Error Control Systems For Digital Communication And Storage

Synopsis

This introductory book on error control coding focuses on key implementation issues and performance analysis with applications valuable to both mathematicians and engineers.FEATURES: * features a complete discussion of punctured convolutional codes. * includes full-chapter coverage of performance analysis of block codes, including code performance over the fading channel (i.e., cellular mobile phone systems). * examines system implementation issues for the Viterbi Decoder and the various decoders for Reed-Solomon and BCH codes. * devotes two full chapters to the theory of finite fields. * features the most current research results on error control for channels with feedback. * includes an entire chapter on trellis coded modulation. * includes historical background and emphasizes practical, up-to-date applications (i.e., the space program) for all key areas in the book.

Book Information

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Customer Reviews

Once you get past the (very necessary) finite field stuff you're hip deep in everything you ever wanted to know about codes - block codes, convolutional codes, binary, ternary, you name it.I found the discussion of Reed-Solomon codes particularly good. So *that's* how they work!Some new stuff missing (Turbo Codes), but that's always going to happen.

In contradiction to an earlier post which expressed this was a good book for beginners, I would highly recommend beginners and those with desire for practical implementation to buy Lin and

Costello's book. This book lacks in the quality and quantity of its examples. It may serve as a good reference for the more theoretically motivated person (e.g., those in the academic publishing community) but if you want to own just one book, don't get this one.

The book is very well written specially as an introductory book. However, some important derivations & discussions are missing. Two examples:(1) there is a whole chapter on BCH and Reed Solomon decoding without the derivation of the Berlekamp-Massey decoding algorithm, not even in the appendeix. (2) When discussing different decoding algorithm, no effort is spent in quantifying the complexity of different algorithms. So, the reader has to take the author's word that algorithm X is simpler than algorithm Y. Current hot topics such as Soft decoding of BCH and Reed Solomon codes is not discussed, except for the traditinal erasure decoding algorithm. Similarly, iterative decoding is not discussed; instead we have the outdated Fano and Stack algorithms that are usually covered in older books.In summary the book is well explained but the subjects are not well chosen.

This is a well written book on the introduction to error control coding. Although now a little bit outdated (lack of all the new development of the 1990's and 2000's, e.g. Turbo code, LDPC code, etc.), it is a good introductionary book such that students can build up their foundation for futher venture to the error control techniques. It will also facilitate the understanding of the new development.Although, the author complemented the books with another two books for Turbo (1998) and LDPC codes (2002), the writing styles of the two books are not as good as this book. It sounds like the author just wanted to get the two books out to be the first in the area. I really wish that the author can sit down to seriously revise the current book, correct certain mistakes (e.g. p. 109, "message blocks (100), (010), and (001)" should be "message blocks (10), (01)"), take out the outdated materials, rewrite certain parts, such as magnetic recording channel, maintain his writing style, and add Turbo, LDPC codes, and other new materials to the book. Otherwise, the role of this book will be replaced by new books in this area, and it will be a pity.

This is an exhaustive text on practically every known technique used in practical error correction/detection. Every individual technique is outlined in a seperate chapter, with a lot of stress on the practical implementation issues, though it does go heavy on the computational nuances at some places.This book shall require you to have a very solid background on vector/matrix math, and also Galois field arithmetic. Some basic knowledge of Communication System models is also

recommended, though not mandatory.The down side of the book is that it does not give exhaustive mathematical proofs of the various algorithms (It was not the original intention of the author in the first place, though it's inclusion would have been really helpful), and secondly, there is no comparative analysis of the various algorithms. In this regard, implementing them in C/C++ could be very instructive to the discerning student.

I use this book at work and several co-worker have borrowed the book. Evereyone who has used the book has found it very useful. The book has been used as a reference for implementing error-correcting codes on FPGAs. The examples in the book are excellent and the book could be used as a comprehensive text on error correction. The author starts with the basics and goes into great detail on both block and convolutional codes.

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