LITERATURE SURVEY

1)In Year 2022,"OIL PRICE PREDICTION USING MACHINE LEARNING MODEL".

AUTHORS : M. Rajeswari , S. Ramya , A ArunPrasath and Tina Susan Thomas, Grandin Major .

Machine Learning allows programming applications to be more precise in predicting outcomes without having to explicitly customize it to try to do it. Oil plays an important part in the energy consumption of the world. The sharp rise in oil prices is shaking financial stocks globally. Because of non-linear factors, old statistical models are not suitable for accurately predicting oil prices.
This prompts us to mandate as a commitment to give a simple consent to the subsequent representation of oil price data and its related Index .

2)In Year 2022,"An Explainable Machine Learning Framework for Forecasting Crude Oil Price during the COVID-19 Pandemic ".

AUTHORS:Xinran Gao,Junwei Wang And Liping Yang.

Financial institutions, investors, central banks and relevant corporations need an efficient and reliable forecasting approach for determining the future of crude oil price in an effort to reach optimal decisions under market volatility. This paper presents an innovative research framework for precisely predicting crude oil price movements and interpreting the predictions. First, it compares six advanced machine learning (ML) models, including two state-of-the-art methods: extreme gradient boosting (XGB) and the light gradient boosting machine (LGBM). Second, it selects novel data, including user search big data, digital currencies and data on the COVID-19 epidemic. The empirical results suggest that LGBM outperforms other alternative ML models. Finally, it proposes an interpretable framework for facilitating decision making to interpret the prediction results of complex ML models and for verifying the importance of various features affecting crude oil price. The results of this paper provide practical guidance for participants in the crude oil market.

3)In Year 2021,"Crude oil prices and volatility prediction by a hybrid model based on kernel extreme learning machine".

AUTHORS:Hongli Niu And Yazhi Zhao.

In view of the important position of crude oil in the national economy and its contribution to various economic sectors, crude oil price and volatility prediction have become an increasingly hot issue that is concerned by practitioners and researchers. In this paper, a new hybrid forecasting model based on variation al mode decomposition (VMD) and kernel extreme learning machine (KELM) is proposed to forecast the daily prices and 7-day volatility of Brent and WTI crude oil. The KELM has the advantage of less time consuming and lower parameter-sensitivity, thus showing fine prediction ability. The effectiveness of VMD-KELM model is verified by a comparative study with other hybrid models and their single models. Except various commonly used evaluation criteria, a recently-developed multi-scale composite complexity synchronization (MCCS) statistic is also utilized to evaluate the synchrony degree between the predictive and the actual values. The empirical results verify that 1) KELM model holds better performance than ELM and BP in crude oil and volatility forecasting; 2) VMD-based model outperforms the EEMD-based model; 3) The developed VMD-KELM model exhibits great superiority compared with other popular models not only for crude oil price, but also for volatility prediction.

4)In Year 2021,"Forecasting Crude Oil Price Using Event Extraction" .

AUTHORS: JianGwei Liu And Xiaohong Huang.

Research on crude oil price forecasting has attracted tremendous attention from scholars and policymakers due to its significant effect on the global economy. Besides supply and demand, crude oil prices are largely influenced by various factors, such as economic development, financial markets, conflicts, wars, and political events. Most previous research treats crude oil price forecasting as a time series or econometric variable prediction problem. Although recently there have been researches considering the effects of real-time news events, most of these works mainly use raw news headlines or topic models to extract text features without profoundly exploring the event information. In this study, a novel crude oil price forecasting framework, AGESL, is proposed to deal with this problem. In our approach, an open domain event extraction algorithm is utilized to extract underlying related events, and a text sentiment analysis algorithm is used to extract sentiment from massive news. Then a deep neural network integrating the news event features, sentimental features, and historical price features is built to predict future crude oil prices. Empirical experiments are performed on West Texas Intermediate (WTI) crude oil price data, and the results show that our approach obtains superior performance compared with several benchmark methods.

5)In Year 2020,"Crude Oil Prices Forecasting: An Approach of Using CEEMDAN-Based Multi-Layer Gated Recurrent Unit Networks ".

AUTHORS:Hualing Lin , Quibi sun.

Accurate prediction of crude oil prices is meaningful for reducing fi firm risks, stabilizing commodity prices and maintaining national financial security. Wrong crude oil price forecasts can bring huge losses to governments, enterprises, investors and even cause economic and social instability. Many classic econometrics and computational approaches show good performance for the ordinary time series prediction tasks, but not satisfactory in crude oil price predictions. They ignore the characteristics of non-linearity and non-stationary of crude oil prices data, which hinder an accurate prediction and eventually lead to poor accuracy or the wrong result. Empirical mode decomposition (EMD) and ensemble EMD (EEMD) solve the problems of non-stationary time series forecasting, but they also generate new problems of mode mixing and reconstruction errors. We propose a hybrid method that is combination of the complete ensemble empirical mode decomposition with adaptive noise (CEEMDAN) and multi-layer gated recurrent unit (ML-GRU) neural network to solve the above mentioned issues. This not only deals with the issue of mode mixing effectively, but also makes the reconstruction error of data close to zero. Multi-layer GRU has an excellent ability of nonlinear data-fi-fitting. The experimental results of real WTI crude oil dataset show that the proposed approach perform better in crude oil prices forecasts than some state-of-the-art models.

6)In Year 2020,"Effects of Covid-19 on Crude Oil Price and Future Forecast Using a Model Application and Machine Learning" .

AUTHORS:Azubuike H . Amadi , Orisa F. Ebube ,Silas I . Aire AND Chigozire B. Marcus

Oil Price has been a benchmark governing the trade of oil and gas globally. It is fixed by producing countries or countries in a consortium through organizations such as Organization of the Petroleum Exporting Countries (OPEC) or a particular mix of crude oil such as the West Texas Intermediate (WTI) or Brent. The spot price and future prices of crude oil is basically determined by demand and supply, however, some external factors can have great influence on oil price. This research work will be emphasizing on the direct and indirect effects of the COVID-19 pandemic as an external factor other than demand and supply on the benchmarks of oil pricing between 2000 and 2020. Having analyzed the various oil price fluctuation which have caused by several factors over the years, this research went further to identify those significant factors, weigh them and input them into a model that will generate simulated oil prices of past, present and future benchmarks with relation to demand, supply, production cost and other external factors. This model was also validated using machine learning algorithms and real data of previous yearly average oil price noting the reasons for each spot price. Significant recommendations were made on the use of this model for fixing oil price benchmarks as variables to each benchmark are numerous.

7)In Year 2020,"Google Index-Driven Oil Price Value-at-Risk Forecasting: A Decomposition Ensemble Approach".

AUTHORS: Lu-Xi Liu AND Ming -Fang Li.

The oil price is in fl-fluctuations not only by the fundamentals of supply and demand but also by unpredictable political conflicts, climate emergencies, and investor intentions, which cause enormous short term fl fluctuations in the oil price. The proposition of the Google index-driven decomposition ensemble model to forecast crude oil price risk uses big data technology and a time series decomposition method. First, by constructing an index of investor attention for the market and emergencies combined with a bi variate empirical mode decomposition, we analyze the impact of investor attention on oil price fl-fluctuations. Second, we establish a vector auto regression model, and the impulse responses define the impact of emergencies on the crude oil price. Finally, with the help of machine learning and historical simulation methods, the risk of crude oil price shocks from unexpected events is predicted. Empirical research demonstrates that concerns related to the oil market and emergencies that appear in Google search data are closely related to changes in oil prices. Based on the Google index, our model's prediction of crude oil prices is more accurate than other models, and the prediction of value-at-risk is closer to the theoretical value than the historical simulation with the ARMA forecasts method. Considering the impact of emergencies in the prediction of crude oil price risk can help provide technical guidance for investors and risk managers and avoid economic risks caused by climate disasters or political conflicts.

8)In Year 2019,"Multi-Scale Volatility and External Event Analysis of Crude Oil Price Prediction".

AUTHORS:Jiayu Yi And Yuxiang Cheng

crude oil price fluctuations and analyze the impacts of external events, this paper first employs the CEEMD method to decompose the crude oil historical prices into different components and extracts a market fluctuation, a shock from extreme events, and a long-term trend. And we find that when determining the crude oil prices, the shock from extreme events has become the most important factor. Then we combine the ICSS test with the Chow test to get the structural breaks and analyze extreme event impacts. Finally, considering the interaction between external event impacts and crude oil prices,we establish the models based on VAR, SVM, and structural breaks to predict the crude oil prices, finding that the CEEMD- VAR-SVM model with structural breaks performs best compared to other models we established.