Please cite our papers as follows, or use the BibTeX entries below. C. Yeh, J. Yu, Y. Shi, and A. Wierman, "Robust online voltage control with an unknown grid topology," in Proceedings of the Thirteenth ACM International Conference on Future Energy Systems (e-Energy ''22), Association for Computing Machinery, Jun. 2022, pp. 240???250, ISBN: 9781450393973.

The SMART-DS data sets are available through the Open Energy Data Initiative as well as the GRID DATA program data repositories: BetterGrids and DR POWER. SMART-DS contributed to the development of the Distribution Transformation Tool (DiTTo), which enables programmatic development of distribution models as well as translations between data

Smart grid (SG) technology transforms the traditional power grid from a single-layer physical system to a cyber???physical network that includes a second layer of information. Collecting, transferring, and analyzing the huge amount of data that can be captured from different parameters in the network, together with the uncertainty that is caused by the distributed ???

Adaptable Smart Distribution Grid Topology Generation for Enhanced Resilience Authors : Nata??a Gaji??, Stephen Dirk Bj?rn Wolthusen Authors Info & Claims Critical Information Infrastructures Security: 18th International Conference, CRITIS 2023, Helsinki Region, Finland, September 13???15, 2023, Revised Selected Papers

Smart Grid Simulation in MATLAB. Matlabhelpers demonstrate how to use the MATLAB software for simulation of a smart grid. The smart grid is the integration of computing and communication technologies into a power grid with the goal of enabling real-time control and a reliable, secure, and efficient energy system.

IEEE TRANS. ON SMART GRID (ACCEPTED AUGUST 12, 2015) 1 Online Energy Price Matrix Factorization for Power Grid Topology Tracking Vassilis Kekatos, Member, IEEE, Georgios B. Giannakis, Fellow, IEEE, and Ross Baldick, Fellow, IEEE Abstract???Grid security and open markets are two major smart grid goals. Transparency of market data facilitates a

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On Topology Attack of a Smart Grid: Undetectable Attacks and Countermeasures Jinsub Kim and Lang Tong, Fellow, IEEE Abstract???Covert data attacks on the network topology of a smart grid is considered. In a so-called man-in-the-middle attack, an adversary alters data from certain meters and net-work switches to mislead the control center with

like) topology, which can be modi???ed by changing breaker statuses on available lines [54]. In recent years, the growth of behind-the-meter distributed energy resources (DERs) and smart loads (e.g., air-conditioners, storage devices, electric vehicles) have brought distribution grids to the forefront of smart grid advancement [85].

The underlying communication topology is essential for the smart grid and is what enables the smart grid to be smart. Analyzing, simulating, designing, and comparing smart grid infrastructures but also optimizing routing algorithms, and predicating impacts of failures, all of this relies on deep knowledge of a smart grids communication topology.

Figure 1. Traditional Grid VS. Smart Grid [4]. The differences between them are many, but there are key differences that can be noted and contrasted between the two technologies. [3] Technology: Traditional power grids are electromechanically operated, while smart grids are digital. This means that the smart grid has more communication between

The topology of the 1960s grid was a result of the strong economies of scale: large coal-, gas- and oil-fired power stations in the 1 GW (1000 MW) to 3 GW scale are still found to be cost-effective, due to efficiency-boosting features that can be cost-effective only when the stations become very large. Pacific Northwest Smart Grid

Classification: (a) Smart Grid Network Topologies, (b) Smart Grid Technologies, and (c) Encryption used in Smart Grids. Table 2 shows the articles that can be classified into Smart Grid Technology. From this table it can be noted that ???

topology attack detection [20], [35] and some focused on developing defense against topology attacks [23]???[25] and mitigating the impact of topology noise in GNNs [26]???[28]. In power systems, the works presented in [15], [16], [29]???[32] studied the effects of topology noise and attacks on various functions, such as SE and cyber stress

Information Technology, Artificial Intelligence and Machine Learning in Smart Grid ??? Performance Comparison between Topology Identification Methodology and Neural Network Identification

How DERs Could Change Grid Topology and Affect System Performance. By Mehrdad Rostami and Mehrdad Boloorchi. The penetration of Distributed Energy Resources (DER) in primary distribution systems which operate in a radial and open-loop topology, need smarter primary network, especially for dealing with the variable generations such as solar photovoltaic and ???

The smart grid network forms a tree-like topology as shown in Fig. 1. A node in a higher layer, termed a parent (e.g., a power utility), generally supports multiple nodes in a lower layers,

For distribution grid topology identification, many methods have been proposed in recent years. For example, in [], the correct topology is searched from a set of possible radial networks.Given the line parameters, Cavraro et al. [] and Sharon et al. [] propose maximum-likelihood methods to select the operational distribution grid topology.Bolognani et al. [], Peppanen et al. [], and Liao ???


Covert data attacks on the network topology of a smart grid is considered. In a so-called man-in-the-middle attack, an adversary alters data from certain meters and network switches to mislead the control center with an incorrect network topology while avoiding detections by the control center. A necessary and sufficient condition for the

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As an example, a cascading failure simulation model based on DC power flow is used to simulate the smart grid behaviors under topology attacks and create the dataset for the XGB classifier [10].


The smart grid also enables two-way power flow, and enhanced metering infrastructure capable of self-healing, resilient to attacks, and can forecast future uncertainties. This paper surveys various smart grid frameworks, social, economic, and environmental impacts, energy trading, and integration of renewable energy sources over the years 2015
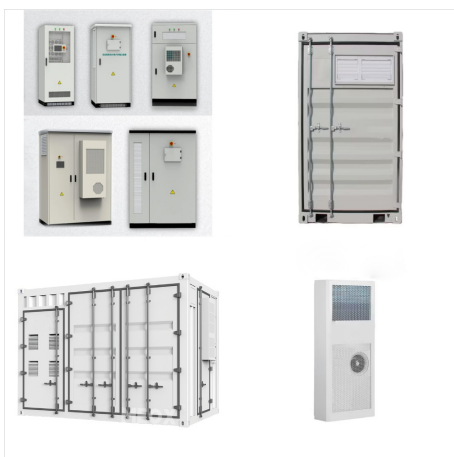
The coordinated topology attacks in smart grid, which combine a physical topology attack and a cyber-topology attack, are investigated and a deep-reinforcement-learning-based approach is proposed to determine the minimal attack resources. In this article, we investigate the coordinated topology attacks in smart grid, which combine a physical topology ???

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This paper develops an efficient solution for power network topology identification and monitoring activities in SG by exploiting the concentration of nonzero elements in the corresponding sparse vectors around the main diagonal in the nodal admittance or structure matrix of the PN. Smart grid (SG) technology reshapes the traditional power grid into a ???
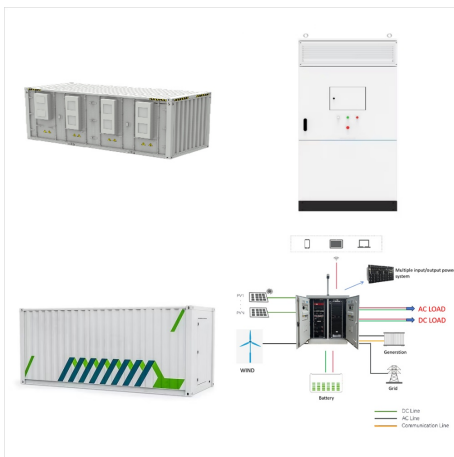
Issue on Smart Grid and Power System Topologies featuring "How DERs may change grid topology and affect system status and performance", grid topology. boloorchi. topology. June 2020. More Like This. 01 Nov 2023. November - General ???

An intelligent cyber-criminal is capable to construct the smart grid system topology blindly by utilizing information analytic grounded on the signals used for measurement [12] or the tariff data