Optimize stock price variation prediction via DOE and BPNN

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Abstract

Stock price variation predictions are at the core of many research issues, and neural networks (NNs) are widely applied and were proven to be more efficient than time series forecasting for stock price forecasting. However, this type of research always determines the parameter settings of the NNs rationally through a trial-and-error methodology. This paper integrates design of experiment (DOE) and back-propagation NN (BPNN) to construct a robust engine to further optimize the prediction accuracy under a robust DOE-based predictor. Adopting data from Taiwan Stock Exchange (TWSE) and Hang Seng Index (HSI) the technical analytical indexes and β value of the listed stocks of TWSE and the components of HIS were computed. The research results indicated that the proposed approach can effectively improve the forecasting rate of stock price variations.

Keyword：Stock price forecasting; Back-propagation neural network; Design of experiment; Parameter optimization;