Smart grid topology Cyprus

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 ...

This paper proposes an efficient channel impulse response (CIR)-based technique to detect topology changes in the power grid. The features of the proposed approach include the following aspects: (i) it is a software-only solution, not requiring any intervention on the current smart grid architecture; (ii) topology changes can be detected via a simple distributed ...

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.

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 most of the algorithms are categorized into the Internet of Things or Industrial Internet of Things.

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 ...

Smart meters that will fulfil open protocol standards for interoperability can form the basis for a real time gateway to customers in line with the system automation requirements. Technologies ...

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 ...

George Konstantinou, University of Cyprus 01/08/2020 Nicosia, Cyprus Lecture 2: Smart Grid Communications ... domains within the smart grid. NAN topology. 2.1.2 Network Topologies: NAN o Domains consist of groups of buildings, systems, individuals, or devices which have similar

Identifying arbitrary power grid topologies in real time based on measurements in the grid is studied. A learning based approach is developed: binary classifiers are trained to approximate the maximum a-posteriori probability (MAP) detectors that each identifies the status of a distinct line. An efficient neural network architecture in which features are shared for inferences of all line ...

Cyber attacks on a smart grid aiming at misleading the control center with incorrect topology information are considered, and an undetectable attack that requires the modification of only a few meter data is proposed. Cyber attacks on a smart grid aiming at misleading the control center with incorrect topology information are considered. In such ...

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 ...

This is a case study of residential photovoltaic grid connected system in North Cyprus and its integration with the local utility as part of transformation from old grid systems to modern ...

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 ...

The main objective of the project is to fully analyze all aspects of smart grids targeting in the improvement of reliability, mitigation of security risks, increase load shaping and energy ...

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 ...

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 ...

Smart grid topology Cyprus

On Topology Attack of a Smart Grid Jinsub Kim and Lang Tong School of Electrical and Computer Engineering Cornell University, Ithaca, NY 14853. Email: {jk752, lt35}@cornell Abstract--Cyber attacks on a smart grid aiming at mislead-ing the control center with incorrect topology information are considered.

Resilient Temporal GCN for Smart Grid State Estimation Under Topology Inaccuracies ... In order to make the model resilient to topology uncertainties, modifications in the TGCN model are proposed to incorporate a knowledge graph, generated based on the measurement data. This knowledge graph supports the assumed uncertain system graph.

like) topology, which can be modified 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 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 ...

Adaptable Smart Distribution Grid Topology Generation for Enhanced Resilience Authors : Natasa Gajic, Stephen Dirk Bjørn Wolthusen Authors Info & Claims Critical Information Infrastructures Security: 18th International Conference, CRITIS 2023, Helsinki Region, Finland, September 13-15, 2023, Revised Selected Papers

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

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