

LITERATURE SURVEY

1)Prediction Model for Crude Oil Price Using Artificial Neural Networks

ABSTRACT

The prediction model based on artificial neural network (ANN) to forecast and compared with least square method (LSM). The results show that on the short-term, the best prediction model for ANN of four, three, two and one hidden layers, respectively. The ANN of one - four hidden layers is found to be able to forecast better than the LSM.

METHODOLOGY

This presents a hybrid methodology to forecast crude oil monthly prices. The model consists of combination of three separate components that they extract rule based system. These three components work disjointedly, and then intergraded together to get the final results. They claimed that nonlinear integration of these three models has outperformed any single one. However, there are several issues in this system. For example, the rule base system of the text mining model 3 depends on the knowledge base which developed by human experts. This process is not only controversial, but also unreliable, experts opinions vary on the same problem. Moreover, neither the rules nor the knowledge base was made available to the public.

LSM arise when fitting a parameterized function to a set of measured data points by minimizing the sum of the squares of the errors between the data points and the function. LSM based methods have received considerable attention for crude oil price forecasting. These models have been used to deal with the nonlinearity of crude oil price. The methodology of this study is based on four layers feedforward network with backpropagation algorithm. The goal is to forecast crude oil prices. Convergence, the ability of the model to perform with new data and Satiability, consistency of the network output are main requirements for any

successful ANN. The points are successfully, a large number of considerations need to be taken into account, the size and frequency of the data, network architect, the number of hidden neurons, and activation function.

2)Crude Oil Price Prediction Using LSTM Networks

ABSTRACT

Crude oil market is an immensely complex and dynamic environment and thus the task of predicting changes in such an environment becomes challenging with regards to its accuracy. A number of approaches have been adopted to take on that challenge and machine learning has been at the core in many of them. There are plenty of examples of algorithms based on machine learning yielding satisfactory results for such type of prediction. In this paper, we have tried to predict crude oil prices using Long Short-Term Memory (LSTM) based recurrent neural networks. We have tried to experiment with different types of models using different epochs, lookbacks and other tuning methods. The results obtained are promising and presented a reasonably accurate prediction for the price of crude oil in near future.

METHODOLOGY

This is based on recurrent neural networks for the purpose of crude oil price prediction. Recurrent neural networks (RNN) have been proved to be one of the most powerful models for processing time-series based sequential data. LSTM is one of the most successful RNN architectures. LSTM introduces the memory cell, a unit of computation that replaces traditional artificial neurons in the hidden layer of the network. With these memory cells, networks are able to effectively associate memories and input remote in time, hence suit to grasp the structure of data dynamically over time with high prediction capacity.

3) Oil Price Prediction Using Ensemble Machine Learning

ABSTRACT

Crude oil price forecasting is a challenging task due to its complex nonlinear and chaotic behavior. During the last couple of decades, both academicians and practitioners devoted proactive knowledge to address this issue. A strand of them has focused on some key factors that may influence the crude oil price prediction accuracy.

METHODOLOGY

Support Vector Regression

Support Vector Machines (SVM) are supervised learning models used for classification and regression analysis. An SVM model is a representation of the examples as points in space, mapped so that the examples of the separate categories are divided by a clear gap that is as wide as possible. Support Vector Regression (SVR) is a SVM algorithm to handle nonlinear prediction.

Instance Based Learning

Instance-based learning (IBL) algorithms are derived from the nearest neighbor machine learning philosophy. IBK is an implementation of the k-nearest neighbor's algorithm. The number of nearest neighbors (k) can be set manually or determined automatically. Each unseen instance is always compared with existing ones using a distance metric.