

What is short-term load forecasting (STLF) in a microgrid?

Short-Term Load Forecasting (STLF) is the most appropriate type of forecasting for both electricity consumers and generators. In this paper, STLF in a Microgrid (MG) is performed via the hybrid applications of machine learning. The proposed model is a modified Support Vector Regression (SVR) and Long Short-Term Memory (LSTM) called SVR-LSTM.

How accurate is load forecasting in power microgrids?

An accurate method with acceptable training time using load and meteorological data. Load forecasting in power microgrids and load management systems is still a challenge and needs an accurate method. Although in recent years, short-term load forecasting is done by statistical or learning algorithms.

What is short-term load forecasting (STLF)?

Load forecasting (LF), particularly short-term load forecasting (STLF), plays a vital role throughout the operation of the conventional power system. The precise modelling and complex analyses of STLF have become more significant in advanced microgrid (MG) applications. Several models are proposed for STLF and tested successfully in the literature.

How is STLF forecasting used in advanced microgrid (MG) applications?

The precise modelling and complex analyses of STLF have become more significant in advanced microgrid (MG) applications. Several models are proposed for STLF and tested successfully in the literature. The selection of a forecasting method is mostly based on data availability and its objectives.

Can mg load be forecasted in a short-term horizon?

Conclusions Forecasting the load of the Microgrid (MG) in a short-term horizon can be a very valuable achievement for the MG energy management system. Therefore, a new hybrid approach, namely Support Vector Regression-Long Short-Term Memory (SVR-LSTM) is presented in this paper for the MG load forecasting.

What is the proposed short-term load forecasting model for MG energy management system?

Proposed short-term load forecasting model for MG energy management system. HHO is used for training of FNN. Best-basis SWPT is used to capture the various season of yearly load demand. Performance of the proposed model has been compared with existing competitive models.

Short-term load forecasting (STLF) plays a vital role in power system operation, and the accuracy of STLF results will affect the security, stability, and economy of the power systems [1], [2]. As an essential part of electricity generation scheduling, the STLF can be used for balancing the power supply and load demand, serving as a basis for energy dispatch and ...

Abstract: Microgrids are a rapidly growing sector of smart grids, which will be an essential component in the

Microgrid short-term load forecasting

trend toward distributed electricity generation. In the operation of a microgrid, forecasting the short-term load is an important task. With a more accurate short-term load forecast (STLF), the microgrid can enhance the management of its renewable and conventional ...

This paper presents the results of STLF in a Microgrid (MG) is performed via the hybrid applications of machine learning, which shows that the SVR-LSTM model is able to provide better results than SVR and LSTM, which have the values of 0.9770 and 0.9809. Short-Term Load Forecasting (STLF) is the most appropriate type of forecasting for both electricity ...

This research proposes an optimization technique for an integrated energy system that includes an accurate prediction model and various energy storage forms to increase load forecast accuracy and coordinated control of various energies in the current integrated energy system. An artificial neural network is utilized to create an accurate short-term load forecasting model to ...

Along this context, the implementation and actual-life demonstration of novel short-term net load forecasting (STNLF) methodologies for the construction of accurately ...

The authors also proposed another short-term load forecasting model for microgrids, based on a three-stage architecture including implementing of a self-organizing ...

Predicting electrical load is crucial for microgrid energy management. Short-term load forecasting (STLF) helps in optimizing energy management and load balancing within microgrids. It enables microgrid operators to balance energy supply and demand, utilize renewable energy sources and energy storage systems efficiently, and reduce energy costs. In this paper, two machine ...

Moradzadeh A, Zakeri S, Shoaran M, Mohammadi-Ivatloo B, Mohammadi F. Short-Term Load Forecasting of Microgrid via Hybrid Support Vector Regression and Long ...

The results show that the proposed approach yielded superior performance for short-term forecasting of microgrid load demand compared with the other methods. 1 Introduction. Load forecasting can be defined as the ...

PDF | On Apr 1, 2019, Jurabek Izzatillaev and others published Short-term Load Forecasting in Grid-connected Microgrid | Find, read and cite all the research you need on ResearchGate

Short-term load forecasting of microgrid via hybrid support vector regression and long short-term memory algorithms. Sustain, 12 (17) (2020), p. 7076, 10.3390/SU12177076. View in Scopus Google Scholar [15] J. Forcan, M. Forcan. Optimal placement of remote-controlled switches in distribution networks considering load forecasting.

The proposed approach outperformed all three methods for 10 min ahead forecasting of load, demonstrating

its effectiveness and applicability for very short-term load forecasting in microgrids.

This paper proposes a hybrid approach for short-term forecasting of load demand in a typical microgrid, which is a combination of the best-basis stationary wavelet ...

The increase in load demand randomness behaviour causes a severe management problem for the operation of the microgrid. A load forecasting model is a source of information that may help to avoid power quality problems or energy management problems such as how much the peak or base demand may be the next day, the scheduling of charging and ...

Short-Term Load Forecasting in a microgrid environment: Investigating the series-specific and cross-learning forecasting methods. Evgenii Genov 1, Stefanos Petridis 2, ... A reliable and accurate load forecasting method is key to successful energy management of smart grids. Due to the non-linear relations in data generating process and data ...

This paper evaluates the performance of different ML models, that are optimally trained using supervised learning regimes, for direct short-term net load forecasting (STNLF) in renewable microgrids.

Microgrids have emerged as a promising solution for enhancing energy sustainability and resilience in localized energy distribution systems. Efficient energy management and accurate load forecasting are one of the critical aspects for improving the operation of microgrids. Various approaches for energy prediction and load forecasting using statistical ...

In the scope of energy management systems (EMSs) for microgrids, the forecasting module stands out as an essential element, significantly influencing the efficacy of optimal solution policies. Forecasts for consumption, generation, and market prices play a crucial role in both day-ahead and real-time decision-making processes within EMSs. This paper aims ...

With the rapid development of smart grids, significant research has been devoted to the methodologies for short-term load forecasting (STLF) due to its significance in ...

The difference between microgrid and traditional power in system load time series is expounded, and a prediction strategy based on feature selection technology and prediction engine (including neural network and evolutionary algorithm) for short-term load prediction of microgrid is proposed.

Short-term load forecasting is difficult since the load contains significant degrees of uncertainty in terms of accuracy [2, 3]. Smart grid technology is an interesting topic where load forecasting and the reliability of the systems are greatly impacted by their accuracy. ... The economic operation of microgrids has considerable obstacles due ...

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based on DA-SVM @article{Zhang2019ShorttermLF, title={Short-term load forecasting for microgrids based on DA-SVM}, author={Anan Zhang and Pengxiang Zhang and Yating Feng}, journal={COMPEL - The international journal for computation and ...

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In the following, the load data of a certain area in Yunnan is taken as an example for research and analysis, and a prediction model conforming to local characteristics is established. 2.1 Short-term Load Characteristics Load forecasting can be divided into ultra-short-term, short-term, medium-term and long-term according to different purposes .

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