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].

Power grid topology is essential for various aspects of smart grid monitoring and operations. Recent studies show that by using the grid topology, an adversary can construct stealthy attacks that can cause significant disruption to power delivery and the critical infrastructure. This paper shows that the power grid topology can be approximately estimated simply by observing ...

In its more visionary acceptation, the smart grid is a model of energy management in which the users are engaged in producing energy as well as consuming it, while having information systems fully aware of the energy demand-response of the network and of dynamically varying prices. ... What is the actual cost of adding an edge to the topology ...

Joint Consideration of Communication Network and Power Grid Topology for Communications in Community Smart Grid ... Community smart grid is formed by a group of neighboring ...

The smart grid is a highly relevant application area for distributed algorithms. Many of these algorithms use a predefined topology to control the information exchange between the distributed entities. Consequently, this exchange topology has a strong impact on the performance of the distributed algorithm. For several algorithms their distributed nature is part ...

The smart grid is arguably one of the most complex cyber-physical systems (CPS). Complex security challenges have been revealed in both the physical and the cyber parts of the smart ...

The role of smart grids is discussed, research impulses for examining diverse smart grid topologies and for evaluating their impacts on urban resilience are given and an agent based simulation approach which considers smartgrid topology as a model parameter is considered. Expand

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 ...

A holistic smart grid vision would open up possibilities for better integration of distributed energy resources. The authors recommend that smart grid investments should remain outside of the regulatory framework for

utilities and ...

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 ...

This paper shows that the power grid topology can be approximately estimated simply by observing multiple power injection measurement data and exhibits almost similar patterns and characteristics to the original topology. Power grid topology is essential for various aspects of smart grid monitoring and operations. Recent studies show that by using the grid topology, an ...

Two major approaches to topology modelling are dominant. The first relies on test networks of electrical networks. In [], the authors list many different types of models of distribution grid such as IEEE Test Feeder or CIGRE Benchmark models as well as many other ones, which were used in this work to validate the ability to create equivalent power network ...

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, ...

grid topology. Bolognani et al. [10], Peppanen et al. [11], and Liao et al. [12] utilise the statistical correlation of single-phase voltages collected from smart meters to estimate distribution grid ...

Grid-Interop Forum 2011 Understanding Wireless Topologies for Smart Grid Applications Joaquin Silva . On-Ramp Wireless 10920 Via Frontera, Suite 200 San Diego, CA 92127 . joaquin.silva@onrampwireless . Keywords: smart grid, smart grid standards, wireless mesh, star topology, utility . Abstract . As smart grid standards are developed and deployed

Regarding Smart Grid Network Topology used or defined by the algorithm, we can see a very homogeneous classification among the algorithms. Thus, as can be seen in Table 1, the schemes are mainly found in Neighborhood Area Networks (NAN) and Field Area Networks (FAN) and Software-Defined Networks (SDN).

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