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Orthogonal wavelet support vector machine for predicting crude oil prices

(Conference Paper)

Chiroma, H.^a [✉](#), Abdul-Kareem, S.^a [✉](#), Abubakar, A.^b [✉](#), Zeki, A.M.^b, Usman, M.J.^c [✉](#)^aDepartment of Artificial Intelligence, University of Malaya, Kuala Lumpur, Malaysia^bDepartment of Computer Science, Faculty of Information and Communication Technology, International Islamic University Malaysia, Gombak, Kuala Lumpur, Malaysia^cSchool of Electronic and Information Engineering, Liaoning University of Technology, Jinzhou, China

Abstract

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Previous studies mainly used radial basis, sigmoid, polynomial, linear, and hyperbolic functions as the kernel function for computation in the neurons of conventional support vector machine (CSVM) whereas orthogonal wavelet requires less number of iterations to converge than these listed kernel functions. We proposed an orthogonal wavelet support vector machine (OSVM) model for predicting the monthly prices of West Texas Intermediate crude oil prices. For evaluation purposes, we compared the performance of our results with that of the CSVM, and multilayer perceptron neural network (MLPNN). It was found to perform better than the CSVM, and the MLPNN. Moreover, the number of iterations, and time computational complexity of the OSVM model is less than that of CSVM, and MLPNN. Experimental results suggest that the OSVM is effective, robust, and can efficiently be used for crude oil price prediction. Our proposal has the potentials of advancing the prediction accuracy of crude oil prices, which makes it suitable for building intelligent decision support systems. © Springer Science+Business Media Singapore 2014.

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Crude oil prices Kernel function Orthogonal wavelet Support vector machine

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