Using improved BPN/Cauchy machine and genetic algorithms to build an efficient neural network and to forecast Taiwanese electronic stock indexes

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Abstract

In recent years, artificial neural network (ANN) was used to forecast stock prices in many research efforts. Some of those efforts lacked a criterion rule to choose input variables and to achieve a significant network architecture. Some of them used trial-and-error to find a better network architecture in some range.

Therefore, in this research, we use genetic algorithms (GA), a neural network and an improved Back-Propagation Network/Cauchy (BPN/Cauchy) machine as the learning algorithms to train the network. The goal is to prevent the network from local optimum and achieve a satisfactory result efficiently. For this kind of network, the training period is long when it is applied to a complex model. We modify the method to train neural network to obtain balance between time consumption and performance. We expect to improve the ability of the network prediction model through our proposed methods. Finally, our proposed method is applied to forecast Taiwanese electronic stock indexes. The results of the experiment reflect that our proposed method is feasible for building an efficient neural network.

Keyword：Artificial Neural Network, Genetic Algorithm, Electronic Stock Indexes, BPN/Cauchy Machine