

LITERATURE REVIEW

Survey 1

Ganiyu Adewale Busari

Crude oil price prediction: A comparison between AdaBoost-LSTM and AdaBoost-GRU for improving forecasting performance

We proposed a hybrid model that combined AdaBoost algorithm with GRU and compare its forecasting performance with the existing AdaBoost-LSTM model. The proposed work is the first that applied to the crude oil prices prediction. Comparison of the analysis results of the models are presented with the benchmarked models, that is, LSTM and GRU. The evaluation metrics considered are both scale –dependent metrics, that is, MAE and RMSE and scale-independent metrics, that is, MAPE and WMAPE. We also applied Scatter index as normalized RMSE. The proposed method, AdaBoost-GRU outperforms the single methods and AdaBoost-LSTM ensemble model in this study.

Survey 2

HuiziHe,MeiSun,XiumingLi,Isaac AdjeiMensah

A novel crude oil price trend prediction method: Machine learning classification algorithm based on multi-modal data features

A novel hybrid prediction model is proposed based on VMD and ML algorithms. Five multi-modal data feature indices are established based on IMFs of prices. The forecasting accuracy is elevated by introducing multi-modal data features. Trend symbols of prices are predicted by ML multi-classifiers. Classification performs better than regression in forecasting price trend.

Survey 3

Prediction of crude oil prices in COVID-19 outbreak using real data

ÖznurÖztunç Kaymak

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.

Survey 4

Taiyong Li,Zijie Qian,Shuheng Wang

Forecasting crude oil price with multilingual search engine data

In the big data era, search engine data (SED) have presented new opportunities for improving crude oil price prediction; however, the existing research were confined to single-language (mostly English) search keywords in SED collection. To address such a language bias and grasp worldwide investor attention, this study proposes a novel multilingual SED-driven forecasting methodology from a global perspective. The proposed methodology includes three main steps: (1) multilingual index construction, based on multilingual SED; (2) relationship investigation, between the multilingual index and crude oil price; and (3) oil price prediction, with the multilingual index as an informative predictor. With WTI spot price as studying samples, the

empirical results indicate that SED have a powerful predictive power for crude oil price; nevertheless, multilingual SED statistically demonstrate better performance than single-language SED, in terms of enhancing prediction accuracy and model robustness.

Survey 5

Binrong Wu,Lin Wang

Effective crude oil price forecasting using new text-based and big-data-driven model

This study proposes a novel data-driven crude oil price prediction methodology using Google Trends and online media text mining. Convolutional neural network (CNN) is used to automatically extract text features from online crude oil news to illustrate the explanatory power of text features for crude oil price prediction. Specifically, our findings contribute to the methodological and theoretical insights for information processing, in that variational mode decomposition is used to construct useful time series indicators based on the outputs of CNN. Experimental results imply that the proposed text-based and online-big-data-based forecasting methods outperform other techniques. A total of 4837 and 3883 news headlines are collected in two cases, respectively. The mean absolute percentage error of the proposed model is 0.0571 and 0.0459 for crude oil price forecasting of two cases, respectively.

REFERENCES

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4. Taiyong Li,Zijie Qian,Shuheng WangForecasting crude oil price with multilingual search engine data.
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