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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 model; 1.2.4.5 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 considerations 2.1.1 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 converters  
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4.2.6.2 The Hamming net

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## 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 synthesis, 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<

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