

I.E. Livieris, E. Pintelas, N. Kiriakidou and S. Stavroyiannis. [An advanced deep learning model for short-term forecasting U.S. natural gas price and movement](#)

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Abstract - Natural gas constitutes one of the most actively traded energy commodity with a significant impact on many financial activities of the world. The accurate natural gas price prediction and the direction of price changes are considered essential since these forecasts are utilized in energy sustainability planning, commodity trading and decision making, covering both the supply and demand side of natural gas market. In this research, a new deep learning prediction model is proposed for short-term forecasting natural gas price and movement. The proposed forecasting model exploits the ability of convolutional layers for providing a deep insight in natural gas data and the efficiency of LSTM layers for learning short-term and long-term dependencies. Additionally, a significant advantage of the proposed model is its abilities to predict the price of natural gas on the following day (regression) and also to predict if the price on the next day will increase, decrease or stay stable (classification) with respect to today's price. The conducted series of experiments demonstrated that the proposed model considerably outperforms state-of-the-art deep learning and machine learning models.