

An Agent-based Method for Predicting Monthly Maximum & Minimum Quote Prices

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Abstract

In this paper a multi agent method for the prediction of monthly maximum and minimum quote prices is presented. This method is based on the training of Elman neural networks in which positive feedback is used to construct the memory in the network. Our motivation for using such a network is the complex behavior of the stock market which implies many parameters for predictor systems. To obtain the best parameters for this network we use a Multi agent optimization method based on the Swarm Intelligence, which is called Particle Swarm Optimization. In addition, a robust and efficient method for reducing the effects of overfitting problem is suggested. This method is based on using the weighted average output of an ensemble of networks, which is composed of some neural networks trained on different noisy versions of data. To make the prediction, also we use the weighted average of the outputs of the same set of networks.

The implementation of our model was verified over a real data set of quote prices. The result shows the error of 0.84 percent and nearly 0 for the prediction of minimum and maximum monthly prices. In the full version of this paper, the results of using this method on sample data sets will be presented.

Keywords

stock prediction, recurrent neural network, Particle Swarm Optimization, ensemble averaging

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