1. Record Nr. UNINA9910784447003321

Autore	Stranneby Dag
Titolo	Digital signal processing and applications [[electronic resource] /] / Dag Stranneby, William Walker
Pubbl/distr/stampa	Oxford, : Newnes, 2004
ISBN	1-281-01604-7 9786611016043 0-08-047252-4
Edizione	[2nd ed.]
Descrizione fisica	1 online resource (368 p.)
Altri autori (Persone)	WalkerWilliam <1959->
Disciplina	621.3822
Soggetti	Signal processing - Digital techniques Signal processing
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Previous ed.: Oxford: Butterworth-Heinemann, 2001.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Cover; Digital Signal Processing and Applications; Contents; Preface; 1 Introduction; Background; Objectives; 1.1 The history of digital signal processing; 1.1.1 Measurements and analysis; 1.1.2 Telecommunications; 1.1.3 Audio and television; 1.1.4 Household appliances and toys; 1.1.5 Automotive; 1.2 Digital signal processing basics; 1.2.1 Continuous and discrete signals; 1.2.2 Sampling and reconstruction; 1.2.3 Quantization; 1.2.4 Processing models for discrete-time series; 1.2.4.1 Linear systems; 1.2.4.2 The difference equation model; 1.2.4.3 The state-space model 1.2.4.4 The convolution model1.2.4.5 The transfer function model; 1.2.4.6 The frequency function model; 1.3 Common filters; 1.3.1 Filter architectures; 1.3.1.1 The non-recursive filter; 1.3.1.2 The recursive filter; 1.3.1.3 The lattice filter; 1.3.2 Filter synthesis; 1.3.2.1 Indirect filter synthesis; 1.3.2.2 Direct filter synthesis; 1.4 Digital control systems; 1.4.1 Proportional-integral-derivate controllers; 1.4.2 Advanced controllers; 1.4.2.2 Pole placement controller; Summary; Review questions; Solved problems; 2 The analog-digital interface; Background; Objectives 2.1 System considerations2.1.1 Encoding and modulation; 2.1.2 Number representation and companding systems; 2.2 Digital-to-analog conversion; 2.2.1 Multiplying digital-to-analog converters;

2.2.2 Integrating digital-to-analog converters; 2.2.3 Bitstream digital-to-analog converters; 2.2.4 Sample-and-hold and reconstruction filters; 2.3 Analog-to-digital conversion; 2.3.1 Anti-aliasing filters and sample-and-hold; 2.3.2 Flash analog-to-digital converters; 2.3.3 Successive approximation analog-to-digital converters; 2.3.4 Counting analog-to-digital converters
2.3.5 Integrating analog-to-digital converters2.3.6 Dither; 2.3.7 Sigma-delta analog-to-digital converters; Summary; Review questions; Solved problems; 3 Adaptive digital systems; Background; Objectives; 3.1 Introduction; 3.1.1 System structure; 3.2 The processor and the performance function; 3.2.1 The adaptive linear combiner; 3.2.2 The performance function; 3.3 Adaptation algorithms; 3.3.1 The method of steepest descent; 3.3.2 Newton's method; 3.3.3 The least mean square algorithm; 3.4 Applications; 3.4.1 Adaptive interference canceling; 3.4.2 Equalizers; 3.4.3 Adaptive beamforming; Summary
Review questionsSolved problems; 4 Non-linear applications; Background; Objectives; 4.1 The median filter; 4.1.1 Basics; 4.1.2 Threshold decomposition; 4.1.3 Performance; 4.1.4 Applications; 4.2 Artificial neural networks; 4.2.1 Background; 4.2.2 The models; 4.2.3 Some historical notes; 4.2.4 Feedforward networks; 4.2.4.1 Nodes; 4.2.4.2 Network topology; 4.2.4.3 Training and adaptation; 4.2.4.4 Applications; 4.2.5 Feedback networks; 4.2.5.1 Nodes; 4.2.5.2 Network topology; 4.2.5.3 Local and global minimum; 4.2.5.4 Applications; 4.2.6 An example application; 4.2.6.1 The problem
4.2.6.2 The Hamming net

Sommario/riassunto

A uniquely practical DSP text, this book gives a thorough understanding of the principles and applications of DSP with a minimum of mathematics, and provides the reader with an introduction to DSP applications in telecoms, control engineering and measurement and data analysis systems.The new edition contains: Expanded coverage of the basic concepts to aid understanding New sections on filter sysnthesis, control theory and contemporary topics of speech and image recognition Full solutions to all questions and exercises in the book A complete on-line resource<