A step-by-step introduction to modeling, training, and forecasting using wavelet networks

Wavelet Neural Networks: With Applications in Financial Engineering, Chaos, and Classification presents the statistical model identification framework that is needed to successfully apply wavelet networks as well as extensive comparisons of alternate methods. Providing a concise and rigorous treatment for constructing optimal wavelet networks, the book links mathematical aspects of wavelet network construction to statistical modeling and forecasting applications in areas such as finance, chaos, and classification.

The authors ensure that readers obtain a complete understanding of model identification by providing in-depth coverage of both model selection and variable significance testing. Featuring an accessible approach with introductory coverage of the basic principles of wavelet analysis, Wavelet Neural Networks: With Applications in Financial Engineering, Chaos, and Classification also includes:

- Methods that can be easily implemented or adapted by researchers, academics, and professionals in identification and modeling for complex nonlinear systems and artificial intelligence

- Multiple examples and thoroughly explained procedures with numerous applications ranging from financial modeling and financial engineering, time series prediction and construction of confidence and prediction intervals, and classification and chaotic time series prediction
• An extensive introduction to neural networks that begins with regression models and builds to more complex frameworks

• Coverage of both the variable selection algorithm and the model selection algorithm for wavelet networks in addition to methods for constructing confidence and prediction intervals

Ideal as a textbook for MBA and graduate-level courses in applied neural network modeling, artificial intelligence, advanced data analysis, time series, and forecasting in financial engineering, the book is also useful as a supplement for courses in informatics, identification and modeling for complex nonlinear systems, and computational finance. In addition, the book serves as a valuable reference for researchers and practitioners in the fields of mathematical modeling, engineering, artificial intelligence, decision science, neural networks, and finance and economics.

名师简介

Antonios K. Alexandridis, PhD, 是肯特大学数学、统计和精算科学学院的讲师。Alexandridis博士的研究兴趣包括金融衍生品建模、定价和预测、机器学习以及神经和小波网络。

Achilleas D. Zapranis, PhD, 是马其顿大学金融与会计学院的副教授，同时担任经济规划和发展副校长。此外，Zapranis博士还担任塞萨洛尼基创新区董事会成员。

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