European Solar and Energy Storage Solutions

Fault detection in smart grid Yemen

Overview

Is autonomous smart grid fault detection possible?

A case study is introduced as a preliminary study for autonomous smart grid fault detection. In addition, we highlight relevant directions for future research. Smart grid plays a crucial role for the smart society and the upcoming carbon neutral society.

Can deep learning improve fault detection and classification in smart grids?

Deep learning emerges as a promising tool for enhancing fault detection and classification within smart grids, offering significant performance improvements.

Can computational intelligence detect islanding phenomenon in smart distributed grids?

The importance of computational intelligence to detect islanding phenomenon in smart distributed grids , , , . Those works present a probabilistic Neural Network (NN) and Support Vector Machine (SVM) as powerful self-adapted machine learning techniques for fault detection.

How is fault detection based on a system model?

In fault detection, those methods are based on the system model by using knowledge of the system to create an analytical mathematical model. Many analytical methods implement a general-purpose estimation method for the particular detection process.

What is a fuzzy detection and automatic fault classification system?

In this research, a fuzzy detection and automatic fault classification system was developed for the power grid, with the help of WHO-optimized random forest and decision tree algorithms, as well as ANFIS-assisted fault localization for various TL configurations with 11 types of faults.

Are there any surveys based on fault detection and/or location in SG Systems?

The main published surveys and tutorials on Fault Detection and/or Location in SG Systems (FD/L-SG) are compiled and compared in this subsection, in terms of the range of application, covered topics, and trending research. Existing surveys: Table 1 lists the existing surveys related to fault detection and/or location in the SG systems context.

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Soft computing based smart grid fault detection using ...

A smart grid of this scale can test all essential faults as well as provide dataset needed to properly examine a fault detection system. In reality, the loading of the power system is affected by a broad variety of variables such as the surrounding temperature, solar radiation, energy stored in batteries, nonlinear load, and the performance of

Faults in smart grid systems: Monitoring, detection and ...

Considering fault detection and classification a key factor to SG reliability, this work provides a systematic review of SG faults from the most significant research databases and state-of-the-art research papers aiming at creating a comprehensive classification framework on the relevant requirements.

Fault detection and prediction in Smart Grids

make fault detection and location more reliable and reduce the danger for grid customers. Figure 1: RMS voltage in grid with intermittent earth fault III. MEASUREMENT INFRASTRUCTURE Real-time monitoring schemes requires high-resolution measurements that are reported with a low time delay (latency) to a centralized computing unit.

Autonomous Smart Grid Fault Detection

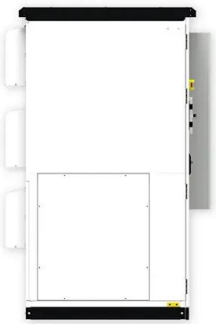
autonomous smart grid fault detection is critical for smart grid system state awareness, maintenance and operation. This paper focuses on fault monitoring in smart grid and discusses the inherent technical challenges and solutions. In particular, we first present the basic principles of smart grid fault detection. Then, we explain the new

Autonomous Smart Grid Fault Detection

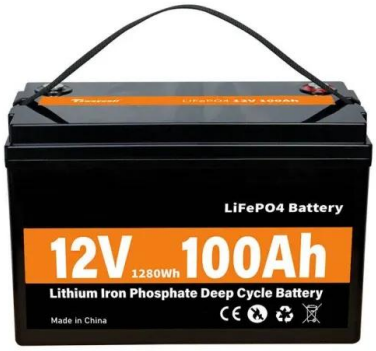
the smart grid and smart grid fault detection. A. Overview of Smart Grid and Fault Detection The key components of smart grid system is shown in Fig.1. From the perspectives of power transmis-sion, power distribution and power consumption, au-tonomous smart grid fault detection is needed. 1) Power Transmission: As UHV AC and DC transmis-

Fault Detection, Classification And Location In Power Distribution

ABSTRACT Fault detection and location give to smart grid the ability to self-healing and isolating the fault in order to limit the negative consequences. In the literature, several techniques are proposed for detection and classification of faults using artificial intelligence algorithms. This paper proposes a novel method using fuzzy logic and neural networks for ...



Soft computing based smart grid fault detection using ...



This study proposes a unique method for detecting faults in the smart grid via the use of data monitoring and classification using a fuzzy machine learning model. Here, enhanced smart sensor metering performed in the cloud at the network's edge has been used to track data from the smart grid.

Fault detection and prediction in Smart Grids

existing grid and reduce the fault frequency. This paper presents some current challenges in the grid and a possible monitoring solution and fault prediction method. This is exemplified with statistics and field-measurements from the Norwegian power grid. Keywords--PMU, PQA, fault prediction, WAMS, statistical learning I. INTRODUCTION

Fault detection and classification in smart grids ...

Such a smart grid is big enough to test all required faults and create the needed dataset to thoroughly study a fault detection system. In fact, the power system loading depends on a large number of variables such as the ...

Resource Orchestration of Cloud-Edge-based Smart Grid Fault Detection

To solve these problems, we study a cloud-edge based hybrid smart grid fault detection system. Embedded devices are placed at the edge of the monitored equipment with several lightweight

neural networks for fault detection. Considering limited communication resources, relatively low computation capabilities of edge devices, and different

Failure and fault classification for smart grids

A brief summary of faults in smart grid infrastructure is provided by Hlalele et al. (2019). ey distinguish between faults related to power distribution, photovoltaic and e authors provide 65 faults detection and location approaches that were discussed Table 1 Related works Year Article Focus Results 2021 Sarathkumar et al. (2021) Faults

Fault Detection and Prediction in Smart Grids

Better monitoring solutions and predictive methods can increase the possible utilization of the existing grid and reduce the fault frequency. This paper presents some current challenges in the grid and a possible monitoring solution and fault prediction method. This is exemplified with statistics and field-measurements from the Norwegian power

Improving Fault Detection and Self-Healing in Smart Grids ...

The addition of microgrid to the main grid aimed to improve the self-healing mechanism after fault detection in smart grids by significantly reducing

the time needed for the grid to normalize its ...

Faults in smart grid systems: Monitoring, detection and classification

Request PDF , Faults in smart grid systems: Monitoring, detection and classification , Smart Grid (SG) is a multidisciplinary concept related to the power system update and improvement. SG implies

Faults in smart grid systems: Monitoring, detection and ...

Journal Article: Faults in smart grid systems: Monitoring, detection and classification Title: Faults in smart grid systems: Monitoring, detection and classification Journal Article · Tue Dec 01 00:00:00 EST 2020 · Electric Power Systems Research

[2206.14150] Autonomous Smart Grid Fault Detection

Smart grid plays a crucial role for the smart society and the upcoming carbon neutral society. Achieving autonomous smart grid fault detection is critical for smart grid system state awareness, maintenance and operation. This paper focuses on fault monitoring in smart grid and discusses

the inherent technical challenges and solutions. In particular, we first present ...

Faults in smart grid systems: Monitoring, detection and classification

The key elements to improve SG faults monitoring, detection, and location infrastructure are highlighted in this section. Notwithstanding the high number of proposals, the consolidation into one integrated tool that includes fault detection, classification, and location modules can be very challenging due to SG complex topologies.

Improving Fault Detection and Self-Healing in Smart Grids ...

The addition of microgrid to the main grid aimed to improve the self-healing mechanism after fault detection in smart grids by significantly reducing the time needed for the grid to normalize its voltage drop. This proposed model will thereby increase the ...

Intelligent Fault Detection and Classification Schemes ...

Effective fault detection, classification, and localization are vital for smart grid self-healing and fault mitigation. Deep learning has the

capability to autonomously extract fault characteristics and discern fault categories from ...

Fault detection and classification using deep learning ...

This article proposes a deep learning (DL) model made of Long Short Term Memory (LSTM) and Adaptive Neuro Fuzzy Inference System (ANFIS) to detect fault in smart distribution grid assisted by communication ...

Autonomous Smart Grid Fault Detection

Achieving autonomous smart grid fault detection is critical for smart grid system state awareness, maintenance, and operation. This article focuses on fault monitoring in smart grid and discusses the inherent technical challenges and solutions.

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