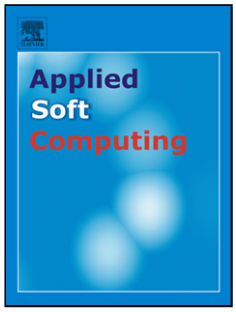

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Wavelet Neural Network Prediction Method of Stock Price Trend Based on Rough Set Attribute Reduction

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Abstract: To improve the prediction capacity of stock price trend, an integrated prediction method is proposed based on Rough Set (RS) and Wavelet Neural Network (WNN). RS is firstly introduced to reduce the feature dimensions of stock price trend. On this basis, RS is used again to determine the structure of WNN, and to obtain the prediction model of stock price trend. Finally, the model is applied to prediction of stock price trend. The simulation results indicate that, through RS attribute reduction, the structure of WNN prediction model can be simplified significantly with the improvement of model performance. The directional symmetry values of prediction, corresponding to SSE Composite Index, CSI 300 Index, All Ordinaries Index, Nikkei 225 Index and Dow Jones Index, are 65.75%, 66.37%, 65.97%, 65.52% and 66.75%, respectively. The prediction results are better than those obtained by other neural networks, SVM, WNN and RS-WNN, which verifies the feasibility and effectiveness of the proposed method of predicting stock price trend.

Keywords: Wavelet Neural Network; Rough Set; Attribute Reduction; Stock Price; Prediction

1 Introduction

The purpose of stock price prediction is to explore the development law of stock market so as to provide a scientific basis for stock investments. As the stock price volatility is caused by many factors, it is difficult to grasp the uncertainty of these factors affecting stock prices. Therefore, accurate prediction of stock prices is a difficult task in the finance field [1, 2].

In the existing stock price prediction methods, time series [3], gray [4], prosperity [5] and other methods are usually used. Since White first used the neural network to predict the daily return rate of IBM ordinary stock[6], the use of neural network in stock price prediction has become a hot research theme [7~15]. These studies make full use of the advantages of neural network such as self-organizing, self-learning, self-adapting, distributed processing, and can overcome the