This paper develops a new model for predicting photovoltaic generators'' output power confidence interval 10 minutes ahead, based on deep learning, mathematical probability density functions and

The narrower the intervals, the better is the forecast (if the corresponding coverage is, however, coherent, as shown in the following subsection). Usually, 50, 90, 95 and 99% prediction intervals are considered for probabilistic forecasting. Prediction intervals can be easily extracted from a forecasted predictive distribution.

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PROBABILISTIC INTERVALS IN PHOTOVOLTAIC

Regional photovoltaic (PV) power prediction plays an important role in power system planning and operation. To effectively improve the performance of prediction intervals (PIs) for very short-term regional PV outputs, an efficient nonparametric probabilistic prediction method based on granulebased clustering (GC) and direct optimization programming (DOP) is proposed.

Currently, the studies on PV power prediction mainly underline 2 time scales while focusing on uncertain probabilistic generation interval forecasting; the former involves very-short-term PV power generation forecasting for guiding the timely scheduling of a smart grid and short-term PV generation prediction for providing important data support

The paper explores Bayesian bootstrap in probabilistic photovoltaic power forecasting. of the forecast versus time and demonstrate the effectiveness of the proposed approach with values of the prediction intervals that, in most cases, include the actual PV power.

PROBABILISTIC INTERVALS IN PHOTOVOLTAIC

two stage probabilistic forecasting framework able to generate highly accurate, reliable, and sharp forecasts yet offering full transparency on both the point forecasts and the prediction intervals a?|

Solar energy is a clean and renewable energy. Photovoltaic (PV) power is an important way to utilize solar energy. Accurate PV power forecast is crucial to the large-scale application of PV power and the stability of electricity grid. This paper proposes a novel method for short-term photovoltaic power forecast using deep convolutional long short-term memory a?|

high-order MC method was proposed to achieve probabilistic PV forecasting, where the influencing factors are classified by pattern discovery method and then used to denote the current PV states. By using a high-order MC, the PV state at the next moment in time was obtained. Finally, the probability density function of the PV at

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To address these issues, this paper proposes an intelligent multi-model forecasting method based on output features clustering and convolutional neural networka??long short term memory (CNNa??LSTM) for PV power interval a?|

Independent component analysis of photovoltaic power generation impact factor was used to establish a conditional probability prediction model to predict the interval probability of photovoltaic

The goal of a probabilistic forecast is to provide either a complete predictive density of the future state or to predict that the future state of a system will fall in an interval, defined by a?|

PROBABILISTIC INTERVALS IN PHOTOVOLTAIC

The experimental results show that this hybrid interval prediction method is first applied to the prediction of short-term PV power scenarios, which fully utilizes the advantages of information granularity to express the data intervals and CNN-BiGRU to learn the complex time series patterns, and realizes the accurate and reliable prediction of

A novel probabilistic forecasting model based on Gated Recurrent Units that uses data from weather forecasts and calendar variables as external features is developed and it is found that the GRU model outperforms the other models for households with electric heating, with solar, and with both technologies, but not for households without distributed energy technologies.

A novel efficient probabilistic forecasting approach is proposed to accurately quantify the variability and uncertainty of the power production from photovoltaic (PV) systems. Distinguished from most existing models, a linear programming-based prediction interval construction model for PV power generation is established based on an extreme learning a?|

PROBABILISTIC INTERVALS IN PHOTOVOLTAIC

In this work, the model-chain-based forecasting framework is extended to the probability space, in that, a calibrated ensemble of model chains is used to generate probabilistic PV power forecasts.

Therefore, a PV power forecasting model which combines QR and CIFG network is proposed to generate probabilistic forecasts for PV forecasting. The probability prediction method uses the probability distribution of the PV equipment at the forecast time as the output, that is, possible output intervals of the PV equipment at the forecast time are

The present study proposes a QRKDDN PV power interval probabilistic prediction model. Firstly, meteorological variables highly correlated with PV power were selected using the Pearson correlation coefficient method. Secondly, a multivariate multi-feature-based GMM clustering algorithm was employed to cluster the historical data. Finally, the

PROBABILISTIC INTERVALS IN PHOTOVOLTAIC

Semantic Scholar extracted view of "Review on probabilistic forecasting of photovoltaic power production and electricity consumption" by D. Meer et al. This work used statistical forecasting tools to generate forecasts with prediction intervals, trialing them on one wind and one solar farm, showing good performance using metrics, including

The probability distribution of the generated power and the coni!?dence interval value at di erent coni!?dence levels was then obtained by the maximum likelihood estimation method. Almeida et al. [29]

Renewable energy sources (RESs), such as solar and wind power, are steadily underway to become substantial shares of the energy mix. In 2016, 75 GW of photovoltaic (PV) power capacity was installed, up from 50 GW installed PV power capacity in 2015, bringing the cumulative installed capacity to at least 303 GW, amounting to 1.8% of worldwide electricity a?|

PROBABILISTIC INTERVALS IN PHOTOVOLTAIC

The goal of a probabilistic forecast is to provide either a complete predictive density of the future state or to predict that the future state of a system will fall in an interval, defined by a

Ultra-short-term multi-step probability interval prediction of photovoltaic power: A framework with time-series-segment feature analysis. Author links open overlay panel Lei Zhang, Ye He and probability interval (PI) predictions. DP prediction only provides the point prediction result at the time to be predicted and contains relatively

sociated with PV power, whereas probability interval prediction can provide a range of fluctuations in predicted power, along with upper and lower bounds at a certain confi-dence level. Simultaneously, predicting the probability distribution and confidence inter-val of the photovoltaic power output enhances the reliability of the photovoltaic power

PROBABILISTIC INTERVALS IN PHOTOVOLTAIC

With the optimization and adjustment of the traditional energy structure, distributed energy sources represented by photovoltaic and wind power are connected to the distribution network, The probabilistic interval obtained under the parallelogram model expands from [0.12465, 0.74752] to [0.11496,0.75192], the probabilistic interval obtained

Accurate photovoltaic power prediction is of great significance to the stable operation of the electric power system with renewable energy as the main body. In view of the different influence mechanisms of meteorological factors on photovoltaic power generation in different irradiation intervals and that the data-driven algorithm has the problem of regression a?|

A novel combined probabilistic forecasting method based on an improved Markov chain for photovoltaics (PVs) to enhance the accuracy of probabilistic PV power forecasting is presented.

PROBABILISTIC INTERVALS IN PHOTOVOLTAIC

A probabilistic prediction interval (PI) model based on variational mode decomposition (VMD) and a kernel extreme learning machine using the firefly algorithm (FA-KELM) is presented to tackle the problem of photovoltaic (PV) power for intra-day-ahead prediction. Firstly, considering the non-stationary and nonlinear characteristics of a PV power a?|