1.TITLE: Machine learning approach for crude oil price prediction with Artificial Neural Networks.

AUTHOR: Abdullah, S. N., & Zeng, X.

YEAR: 2010

DESCRIPTION: The volatility of crude oil market and its chain effects to the world economy augmented the interest and fear of individuals, public and private sectors. Previous statistical and econometric techniques used for prediction, offer good results when dealing with linear data. Nevertheless, crude oil price series deal with high nonlinearity and irregular events. The continuous usage of statistical and econometric techniques for crude oil price prediction might demonstrate demotions to the prediction performance. Machine Learning and Computational Intelligence approach through combination of historical quantitative data with qualitative data from experts' view and news is a remedy proposed to predict this. This paper will discuss the first part of the research, focusing on to (i) the development of Hierarchical Conceptual (HC) model and (ii) the development of Artificial Neural Networks.

2.TITLE: Brent Crude Oil Price Forecast Utilizing Deep Neural Networks Architectures.

AUTHOR: Maryan Ebrahimi, Amir Daneshvar.

YEAR: 2022

DESCRIPTION: Brent crude oil is considered as one of the most important sources of crude oil pricing in the worldwide market, and it is used to set the price of two-thirds of the traded crude oil supplies in the world. To predict the price of Brent crude oil, LSTM and Bi-LSTM methods are applied, which are the architecture of the recursive neural network. Initially, the database creates the appropriate data for the period January 2015 to March 2021 from Brent crude oil price signals and daily data from a financial market, and then, the modeling process is performed via the use of MATLAB software. Also, about 90% of the data are for training and the remaining for validation and comparison. Using LSTM and Bi-LSTM neural networks, the network architecture has been worked on, and by adding the number of layers and changing the solvers (SGDM, RMSProp, and Adam), the errors of different models are compared with each other. Nonlinear techniques of artificial neural networks and deep learning were used for modeling. Then, the network architecture was worked on and the model error rate was evaluated by comparing different layers and solvents such as SGDM, RMSProp, and Adam. The superiority of SGDM solvent over others was shown, and finally, it can be mentioned as the superior method of modeling of price forecasting in Brent crude oil field. The results show that the model with two layers of LSTM and SGDM solver has less error and better accuracy.

3.TITLE: Prediction Of Crude Oil Prices In COVID-19 Outbreak Using Real Data.

AUTHOR: Oznur oztunc kaymark, Yigit kaymark.

YEAR:2022

DESCRIPTION: The world has been undergoing a global economic recession for almost two years because of the health crisis stemming from the outbreak and its effects have still continued so far. Especially, COVID-19 reduced consumer spending due to social isolation, lockdown and travel restrictions in 2020. As a result of this, with social and economic life coming to a standstill, oil prices plummeted. With the ongoing uncertainty concerning the COVID-19 pandemic, it has been of great importance for all economic agents to predict crude oil prices. The objective of this paper is to improve a model in order to make more accurate predictions for crude oil price movements. The performance of this model is assessed in terms of some significant criteria comparing our model with its counterparts as well as artificial neural networks (ANNs) and support vector machine (SVM) methods. As for these criteria, root mean square error (RMSE) and mean absolute error (MAE) results show that this model outperforms other models in forecasting crude oil prices. Further, the simulation results for 2021 show that the daily crude oil price forecasts are almost close to the real oil prices.
Oil price forecasting has become more and more important for economic agents in COVID-19 period. A consistent model is required to cope with the movements in crude oil prices. A novel method combining fuzzy time series and the greatest integer function is developed. The results show that our model outperforms other counterparts or ANN and SVM methods. We capture non-linearity and volatility in crude oil prices.

4.TITLE: Using Four Different Online Media Sources to Forecast the Crude Oil Price.

AUTHOR: Elshendy, M., Fronzetti Colladon, A., Battistoni, E. & Gloor, P. A.

YEAR:2018

DESCRIPTION: This study looks for signals of economic awareness on online social media and tests their significance in economic predictions. The study analyses, over a period of two years, the relationship between the West Texas Intermediate daily crude oil price and multiple predictors extracted from Twitter, Google Trends, Wikipedia, and the Global Data on Events, Language, and Tone database (GDELT). Semantic Analysis is applied to study the sentiment, emotionality and complexity of the language used. ARIMAX models are used to make predictions and to confirm the value of the study variables. Results show that the combined analysis of the four media platforms carries valuable information in making financial forecasting. Twitter language complexity, GDELT number of articles and Wikipedia page reads have the highest predictive power. The study also allows a comparison of the different foresighting abilities of each platform, in terms of how many days ahead a platform can predict a price movement before it happens. In comparison to previous work, more media sources, and more dimensions of the interaction and of the language used, are combined in a joint analysis.

5.TITLE: A Novel Hybrid Method Of Forecasting Crude Oil Prices Using Complex Network Science And Artificial Intelligence Algorithms.

AUTHOR: Minggang Wang, Longfeng Zhao, Ruijin Du, Lin Chen.

YEAR:2013.

DESCRIPTION: Forecasting the price of crude oil is a challenging task. To improve this forecasting, this paper proposes a novel hybrid method that uses an integrated data fluctuation network (DFN) and several artificial intelligence (AI) algorithms, named DFN-AI model. In the proposed DFN-AI model, a complex network time series analysis technique is performed as a preprocessor for the original data to extract the fluctuation features and reconstruct the original data, and then an artificial intelligence tool, e.g., BPNN, RBFNN or ELM, is employed to model the reconstructed data and predict the future data. To verify these results we examine the daily, weekly, and monthly price data from the crude oil trading hub in Cushing, Oklahoma. Empirical results demonstrate that the proposed DFN-AI models (i.e., DFN-BP, DFN-RBF, and DFN-ELM) perform significantly better than their corresponding single AI models in both the direction and level of prediction. This confirms the effectiveness of our proposed modeling of the nonlinear patterns hidden in crude oil prices. In addition, our proposed DFN-AI methods are robust and reliable and are unaffected by random sample selection, sample frequency, or breaks in sample structure.