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Representations of the Hamming Code; An Algebraic Representation
A Polynomial RepresentationA Trellis Representation; The Tanner Graph Representation; 1.10 The Basic Questions; 1.11 Historical Milestones of Coding Theory; 1.12 A Bit of Information Theory; 1.12.1 Definitions for Discrete Random Variables; Entropy and Conditional Entropy; Relative Entropy, Mutual Information, and Channel Capacity; 1.12.2 Definitions for Continuous Random Variables; 1.12.3 The Channel Coding Theorem; 1.12.4 "Proof" of the Channel Coding Theorem; 1.12.5 Capacity for the Continuous-Time AWGN Channel; 1.12.6 Transmission at Capacity with Errors
1.12.7 The Implication of the Channel Coding TheoremLab 1 Simulating a Communications Channel; Objective; Background; Use of Coding in Conjunction with the BSC; Assignment; Programming Part; Resources and Implementation Suggestions; 1.13 Exercises; 1.14 References; Part II Block Codes; 2 Groups and Vector Spaces; 2.1 Introduction; 2.2 Groups; 2.2.1 Subgroups; 2.2.2 Cyclic Groups and the Order of an Element; 2.2.3 Cosets; 2.2.4 Lagrange's Theorem; 2.2.5 Induced Operations; Isomorphism; 2.2.6 Homomorphism; 2.3 Fields: A Prelude; 2.4 Review of Linear Algebra; 2.5 Exercises; 2.6 References
3 Linear Block Codes3.1 Basic Definitions; 3.2 The Generator Matrix Description of Linear Block Codes; 3.2.1 Rudimentary Implementation; 3.3 The Parity Check Matrix and Dual Codes; 3.3.1 Some Simple Bounds on Block Codes; 3.4 Error Detection and Correction over Hard-Input Channels; 3.4.1 Error Detection; 3.4.2 Error Correction: The Standard Array; 3.5 Weight Distributions of Codes and Their Duals; 3.6 Hamming Codes and Their Duals; 3.7 Performance of Linear Codes; 3.7.1 Error detection performance; 3.7.2 Error Correction Performance; 3.7.3 Performance for Soft-Decision Decoding
3.8 Erasure Decoding

Sommario/riassunto

An unparalleled learning tool and guide to error correction codingError correction coding techniques allow the detection and correction of errors occurring during the transmission of data in digital communication systems. These techniques are nearly universally employed in modern communication systems, and are thus an important component of the modern information economy.Error Correction Coding: Mathematical Methods and Algorithms provides a comprehensive introduction to both the theoretical and practical aspects of error correction coding, with a presentation suitable for a wi