VDB Solar Solutions

Deep learning in power system

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Deep learning in power systems research: A review

This study explores the theoretical advantages of deep representation learning in power systems research. We review deep learning methodologies presented and applied in ...

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This study explores the theoretical advantages of deep representation learning in power systems research. We review deep learning methodologies presented and applied in a wide range of supervised, unsupervised, and semi-supervised applications as well as ...

Deep learning in power systems research: A review

With the rapid growth of power systems measurements in terms of size and complexity, discovering statistical patterns for a large variety of real-world applications such as renewable energy prediction, demand response, energy disaggregation, and state estimation is considered a crucial challenge. In recent years, deep learning has emerged as a novel class of machine ...

Deep reinforcement learning for power system applications: An ...

Due to increasing complexity, uncertainty and data dimensions in power systems, conventional

methods often meet bottlenecks when attempting to solve decision and control problems. Therefore, data-driven methods toward solving such problems are being extensively studied. Deep reinforcement learning (DRL) is one of these data-driven methods ...

Full article: Deep learning approaches for fault detection and

The organization of this paper is as follows: Section 2 discusses the faults classifications in the secondary distribution network, section 2 presents the faults detection mechanisms adopted. Section 4 describes the faults detection and classification methods which were mainly used in previous studies, section 5 explains different deep learning architectures ...

Deep Learning for Power System Data Analysis

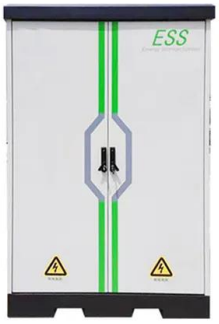
Still, the power system transition toward the big data era encourages the use of deep learning, as the most advanced solutions for large-scale applications. For example, the interested reader is referred to Mocanu et al. [19] for a comparison between CRBM and HMMs for energy prediction, and to Mocanu et al. [48] to see FCRBM capabilities in a price-responsive ...

Deep reinforcement learning for power system applications: An ...

Applications in power systems such as energy management, demand response, electricity market, operational control, and others are then considered. In addition, recent ...

Deep Learning Techniques in Intelligent Fault ...

Industrial systems are typical complex systems with various subsystems and device types of mechanical system, power system, information system, electronic system, or their combinations. They are playing an ...



Deep learning methods utilization in electric power systems

This study offers a thorough analysis of deep learning applications in electric power systems, including load forecasting, fault detection, and diagnosis, assessment of the ...

Deep learning and big data applications in electrical power systems

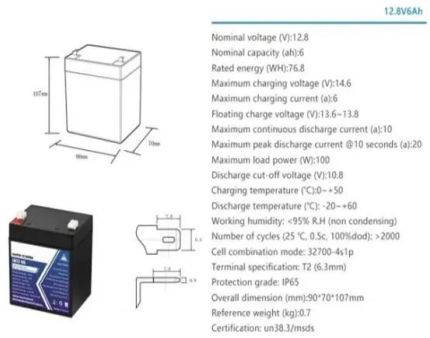
The power system analysis and decision-making has been dependent only on physical modeling, numerical calculations, Deep learning models can be used in updating generator and load setpoints, based on the load forecasts, as well as incorporating online

Introduction: A Brief History of Deep Learning and Its

This chapter gives a brief introduction to the history of deep learning and the associated concepts. One step further, various deep learning applications in the area of power systems

Deep Learning for Power System Applications: Case ...

Representative case studies of deep learning techniques in power systems are investigated and discussed, including convolutional neural networks (CNN) for power system security screening and cascading failure assessment, deep ...



Deep Learning Approaches for Power Prediction in Wind-Solar Tower Systems

Wind-solar towers are a relatively new method of capturing renewable energy from solar and wind power. Solar radiation is collected and heated air is forced to move through the tower. The thermal updraft propels a wind turbine to generate electricity. Furthermore, the top of the tower's vortex generators produces a pressure differential, which intensifies the updraft. ...

Introduction and Literature Review of the Application of Machine

6.2.2 Midterm Load ForecastingMidterm load forecasting (MTLF) includes 1 week up to 12 months ahead of forecasting. This type of load forecasting is important for the maintenance and operation of the power system. In [], a combination of three different models, i.e., random forest regression (RFR), gradient boosting decision tree (GBDT), and SVR, were ...

Deep Learning in Intelligent Power and Energy Systems

Request PDF , Deep Learning in Intelligent Power and Energy Systems , The rapid developments in Internet-of-Things (IoT), cloud computing, and big data technologies have increased the

Deep-Learning Based Fault Events Analysis in Power Systems

The identification of fault types and their locations is crucial for power system protection/operation when a fault occurs in the lines. In general, this involves a human-in-the-loop analysis to capture the transient voltage and current signals using a common format for transient data exchange for power systems (COMTRADE) file. Then, protection engineers can identify ...

Application of Machine Learning and Deep Learning Methods to Power

This book evaluates the role of innovative machine learning and deep learning methods in dealing with power system issues, concentrating on recent developments and advances that improve planning, operation, and control of power systems. Cutting-edge case

Deep learning methods and applications for electrical power ...

The practices of deep learning and its combinations are well organized with up-to-date references in various fields such as load forecasting, wind and solar power forecasting, ...

Deep Neural Networks in Power Systems: A Review

In the last decade, deep learning has arisen as a new kind of artificial intelligence technique that expresses power grid datasets via an extensive hypothesis space, resulting in an outstanding performance in ...

Deep Learning for Power System Data Analysis

A review focusing on the application of deep learning techniques for power system data analysis was presented in Ref. [54] and one with the focus on ensemble prediction models in Ref. [55]. One review with the focus on application of data-driven models for the use in control applications has been published in Ref. [56].

Deep learning methods and applications for electrical power systems...

The practices of deep learning and its combinations are well organized with up-to-date references in various fields such as load forecasting, wind and solar power forecasting, power quality disturbances detection and classifications, fault detection power system

Image fusion of fault detection in power system based on deep learning

Aiming at the three main problems of power system--leakage, high temperature and physical damage, a new image fusion of fault detection method in power system based on deep learning is proposed in this paper. The core of deep learning is achieved by capsule network model. The model is trained and tested by self-built image dataset of power system. There are ...

Deep learning methods and applications for electrical ...

Request PDF , Deep learning methods and applications for electrical power systems: A comprehensive review , Over the past decades, electric power systems (EPSs) have undergone an evolution from an

[PDF] Deep Reinforcement Learning for Power System Applications...

The basic ideas, models, algorithms and techniques of DRL are reviewed, which have been applied to solve a wide range of complex sequential decision-making problems, including those in power systems. --Due to increasing complexity, uncertainty and data dimensions in power systems, conventional methods often meet bottlenecks when attempting to solve decision and ...

Deep learning for renewable energy forecasting: A taxonomy, and

In order to identify power production and demand in realtime for efficient and dependable management for diverse renewable energy systems, precise and intuitive renewable energy predictions are required. Deep learning can be exploited to handle a variety of

Deep learning methods and applications for electrical ...

The practices of deep learning and its combinations are well organized with up-to-date references in various fields such as load forecasting, wind and solar power forecasting, power quality disturbances detection and ...

Deep learning-driven hybrid model for short-term load

The incorporation of deep learning in power load forecasting has brought about a paradigm shift, In 2023 3rd Power System and Green Energy Conference (PSGEC) (pp. 439-443). IEEE (2023, August).

Explainable AI in Deep Reinforcement Learning Models for Power System

Artificial intelligence (AI) technology has become an important trend to support the analysis and control of complex and time-varying power systems. Although deep reinforcement learning (DRL) has been utilized in the power system field, most of these DRL models are regarded as black boxes, which are difficult to explain and cannot be used on occasions when human operators ...

A review of applications of deep learning in power systems

ABSTRACT Deep learning is a major branch of machine learning. Combining its powerful data processing capabilities with power systems is an important path to promote the intelligence of power systems. This paper first introduces the application characteristics

Application Resolution of Deep Learning in Electric Power System

The construction of the electric power system has entered the era of big data, and all links in the system have accumulated massive amounts of electric power big data. Doing a better analysis of these valuable data resources will bring considerable benefits to electric power companies. The deep learning technology in the field of artificial intelligence has obvious advantages when ...

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