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Monthly minima & maxima stock prediction using Backpropagation & Genetic Algorithm hybrid

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Abstract
There is an increasing demand on stock prediction by the stock traders. One approach to stock prediction is Data Mining analysis in time series process, thus future stock price is predicted using datasets of daily prices and daily transactions volume gathered till now, and some economical indexes. Variance in stock price is non-linear and the best known approach is Artificial Neural Networks trained by Backpropagation. But this approach has the problem of local minima, furthermore any method proposed till know using this approach, can only perform well on daily predictions, so it can only predict some next days accurately, But the goal of this paper is to predict monthly maxima & minima, so we need prediction of all prices in work days of at least next month to estimate minima & maxima of them. Therefore we need a more accurate approach.
In this paper we experiment a hybrid model of Backpropagation (BP) & Genetic Algorithm (GA) to get a better prediction and eliminate the local minima problem. In this hybrid model first some backpropagation networks are trained by current data until we reach a local minima. Networks are initialized by random weights and trained respectively. Also to gain more speed it can be done on parallel systems. Then the weights obtained by any network are a member of population in a Genetic Algorithm. Genetic Algorithm outputs are then weights of a MLP Neural Network. Whereas weights of network in this level are good, it will be trained soon. This network is trained until weights nearly stop changing. Final weights form the desired output.

Keywords
Stock Prediction, Finance, Time Series, Risk analysis, Genetic Algorithm, Neural Network, Backpropagation