World Academy of Science, Engineering and Technology
International Journal of Mathematical and Computational Sciences
Vol:8, No:08, 2014

Fractal-Wavelet Based Techniques for Improving the Artificial Neural Network Models

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Abstract : Natural resources management including water resources requires reliable estimations of time variant environmental parameters. Small improvements in the estimation of environmental parameters would result in grate effects on managing decisions. Noise reduction using wavelet techniques is an effective approach for pre-processing of practical data sets. Predictability enhancement of the river flow time series are assessed using fractal approaches before and after applying wavelet based pre-processing. Time series correlation and persistency, the minimum sufficient length for training the predicting model and the maximum valid length of predictions were also investigated through a fractal assessment.

Keywords : wavelet, de-noising, predictability, time series fractal analysis, valid length, ANN
Conference Title : ICCMS 2014 : International Conference on Chaotic Modeling and Simulation
Conference Location : Kuala Lumpur, Malaysia
Conference Dates : August 25-26, 2014

Open Science Index, Mathematical and Computational Sciences Vol:8, No:08, 2014 publications.waset.org/abstracts/13126.pdf