



(DOI: 10.1007/S00521-017-3225-Z) Photovoltaic (PV) is one of the most promising renewable energy sources. To ensure secure operation and economic integration of PV in smart grids, accurate forecasting of PV power is an important issue. In this paper, we propose the use of long short-term memory recurrent neural network (LSTM-RNN) to accurately forecast the output ???

The integration of solar energy with a power system brings great economic and environmental benefits. However, the high penetration of solar power is challenging due to the operation and planning of the existing power system owing to the intermittence and randomicity of solar power generation. Achieving accurate predictions for power generation is important to ???

The PV power forecasting methods are mainly divided into three categories: physical models, statistical models, and machine learning models. The physical model mainly depends on the interaction between the laws of physics and solar radiation in the atmosphere [3] consists of three sub-models: numerical weather prediction (NWP) [4], total-sky image ???

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? Several researchers have worked on the prediction of PV power using RNN and LSTM based models 7,8,9,10,11. Wang et al. 12 presented a LSTM-RNN model based on the principles of time correlation

According to Yang et al. 57,58, the accuracy of solar forecasting models (in general, the term "solar forecasting" may refer to either solar irradiance forecasting or solar power forecasting



The output of LSTM-RNN model and time correlation model are both the data sequence of daily PV power in the forecasting day. While for LSTM-RNN model, the input data are the PV power value sequence in the previous three days, and for time correlation model, the output data are calculated according to the determined scale coefficients using

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In recent years, advanced information technologies, such as deep learning and big data, have been actively applied in building energy management systems to improve energy efficiency. Various studies have been conducted on the prediction of renewable energy performance using machine learning techniques. In this study, a recurrent neural network ???

Accurate forecasting of photovoltaic (PV) power is essential for grid scheduling and energy management. In recent years, deep learning technology has made significant progress in time-series forecasting, offering new solutions for PV power forecasting. This study provides a systematic review of deep learning models for PV power forecasting, concentrating ???

Photovoltaic (PV) power generation prediction is a significant research topic in photovoltaics due to the clean and pollution-free characteristics of solar energy, which have contributed to its popularity worldwide. Photovoltaic data, as a type of time series data, exhibit strong periodicity and volatility. Researchers typically employ time???frequency signal ???

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Accurate photovoltaic power forecasting models using deep LSTM-RNN. Neural Comput. Appl. (2019) M. Gaoa et al. Accurate PV power forecasting is becoming a mandatory task to integrate the PV plant into the electrical grid, scheduling and guaranteeing the safety of the power grid. In this paper, a novel model to forecast the PV power using



To predict aggregated power load and photovoltaic power generation in a community microgrid, Wen et al. developed a deep recurrent neural network (RNN) with LSTM units (DRNN-LSTM) model, the proposed forecasting model was tested using two real-world datasets, and the results demonstrate that the DRNN-LSTM model outperforms a multi-layer



First is the research on an LSTM-RNN model for day-ahead PV power forecasting based on deep learning techniques to improve the AI modeling based forecasting accuracy. Second is the research on a time correlation modification (TCM) method based on time periodicity and proximate similarity.

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The growing integration of renewable energy sources and the rapid increase in electricity demand have posed new challenges in terms of power quality in the traditional power grid. To address these challenges, the transition to a smart grid is considered as the best solution. This study reviews deep learning (DL) models for time series data management to predict ???



To improve the PV power forecasting accuracy, LSTM-TCN has been proposed for very short-term forecasting applications. In this paper, the novel model combines the Long short term memory model, and the Temporal convolutional network model. Accurate photovoltaic power forecasting models using deep LSTM-RNN. Neural Comput. Appl., 31 (2019), pp



In Ref. [28], a deep learning model based on long-short-term memory recurrent neural network (LSTM-RNN) under the framework of partial daily pattern prediction (PDPP) is proposed for day-ahead PV power forecasting. However, the prediction model based on similar weather types breaks the law essence of the original time series of power data, and

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PV prediction accuracy is a good solution to overcome these issues . At present, Statistical approaches and artificial neural network (ANN)-based methods are two main types of load forecasting methods. Abdel-Nasser, M., Mahmoud, K.: Accurate photovoltaic power forecasting models using deep LSTM-RNN. Neural Comput. Appl. 31(7), 2727???2740

To significantly improve the prediction accuracy of short-term PV output power, this paper proposes a short-term PV power forecasting method based on a hybrid model of temporal convolutional



Abdel-Nasser M, Mahmoud K (2019) Accurate photovoltaic power forecasting models using deep LSTM-RNN. Neural Comput Appl 31:2727???2740. Google Scholar Wojtkiewicz J, Hosseini M, Gottumukkala R, Chambers TL (2019) Hour-ahead solar irradiance forecasting using multivariate gated recurrent units, pp 1???13.

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The switch to an autonomous source of electricity has caused a major change in the Indian power sector. Due to the rising percentage of solar PV and its sporadic reliance on weather, grid stability may hamper [4].Grid operating causes erratic power production, which is the cause of problems with public grid operation and control [5].To send the generated power ???



PDF | On Apr 1, 2020, Fouzi Harrou and others published Forecasting of Photovoltaic Solar Power Production Using LSTM Approach | Find, read and cite all the research you need on ResearchGate



Solar-based energy is becoming one of the most promising sources for producing power for residential, commercial, and industrial applications. Energy production based on solar photovoltaic (PV) systems has gained much attention from researchers and practitioners recently due to its desirable characteristics. However, the main difficulty in solar energy production is ???

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Solar is a significant renewable energy source. Solar energy can provide for the world's energy needs while minimizing global warming from traditional sources. Forecasting the output of renewable energy has a considerable impact on decisions about the operation and management of power systems. It is crucial to accurately forecast the output of renewable ???

In this paper, we propose the use of long short-term memory recurrent neural network (LSTM-RNN) to accurately forecast the output power of PV systems. The LSTM networks can model the temporal changes in PV output power because of their recurrent architecture and memory units. The proposed method is evaluated using hourly datasets of different



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method form NARX and LSTM-RNN. A Novel Approach Based Deep RNN Using Hybrid NARX-LSTM Model For Solar Power Forecasting Mohamed Massaoudi1,2, Ines Chihi3, Lilia Sidhom3, Mohamed Trabelsi2,4, Shady S. Refaat2, Fakhreddine S. Oueslati1 1Unit? de Recherche de Physique des Semi-Conducteurs et Capteurs, Carthage University, Tunis, Tunisia



In this paper, a forecasting algorithm is proposed to predict photovoltaic (PV) power generation using a long short term memory (LSTM) neural network (NN). A synthetic weather forecast is created for the targeted PV plant location by integrating the statistical knowledge of historical solar irradiance data with the publicly available type of sky forecast of ???