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Nota di contenuto	The Art of Error Correcting Coding; Contents; Preface; Foreword; The ECC web site; 1 Introduction; 1.1 Error correcting coding: Basic concepts; 1.1.1 Block codes and convolutional codes; 1.1.2 Hamming distance, Hamming spheres and error correcting capability; 1.2 Linear block codes; 1.2.1 Generator and parity-check matrices; 1.2.2 The weight is the distance; 1.3 Encoding and decoding of linear block codes; 1.3.1 Encoding with G and H; 1.3.2 Standard array decoding; 1.3.3 Hamming spheres, decoding regions and the standard array; 1.4 Weight distribution and error performance 1.4.1 Weight distribution and undetected error probability over a BSC1. 4.2 Performance bounds over BSC, AWGN and fading channels; 1.5

General structure of a hard-decision decoder of linear codes; Problems; 2 Hamming, Golay and Reed-Muller codes; 2.1 Hamming codes; 2.1.1 Encoding and decoding procedures; 2.2 The binary Golay code; 2.2.1 Encoding; 2.2.2 Decoding; 2.2.3 Arithmetic decoding of the extended (24, 12, 8) Golay code; 2.3 Binary Reed-Muller codes; 2.3.1 Boolean polynomials and RM codes; 2.3.2 Finite geometries and majority-logic decoding; Problems; 3 Binary cyclic codes and BCH codes
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3.5.6 Errors-and-erasures decoding3.6 Weight distribution and performance bounds; 3.6.1 Error performance evaluation; Problems; 4 Nonbinary BCH codes: Reed-Solomon codes; 4.1 RS codes as polynomial codes; 4.2 From binary BCH to RS codes; 4.3 Decoding RS codes; 4.3.1 Remarks on decoding algorithms; 4.3.2 Errors-and-erasures decoding; 4.4 Weight distribution; Problems; 5 Binary convolutional codes; 5.1 Basic structure; 5.1.1 Recursive systematic convolutional codes; 5.1.2 Free distance; 5.2 Connections with block codes; 5.2.1 Zero-tail construction; 5.2.2 Direct-truncation construction
5.2.3 Tail-biting construction5.2.4 Weight distributions; 5.3 Weight enumeration; 5.4 Performance bounds; 5.5 Decoding: Viterbi algorithm with Hamming metrics; 5.5.1 Maximum-likelihood decoding and metrics; 5.5.2 The Viterbi algorithm; 5.5.3 Implementation issues; 5.6 Punctured convolutional codes; 5.6.1 Implementation issues related to punctured convolutional codes; 5.6.2 RCPC codes; Problems; 6 Modifying and combining codes; 6.1 Modifying codes; 6.1.1 Shortening; 6.1.2 Extending; 6.1.3 Puncturing; 6.1.4 Augmenting, expurgating and lengthening; 6.2 Combining codes
6.2.1 Time sharing of codes

Sommario/riassunto

Building on the success of the first edition, which offered a practical introductory approach to the techniques of error concealment, this book, now fully revised and updated, provides a comprehensive treatment of the subject and includes a wealth of additional features. The Art of Error Correcting Coding, Second Edition explores intermediate and advanced level concepts as well as those which will appeal to the novice. All key topics are discussed, including Reed-Solomon codes, Viterbi decoding, soft-output decoding algorithms, MAP, log-MAP and MAX-log-MAP. Reliability-based algorith