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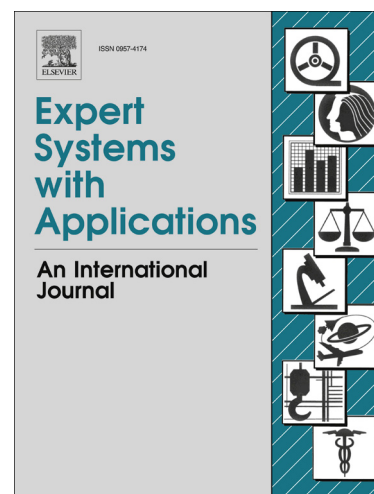
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Recurrent neural network and a hybrid model for prediction of stock returns

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Abstract

In this paper, we propose a robust and novel hybrid model for prediction of stock returns. The proposed model is constituted of two linear models: autoregressive moving average model, exponential smoothing model and a non-linear model: recurrent neural network. Training data for recurrent neural network is generated by a new regression model. Recurrent neural network produces satisfactory predictions as compared to linear models. With the goal to further improve the accuracy of predictions, the proposed hybrid prediction model merges predictions obtained from these three prediction based models. An optimization model is introduced which generates optimal weights for proposed model; the model is solved using genetic algorithms. The results confirm about the accuracy of the prediction performance of recurrent neural network. As expected, an outstanding prediction performance has been obtained from proposed hybrid prediction model as it outperforms recurrent neural network. The proposed model is certainly expected to be a promising approach in the field of prediction based models where data is non-linear, whose patterns are difficult to be captured by traditional models.

Keywords: Recurrent neural network, Autoregressive neural network, Genetic algorithms, Time series, Stock returns

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