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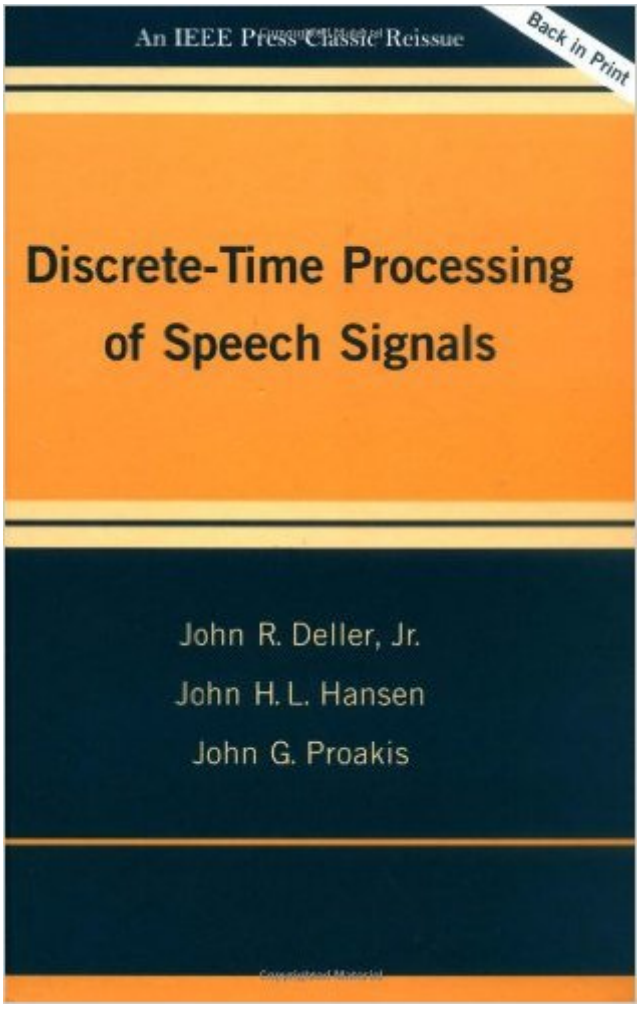
Discrete-Time Processing Of Speech Signals



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Synopsis

Commercial applications of speech processing and recognition are fast becoming a growth industry that will shape the next decade. Now students and practicing engineers of signal processing can find in a single volume the fundamentals essential to understanding this rapidly developing field. IEEE Press is pleased to publish a classic reissue of Discrete-Time Processing of Speech Signals. Specially featured in this reissue is the addition of valuable World Wide Web links to the latest speech data references. This landmark book offers a balanced discussion of both the mathematical theory of digital speech signal processing and critical contemporary applications. The authors provide a comprehensive view of all major modern speech processing areas: speech production physiology and modeling, signal analysis techniques, coding, enhancement, quality assessment, and recognition. You will learn the principles needed to understand advanced technologies in speech processing -- from speech coding for communications systems to biomedical applications of speech analysis and recognition. Ideal for self-study or as a course text, this far-reaching reference book offers an extensive historical context for concepts under discussion, end-of-chapter problems, and practical algorithms. Discrete-Time Processing of Speech Signals is the definitive resource for students, engineers, and scientists in the speech processing field. An Instructor's Manual presenting detailed solutions to all the problems in the book is available upon request from the Wiley Makerting Department.

Book Information

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Customer Reviews

This book is very thorough, but at times it seems like the authors go out of their way to keep their discussion on a very theoretical level.Chapter 1: A highly theoretical review of DSP. You need good knowledge of DSP to understand it.Chapter 2: Goes over the human speech production and recognition systems. Here you get some practical info on the spectral and time-domain properties that distinguish speech sounds.Chapter 3: Describes a model of the speech production based on a series of pulses passed through filters that correspond to features of the human speech production system. Practical issues such as which zero and pole values work best are left as an exercise to the reader.Chapter 4: A lot of mathematics relating long-term statistical properties to those of a short frame of speech data. Contains good info on how to find recursive formulas for statistical properties of speech frames. It is a great shame that the authors don't include examples in MATLAB or pseudo code.Chapter 5: Linear Prediction. Discusses a mathematical algorithm for creating a prediction filter that could be used to predict the next value in a series of data. In speech processing we are interested in using the coefficients of this prediction filter to encapsulate the properties of a speech frame. Examples of 1st,, 2nd, and 3rd order filters would have gone along way to illustrate how to implement this. There are some good formulas to measure the degree of similarities between speech frames based on their LP filter coefficients.Chapter 6: Introduces the concept of the cepstrum. Cepstral analysis allows you to de-convolve speech data to separate the excitation source from the vocal tract filter.

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