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COMPARATIVE ANALYSIS OF MODELS FOR SHORT-TERM FORECASTING OF ELECTRICITY CONSUMPTION

Abstract. Forecasting electricity consumption is an urgent task, and the solution significantly affects the efficiency of the use of energy resources. The paper considers short-term forecasting of electricity consumption, which predicts the amount of energy that will be used in a short period, from several hours to several days in advance. There are various short-term forecasting models, so it is important to reasonably choose a model that provides analysis and effective forecasting of electricity consumption to optimize the use of energy resources. The purpose of the work is to analyze the main forecasting models, such as statistical models (autoregressive model, moving average, exponential smoothing, moving average with autoregression and integration) and deep learning models (artificial neural network, recurrent neural network, long short-term memory, transformer), indicating their advantages and disadvantages, and choosing the best of them. The experimental results of a comparative analysis of power consumption forecasting models are presented, which showed that the transformer model was 1.5% - 2% more effective in power consumption forecasting according to various metrics. Its higher level of accuracy, reflected in low error values and high coefficient of determination, indicates its high adaptability to the dynamics of electricity consumption.

Keywords. Forecasting, time series, power consumption, model, neural network, deep learning, accuracy