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Department of Electronics and Communication Engineering

HX8001 - PROFESSIONAL READINESS FOR INNOVATION, EMPLOYABILITY AND ENTREPRENEURSHIP

CRUDE OIL PRICE PREDICTION

Domain of the Project : RETAIL & E-COMMERCE
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Objectives

- To forecast the future crude oil price using Artificial Neural Network models and comparison between feedforward and backpropagation neural network.

- To analyse the impact of production, consumption, exports and imports of crude oil, exchange rate, inflation, Nifty index and stock prices of RIL, BPCL, HPCL, OGC, IOC and MRPL on crude oil price.

Abstract

- 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.
- Artificial intelligent methods are being extensively used for oil price fore casting as an alternate approach to conventional techniques. There has been a whole spectrum of artificial intelligent techniques to overcome the difficulties of complexityand irregularity in oil price series.
- The potential of AI as a design tool for oil price forecasting has been reviewed in this study.

Introduction

- In the last several years, oil prices showed great variations, they raised and dropped down dramatically in various intervals.
- Since, oil is one of the strategic commodities and plays a critical role in effecting on the word's economy and macroeconomics factors such as inflation,recession, GDP, interest rates, exchange rates, and etc; therefore, the determinants of oil prices and its fluctuations have been one of the most favorable subjects for energy researchers and economists.
- As a result, achieving to a reliable and highly accurate forecasting and answering to the complexities of the crude oil prices would be important to policy makers.

Literature Survey

TITLE	AUTHOR & YEAR	JOURNAL NAME	REMARKS
Crude oil price prediction using complex network and deep learning algorithm	Makumbonori Bristone , Rajesh Prasad and Adamu Ali Abubakar & 2019	Petroleum	They use the complex network analysis and LSTM for price prediction .They only consider crude oil price without necessarily considering other factor such as financial market ,economic growth, dollar exchange rate ,demand and supply etc..
Multi-Scale Volatility and External Event Analysis of Crude Oil Price Prediction	Yuxiang Cheng & 2019	IEEE Xplore	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.

Literature Survey

TITLE	AUTHOR & YEAR	JOURNAL NAME	REMARKS
Crude Oil Prices Forecast Based on EMD and BP Neural Network	MALLI SURESH BABU , DR. S NAVEEN KUMAR & 2021	JES	we use hybrid mannequin with the empirical mode decomposition (EMD) and Back Propagation Neural Network (BPNN) to predict the crude oil prices Moreover we used BPNN to predict the Brent and WIT crude oil expenditures respectively
A Comparative Study of Time Series, Machine Learning, and Ensemble Models for Crude Oil Price Prediction	Ankit Prakash ,Sunil Kumar Singh & 2019	Springer link	Various time series, machine learning, deep learning, and ensemble learning models are used to find the best model for forecasting the results. We have analyzed the performance of the models with the help of the performance metrics such as MSE, RMSE, MAPE, and NRMSE

Literature Survey

TITLE	AUTHOR & YEAR	JOURNAL NAME	REMARKS
Multi-Step-Ahead Crude Oil Price Forecasting Based on Hybrid Model	Grandin Major,Rajeshwari M,Ramya S & 2022	China journal of econometrics	We propose a hybrid multi-step-ahead forecasting model that integrates the secondary decomposition algorithm which combines variational modal decomposition and integrated empirical modal decomposition, differential evolution and extreme learning machine (ELM), namely, VMD-RES.-EEMD-DE-ELM, for more accurate crude oil price forecasting
OIL PRICE PREDICTION USING MACHINE LEARNING MODEL	TANG Zhenpeng, ZHANG Tingting,CHEN Kaijie & 2021	Kalahari	Machine learning models such as FB Prophet a to analyze, classify, and predict time series data. Historical data is presented using variables analyzed and calculated during the algorithm execution module, and each algorithm makes a series of oil price predictions

Literature Survey

TITLE	AUTHOR & YEAR	JOURNAL NAME	REMARKS
Analysis and forecasting of crude oil price based on the variable selection-LSTM integrated model	Quanying Lu, Shaolong Sun, Hongbo Duan and Shouyang Wang &2021	Scientist	This paper assesses and selects core influence factors with the elastic-net regularized generalized linear Model , spike-slab lasso method, and Bayesian model average. Secondly, the new machine learning method long short-term Memory Network is developed for crude oil price forecasting.
Forecasting Crude Oil Price Using Event Extraction	Jiangwei Liuand Xaohong Huang & 2021	IEEE Access	We propose a new hybrid framework, AGESL, for predicting crude oil prices whose focus is on capturing these features to enhance the prediction accuracy. For this purpose, we utilize an open-domain Event Extraction algorithm and other NLP technologies to extract news events and news sentiment from news text.

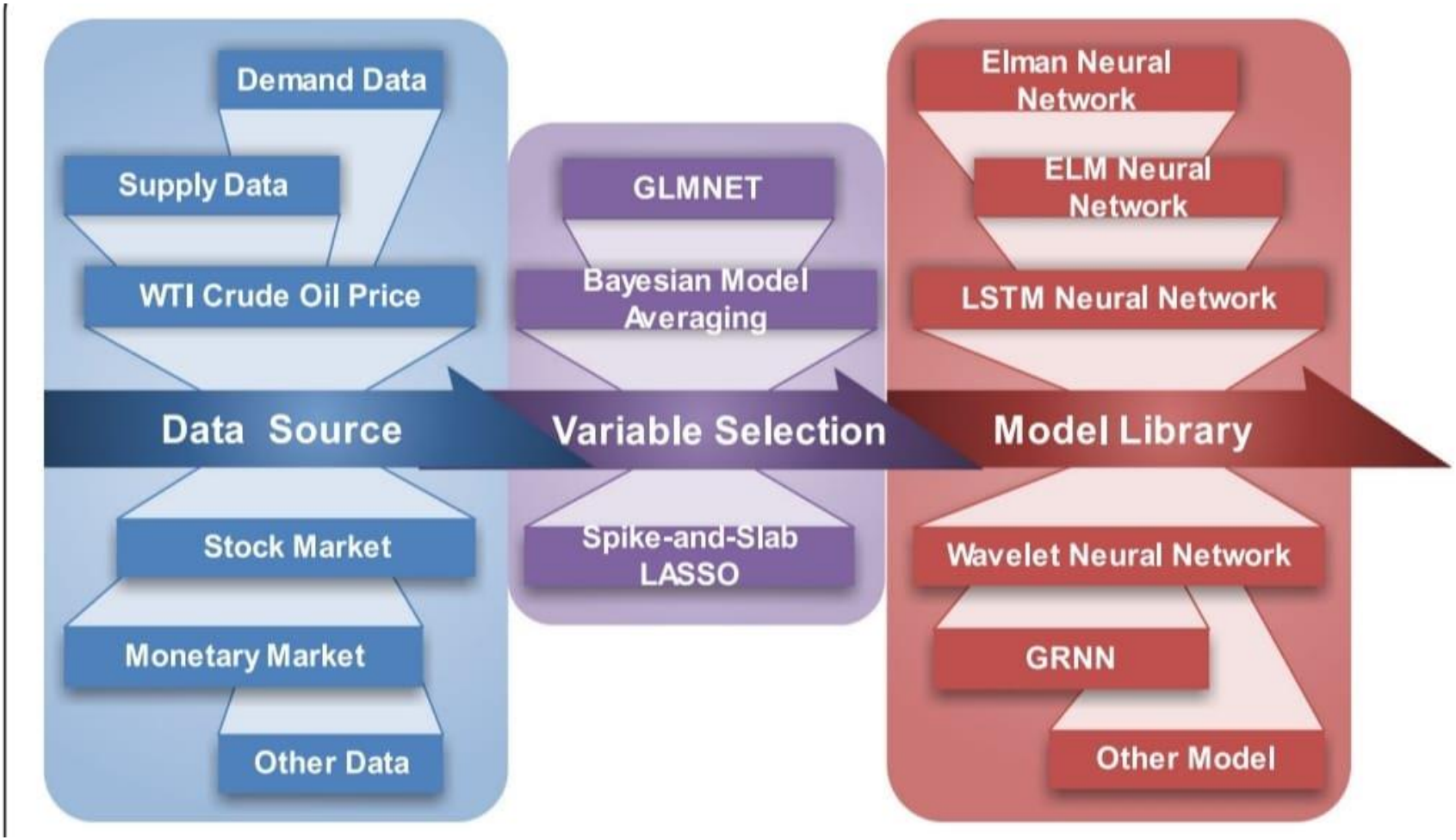
Literature Survey

TITLE	AUTHOR & YEAR	JOURNAL NAME	REMARKS
Crude oil price by a hybrid model based on Kernel extreme learning machine	Kuen-Suan Chen & 2021	TREND MD	He used a new hybrid forecasting model based on variational mode decomposition(VMD) and kernel extreme learning machine(KELM) is proposed to forecast the daily prices.
Crude oil price forecast utilizing Deep neural netwo rk architectures	Amir Daneshvr, Fariba Salahi, Maryam Rahmaty & 2022	Hindawi	To predict the price of the crude oil, LSTM and Bi-LSTM methods are applied. Initially the database create the appropriate data for the period of last 5 years from the crude oil signal and daily data from the financial market and then the modeling process is performed via MATLAB software

Problem Identification

- Forecasting crude oil prices is a very challenging problem due to the high volatility of oil prices. In this paper, we developed a new oil price prediction approachusing ideas and tools from stream learning, a machine learning paradigm for analysis and inference of continuous flow of non-stationary data. Our stream learning model will beupdated whenever new oil price data are available, so the model continuously evolvesover time, and can capture the changing pattern of oil prices. In addition, updating the model requires only a small constant time per new data example, as opposed to retraining the model using the entire training data set.

Block Diagram



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Questions & Discussion

THANK YOU