1. Record Nr. UNINA9910830704503321

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Titolo	A practical approach to signals and systems [[electronic resource] /] / D. Sundararajan
Pubbl/distr/stampa	Singapore ; ; Hoboken, NJ, : John Wiley & Sons (Asia), c2008
ISBN	1-282-03142-2 9786612031427 0-470-82355-0 0-470-82354-2
Descrizione fisica	1 online resource (399 p.)
Disciplina	621.382/23 621.38223
Soggetti	Signal theory (Telecommunication) Signal processing System analysis
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	A PRACTICAL APPROACH TO SIGNALS AND SYSTEMS; Contents; Preface; Abbreviations; 1 Introduction; 1.1 The Organization of this Book; 2 Discrete Signals; 2.1 Classification of Signals; 2.1.1 Continuous, Discrete and Digital Signals; 2.1.2 Periodic and Aperiodic Signals; 2.1.3 Energy and Power Signals; 2.1.4 Even- and Odd-symmetric Signals; 2.1.5 Causal and Noncausal Signals; 2.1.6 Deterministic and Random Signals; 2.2 Basic Signals; 2.2.1 Unit-impulse Signal; 2.2.2 Unit-step Signal; 2.2.3 Unit-ramp Signal; 2.2.4 Sinusoids and Exponentials; 2.3 Signal Operations; 2.3.1 Time Shifting 2.3.2 Time Reversal2.3.3 Time Scaling; 2.4 Summary; Further Reading; Exercises; 3 Continuous Signals; 3.1 Classification of Signals; 3.1.1 Continuous Signals; 3.1.2 Periodic and Aperiodic Signals; 3.1.3 Energy and Power Signals; 3.1.4 Even- and Odd-symmetric Signals; 3.1.5 Causal and Noncausal Signals; 3.2 Basic Signals; 3.2.1 Unit-step Signal; 3.2.2 Unit-impulse Signal; 3.2.3 Unit-ramp Signal; 3.2.4 Sinusoids; 3.3 Signal Operations; 3.3.1 Time Shifting; 3.3.2 Time Reversal; 3.3.3 Time Scaling; 3.4 Summary; Further Reading; Exercises; 4 Time-domain

Analysis of Discrete Systems

4.1 Difference Equation Model4.1.1 System Response; 4.1.2 Impulse Response; 4.1.3 Characterization of Systems by their Responses to Impulse and Unit-step Signals; 4.2 Classification of Systems; 4.2.1 Linear and Nonlinear Systems; 4.2.2 Time-invariant and Time-varying Systems; 4.2.3 Causal and Noncausal Systems; 4.2.4 Instantaneous and Dynamic Systems; 4.2.5 Inverse Systems; 4.2.6 Continuous and Discrete Systems; 4.3 ConvolutionSummation Model; 4.3.1 Properties of ConvolutionSummation; 4.3.2 The Difference Equation and ConvolutionSummation; 4.3.3 Response to Complex Exponential Input 4.4 System Stability4.5 Realization of Discrete Systems; 4.5.1 Decomposition of Higher-order Systems; 4.5.2 Feedback Systems; 4.6 Summary; Further Reading; Exercises; 5 Time-domain Analysis of Continuous Systems; 5.1 Classification of Systems; 5.1.1 Linear and Nonlinear Systems; 5.1.2 Time-invariant and Time-varying Systems; 5.1.3 Causal and Noncausal Systems; 5.1.4 Instantaneous and Dynamic Systems; 5.1.5 Lumped-parameter and Distributed-parameter Systems; 5.1.6 Inverse Systems; 5.2 Differential Equation Model; 5.3 Convolution-integral Model; 5.3.1 Properties of the Convolution-integral

5.4 System Response5.4.1 Impulse Response; 5.4.2 Response to Unit-step Input; 5.4.3 Characterization of Systems by their Responses to Impulse and Unit-step Signals; 5.4.4 Response to Complex Exponential Input; 5.5 System Stability; 5.6 Realization of Continuous Systems; 5.6.1 Decomposition of Higher-order Systems; 5.6.2 Feedback Systems; 5.7 Summary; Further Reading; Exercises; 6 The Discrete Fourier Transform; 6.1 The Time-domain and the Frequency-domain; 6.2 Fourier Analysis; 6.2.1 Versions of Fourier Analysis; 6.3 The Discrete Fourier Transform

6.3.1 The Approximation of Arbitrary Waveforms with a Finite Number of Samples

Sommario/riassunto

Concisely covers all the important concepts in an easy-to-understand way Gaining a strong sense of signals and systems fundamentals is key for general proficiency in any electronic engineering discipline, and critical for specialists in signal processing, communication, and control. At the same time, there is a pressing need to gain mastery of these concepts quickly, and in a manner that will be immediately applicable in the real word. Simultaneous study of both continuous and discrete signals and systems presents a much easy path to understanding signals and systems analysis. In <i