

## **Crude Oil Price Prediction**

Crude oil is the world's leading fuel, and its prices have a big impact on the global environment, economy as well as oil exploration and exploitation activities. Oil price forecasts are very useful to industries, governments and individuals. Although many methods have been developed for predicting oil prices, it remains one of the most challenging forecasting problems due to the high volatility of oil prices.

We propose a novel approach for crude oil price prediction based on a machine learning approach. The main advantage of our approach is that the prediction model can capture the changing pattern of oil prices since the model is continuously updated whenever new oil price data are available, with very small constant overhead.

To evaluate the forecasting ability of our learning model, we compare it with three other popular oil price prediction models. The experiment results show that our stream learning model achieves the highest accuracy in terms of both mean squared prediction error and directional accuracy ratio over a variety of forecast time horizons.

We use the deep learning model to capture the unknown complex nonlinear characteristics of the crude oil price movement. We further propose a new hybrid crude oil price forecasting model based on the deep learning model. Using the proposed model, major crude oil price movement is analyzed and modeled. The performance of the proposed model is evaluated using the price data in the WTI crude oil markets. The empirical results show that the proposed model achieves the improved forecasting accuracy.