



Wavelets in Soft Computing 2nd Edition



ABOUT THE BOOK

The comprehensive compendium furnishes a quick and efficient entry point to many multiresolution techniques and facilitates the transition from an idea into a real project. It focuses on methods combining several soft computing techniques (fuzzy logic, neural networks, genetic algorithms) in a multiresolution framework.

Illustrated with numerous vivid examples, this useful volume gives the reader the necessary theoretical background to decide which methods suit his/her needs.

New materials and applications for multiresolution analysis are added, including notable research topics such as deep learning, graphs, and network analysis.

READERSHIP

Researchers, professionals, academics and graduate students in fuzzy logic.

CONTENTS

- Foreword
- Introduction to the Second Edition
- Introduction to Wavelet Theory:
- A Short Overview of the Development of Wavelet Theory
- Wavelet Transform versus Fourier Transform
- The Fast Wavelet Transform
- Definition of a Multiresolution
- Biorthogonal Wavelets
- Wavelets and Subband Coding
- Contourlets and Shearlet
- Empirical Wavelet Decomposition
- Applications

- Recent Applications of Wavelet and Multiresolution Analysis
- Preprocessing: The Multiresolution Approach:
- The Double Curse: Dimensionality and Complexity
- Dimension Reduction
- Karhunen-Loève Transform (Principal Components Analysis)
- Dimension Reduction Through Wavelet-Based Projection Methods
- Exploratory Knowledge Extraction
- Wavelets in Classification
- Applications of Multiresolution Techniques for Preprocessing in Soft Computing

Feel Books Pvt. Ltd.

4381/4 Ansari Road Daryaganj, New Delhi 110002, Tel: +91 11 47472600, Email: marketing@feelbooks.in

www.feelbooks.in

- Spline-Based Wavelets Approximation and Compression Algorithms:
- Spline-Based Wavelets
- A Selection of Wavelet-Based Algorithms for Spline Approximation
- Automatic Generation of a Fuzzy System with Wavelet-Based Methods and Spline-Based Wavelets:
- Fuzzy Rule-Based Systems
- Type-2 Fuzzy Systems
- Interpolation, Extrapolation, and Approximation Methods
- Fuzzy Wavelet
- Soft Computing Approach to Fuzzy Wavelet Transform
- Nonparametric Wavelet-Based Estimation and Regression Techniques:
- Introduction
- Smoothing Splines
- Wavelet Estimators
- Wavelet Methods for Curve Estimation
- Fuzzy Wavelet Estimators
- Hybrid Neural Networks:
- Neuro-Fuzzy Modeling
- Wavelet-Based Neural Networks
- Extreme Learning Machines
- Dyadic Wavelet Networks Or Wavenets
- Wavelet-Based Fuzzy Neural Networks
- Applications of Wavelet, Fuzzy Wavelet Networks, and Wavenets
- Multiresolution and Deep Neural Networks:
- Introduction
- Convolutional Neural Networks (CNN) and Multiresolution
- Generative Adversarial Networks (GAN)
- U-Nets and Multiresolution
- Fuzzy Logic in Deep Learning

- Developing Intelligent Sensors with Fuzzy Logic and Multiresolution Analysis:
- Application of Multiresolution and Fuzzy Logic to Fire Detection
- Transparency
- Man, Sensors, and Computer Intelligence
- Constructive Modeling
- From a Sensor to a Smart Sensor Network with Multicriteria Decisions
- Multiresolution and Wavelets in Graphs, Trees, and Networks:
- Wavelet Decomposition on a Graph
- Treelet
- Phylogenetic Trees and Networks
- Multiresolution Approach to Phylogeny
- Applications to Phylogeography
- Continuous Characters: Classification of Galaxies
- Outlook
- Genetic Algorithms and Multiresolution:
- The Standard Genetic Algorithm
- Walsh Functions and Genetic Algorithms
- Wavelet-Based Genetic Algorithms
- Population Evolution and Deceptive Functions
- Multiresolution Search
- Searching for a Good Solution: How to Beat Brute Force
- Swarm Intelligence
- Annexes:
- Annex A: Lifting Scheme
- Introduction
- Biorthogonal Spline-Wavelets Constructions with the Lifting Scheme
- Annex B: Nonlinear Wavelets
- Said and Pearlman Wavelets
- Morphological Haar Wavelets
- Annex C: Phylogenetic Trees and Networks (Outerplanar Networks)
- Index

For orders and enquiries, please contact us:

FEEL	FEELB	OOKS PVT. LT	D.	www.feelbooks.in
DELHI	4381/4 Ansari Road, Daryaganj, New Delhi 110002		Tel: +91-11-47472630	
	Pushpendra Kumar	Mobile: +91 9015043442	Email:	orders@feelbooks.in
BENGALURU	C-22, Brigade MM, KR Road, J	Jayanagar 7th Block, Bengaluru 5	60070	Tel: +91-80-26762129
	Shekar Reddy	Mobile: +91 9945234476	Email:	bangalore@feelbooks.in
MUMBAI	Alok Dube	Mobile: +91 9833435804	Email:	adube@feelbooks.in
CHENNAI	G Srinivasan	Mobile: +91 9003047502	Email:	gsrinivasan@feelbooks.in
KOLKATA	Dhrubajyoti Bhattacharjee	Mobile: +91 9836160013	Email:	dbhattacharjee@feelbooks.in
HYDERABAD	K.S.Vishwanath	Mobile: +91 9871745850	Email:	kvishwanath@feelbooks.in



For any queries, please email us at marketing@feelbooks.in



www.feelbooks.in

solution • A p Learning N