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AN ANALYSIS OF DEEP LEARNING FOR RENEWABLE ENERGY FORECASTING

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ABSTRACT

Order to increase the accuracy of sustainable energy forecasting is important to power system planning, management, and operations as renewable energy becomes more prevalent in the worldwide electric energy grid. According of the sporadic and unpredictable nature of renewable energy data, this is a difficult job. To date, a variety of approaches have been developed to enhance the forecasting accuracy of renewable energy, including physical models, statistical methods, artificial intelligence techniques, and their hybrids. Deep learning has been widely described in the literature as a potential form of machine learning capable of finding intrinsic nonlinear characteristics and high-level invariant structures in data. This article offers a thorough and in-depth examination of deep learning-based renewable energy forecasting techniques in order to assess their efficacy, efficiency, and application potential. Deep belief network, stack auto-encoder, deep recurrent neural network, and others are the four categories of extant deterministic and probabilistic forecasting techniques based on deep learning. To enhance forecasting accuracy, we also analyze viable data preparation approaches and error post-correction procedures. Various deep learning-based forecasting techniques are thoroughly examined and discussed. Furthermore, we look at the present research efforts, difficulties, and study and future research orientations in this field.

KEYWORDS: *Artificial intelligence, Deep learning, Network, Renewable, Technique.*

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