

Does Vietnam have a smart grid development roadmap?

Vietnam has been implementing the current Smart Grid Development Roadmap since 2012, following the Prime Minister's Decision No. 1670/QD-TTg dated 8 November 2012. However, as stated in this project TOR, the existing roadmap has not been updated to align with Vietnam's evolving policies and the significant growth in renewable energy sources.

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 a smart grid detect AC faults in a photovoltaic power plant?

Figure 2 shows the simulated smart grid to study the proposed detection technique. The aforementioned LLL, LL, LLLG, LLG faults can occur at any point in the AC side of the network. In this study, considering the transmission line length the studied AC faults occur 100 km after the photovoltaic power plant.

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 to classify faults in a smart grid?

A classification technique based-on the conventional K-NN algorithm is proposed to detect and classify different types of fault in a smart grid. In the proposed technique, the PCA method is used to decrease the dataset size while LDA provides online classification before applying the K-NN.

Can machine learning detect faults of smart grids?

In this paper, a reliable machine learning technique is proposed to detect and classify different faults of smart grids. The proposed technique benefits from the principal component analysis (PCA) and linear discriminant analysis (LDA). The PCA is used to reduce the size of the dataset matrixes.

of smart grids, new functionalities for the detection and location of a fault are becoming available in the LV grid [16]. Additionally, a fault detection and localization approach for non-technical losses is presented in [17]. A method taking advantage of both voltage and current measurements at ...

Fault detection and identification are critical tasks in maintaining the reliability and stability of the energy grid. The timely detection of faults and accurate identification of their locations ...

Timely detection of electrical faults is of paramount importance for efficient operation of the smart grid. To better equip the power grid operators to prevent grid-wide cascading failures, the detection of fault occurrence and its type must be accompanied by accurately locating the fault. In this work, we propose a multi-task learning architecture that encodes the graph structure of the ...

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

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 ...

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 ...

1. Autonomous smart grid fault detection is critical for system awareness, maintenance, and operation of complex modern power systems but faces challenges from new power equipment, renewable energy sources, and carbon neutrality goals. 2. These factors require more accurate real-time sensing of equipment status under variable conditions, development of condition ...

The proposed technique of fault detection is based on the vibration sensor data. This can also be done using other parameters like temperature, pressure, lubrication. These parameters are also very important indicators of the health ...

The fault detection is the essential factor to the reliability of the smart grid, which also provides the smart grid with the ability to self-heal and isolate to avoid or limit negative ...

Fault Detection Method for Smart Grid. January 2014; Conference: National Conference on Power systems, Embedded systems, Power electronics, Communication, Control and Instrumentation- PEPCCI-2014 ...

Abstract: This research proposes an innovative simulation-based model for fault detection and correction in a smart grid environment by the integration of UPS (uninterrupted power supply). ...

Keywords: fault classification, fault detection, fuzzy logic, smart meter data, smart grid ©The Author("s). This is an open access article distributed under the terms of theCreative Commons Attribution License (CC ... In a smart grid, faults are detected by analyzing the shape of voltage, current and phases. That is why in [14], the authors ...

Timely detection of electrical faults is of paramount importance for efficient operation of the smart grid. To better equip the power grid operators to prevent grid-wide cascading failures, the detection of fault occurrence and its type must be accompanied by accurately locating the fault.

Vietnam Electricity Group's Ho Chi Minh City Power Corp. (EVNHCMC) deployed a distribution automation system that facilitates automatic--and very quick--fault detection and handling with a ...

Automatic fault detection is a process that uses advanced algorithms and technologies to identify, isolate, and notify operators of faults or malfunctions within electrical systems. This technology plays a crucial role in maintaining the reliability and efficiency of power grids by quickly pinpointing issues that could disrupt service or pose safety risks. By enabling real-time monitoring and ...

The power grid faults model is paramount to discriminate faults from standard functioning states. The protection schemes for SG and Micro-SGs (m SGs) consider the concept of Internet-of-Energy (IoE) [3], [4] utilized for the operation and coordination of protection to obtain an efficient and dynamic infrastructure.

1.2 . Figure 1.1. Grid Fault Taxonomy. Traditional fault detection (basic over-current detection) and analysis are performed from measurements mostly made at the substation and in some systems, with pole-top devices such as smart switches and

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 ...

A fault detection, identification, and location approach is proposed and studied in this paper. This approach is based on matching pursuit decomposition (MPD) using Gaussian atom dictionary, hidden Markov model (HMM) of real-time frequency and voltage variation features, and fault contour maps generated by machine learning algorithms in smart grid (SG) systems. ...

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 ...

In this paper, the KNN technique augmented with principal component analysis (PCA) and linear discriminant analysis (LDA) is used to detect and classify different faults in a smart grid. In the first stage of the ...

This survey presents a structured review of the existing research into some common AI techniques applied to load forecasting, power grid stability assessment, faults detection, and security ...

Recent works related to fault detection in WSN based smart grid environments are mentioned . below . Arifa

et al. [21] proposed a wireless sensor based smart grid by using cognitively driven load .

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 systems using smart meter data. In smart grid, data analysis for fault identification and detection is crucial for grid monitoring.

Development of smart fault diagnosis models (detection, classification, and either location or section identification) employing feedforward neural networks. ... Smart grid fault diagnosis under load and renewable energy uncertainty. Power Syst Fault Diagn (2022), pp. 293-346, 10.1016/B978-0-323-88429-7.00006-0.

IEEE TRANSACTIONS ON SMART GRID, VOL. 5, NO. 6, NOVEMBER 2014 2947 Fault Detection, Identification, and Location in Smart Grid Based on Data-Driven Computational Methods Huaiguang Jiang, Student Member, IEEE, Jun J. Zhang, Senior Member, IEEE, Wenzhong Gao, Senior Member, IEEE, and Ziping Wu, Student Member, IEEE Abstract--A ...

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