide correlates primary subjects with Dewey and LC classification numbers. These cumulative records are available in three separate sets.

Mathematical Reviews

Includes entries for maps and atlases.

Digitale Kommunikation

Over 220,000 entries representing some 56,000 Library of Congress subject headings. Covers all disciplines of science and technology, e.g., engineering, agriculture, and domestic arts. Also contains at least 5000 titles published before 1876. Has many applications in libraries, information centers, and other organizations concerned with scientific and technological literature. Subject index contains main listing of entries. Each entry gives cataloging as prepared by the Library of Congress. Author/title indexes.

WWW

The Best of the Best: Fifty Years of Communications and Networking Research consists of a group of 50 papers selected as the best published by ComSoc in its various journals in the Society’s 50-year history. The editors of the collection have written an essay to introduce the papers and discuss the historical significance of the collection and how they were selected for the collection. The book divides

the papers into two major categories (Communications and Networking) and groups them by decade within these major subdivisions.

Practical Computer Data Communications

Issues for 1973- cover the entire IEEE technical literature.

Key Papers in the Development of Coding Theory

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Deterministic Identification of Dynamical Systems