

1. Record Nr.	UNINA9910139575203321
Autore	Ruch David K. <1959->
Titolo	Wavelet theory [[electronic resource]] : an elementary approach with applications / / David K. Ruch, Patrick J. Van Fleet
Pubbl/distr/stampa	Hoboken, N.J., : John Wiley & Sons, 2009
ISBN	1-283-28001-9 9786613280015 1-118-16565-9 1-118-16566-7
Descrizione fisica	1 online resource (502 p.)
Altri autori (Persone)	Van FleetPatrick J. <1962->
Disciplina	515.2433
Soggetti	Wavelets (Mathematics) Transformations (Mathematics) Digital images - Mathematics Electronic books.
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 indexes.
Nota di contenuto	Wavelet Theory: An Elementary Approach with Applications; CONTENTS; Preface; Acknowledgments; 1 The Complex Plane and the Space $L_2(\mathbb{R})$; 1.1 Complex Numbers and Basic Operations; Problems; 1.2 The Space $L_2(\mathbb{R})$; Problems; 1.3 Inner Products; Problems; 1.4 Bases and Projections; Problems; 2 Fourier Series and Fourier Transformations; 2.1 Euler's Formula and the Complex Exponential Function; Problems; 2.2 Fourier Series; Problems; 2.3 The Fourier Transform; Problems; 2.4 Convolution and 5-Splines; Problems; 3 Haar Spaces; 3.1 The Haar Space V_0 ; Problems; 3.2 The General Haar Space V_j ; Problems 3.3 The Haar Wavelet Space W_0 Problems; 3.4 The General Haar Wavelet Space W_j ; Problems; 3.5 Decomposition and Reconstruction; Problems; 3.6 Summary; 4 The Discrete Haar Wavelet Transform and Applications; 4.1 The One-Dimensional Transform; Problems; 4.2 The Two-Dimensional Transform; Problems; 4.3 Edge Detection and Naive Image Compression; 5 Multiresolution Analysis; 5.1 Multiresolution Analysis; Problems; 5.2 The View from the Transform Domain; Problems; 5.3 Examples of Multiresolution Analyses; Problems; 5.4 Summary; 6

Daubechies Scaling Functions and Wavelets

6.1 Constructing the Daubechies Scaling Functions; 6.2 The Cascade Algorithm; 6.3 Orthogonal Translates, Coding, and Projections; 7 The Discrete Daubechies Transformation and Applications; 7.1 The Discrete Daubechies Wavelet Transform; Problems; 7.2 Projections and Signal and Image Compression; Problems; 7.3 Naive Image Segmentation; Problems; 8 Biorthogonal Scaling Functions and Wavelets; 8.1 A Biorthogonal Example and Duality; Problems; 8.2 Biorthogonality Conditions for Symbols and Wavelet Spaces; Problems
8.3 Biorthogonal Spline Filter Pairs and the CDF97 Filter Pair; Problems; 8.4 Decomposition and Reconstruction; Problems; 8.5 The Discrete Biorthogonal Wavelet Transform; Problems; 8.6 Riesz Basis Theory; Problems; 9 Wavelet Packets; 9.1 Constructing Wavelet Packet Functions; Problems; 9.2 Wavelet Packet Spaces; Problems; 9.3 The Discrete Packet Transform and Best Basis Algorithm; Problems; 9.4 The FBI Fingerprint Compression Standard; Appendix A: Huffman Coding; Problems; References; Topic Index; Author Index

Sommario/riassunto

A self-contained, elementary introduction to wavelet theory and applications Exploring the growing relevance of wavelets in the field of mathematics, Wavelet Theory: An Elementary Approach with Applications provides an introduction to the topic, detailing the fundamental concepts and presenting its major impacts in the world beyond academia. Drawing on concepts from calculus and linear algebra, this book helps readers sharpen their mathematical proof writing and reading skills through interesting, real-world applications. The book begins with a brief introduction to the fundamentals of com
