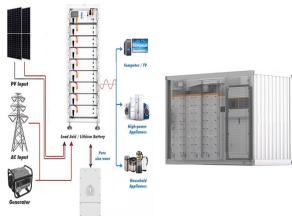


JORDAN SMART GRID TOPOLOGY



Transitioning to the full use of smart meters has been suggested as the main process of converting Jordan's traditional electrical grid into a smart grid . While countries such a?|



PDF | On Oct 26, 2021, Hamza Alnawafah and others published Modeling and Control for Hybrid Renewable Energy System in Smart Grid Scenario - A Case Study Part of Jordan Grid | Find, read and cite



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 a?|



like) topology, which can be modii!?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].



Smart grids require information and communication technology (ICT) in order to control dynamics in the power grid. However, adding ICT creates additional entry points in vulnerable hard- and

JORDAN SMART GRID TOPOLOGY



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



Smart grid (SG) technology transforms the traditional power grid from a single-layer physical system to a cybera??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 power a?|



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 a?|



A Chain Topology for Ef!?cient Monitoring of Food Grain Storage Using Smart Sensors Alekha Kumar Mishra 1, Asis Kumar Tripathy, Mohammad S. Obaidat, Fellow of IEEE and Fellow of SCS2, Zhiyuan Tan3, Mukesh Prasad4, Balqies Sadoun5 and Deepak Puthal4 1Vellore Institute of Technology, Vellore, India 2University of Jordan, Jordan 2Nazarbayev University, Astana, a?|



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 a?|

JORDAN SMART GRID TOPOLOGY



Roadmap to Transit the Electrical Grid to a Secure Smart Grid: A Collaborative Approach for Regulatory and Governmental Reforms in the Kingdom of Jordan December 2023 DOI: 10.20944/preprints202312



In the era of advanced automation and broadband communications where every aspect of daily life can be positively affected by smart applications; our power grids continue to be operated using antiquated technologies and systems. Although the traditional power grid has been an effective solution for more than 50 years, the future is uncertain as the shift from coal a?|



Concerning the topic of smart grid with focus on the high voltage network, Wang et al. [39] study the power grid to understand the kind of communication system needed to support the decentralized control required by the new power grid applying complex network analysis techniques. The analyses aim at generating samples using random topologies based a?|



The ERs of grid topology estimation with the rooftop PVs integration are presented in Table 4 using noiseless measurements. Our algorithm does not have any performance degradation with DER integration. This paper proposes a data-driven approach to estimate multi-phase distribution grid topology by utilising smart meter measurements. Unlike



As a country, Jordan is heavily reliant on fossil fuels to meet its energy needs. As of 2021, 73% of the total generation was from natural gas, with only 26% from renewable sources []. Therefore, great benefit can be derived from converting the electrical grid into a smart grid, primarily owing to its potential to enhance the reliability and efficiency of the electric grid a?|

JORDAN SMART GRID TOPOLOGY



Internet of things application in smart grid: A brief overview of challenges, opportunities, and future trends. Qiang Yang, in Smart Power Distribution Systems, 2019. 13.4.2 Topology characterization and generation. The grid topology needs to adapt and shift from a centralized source to a distributed topology that can absorb different energy sources in a dynamic way.



A communication network is integrated with the electricity distribution system to form a modern smart grid, an infrastructure of a complex cyber-physical power system enabling bidirectional power and information transfer [1, 2] 2023, 65 % of electrical firms are expected to have invested in flexibility services, potentially reaching up to 35 % of installed capacity [3].



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

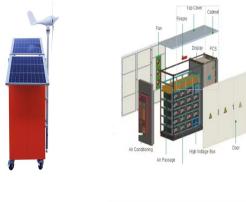


For distribution grid topology identification, many methods have been proposed in recent years. For example, in [], the correct topology is searched from a set of possible radial networks. Given the line parameters, Cavraro et al. [] and Sharon et al. [] propose maximum-likelihood methods to select the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



Smart grid will bring many benefits to energy economy, including optimal production of electricity and combining storage while reducing the need for it, a natural integration of decentralized a?|

JORDAN SMART GRID TOPOLOGY



The Jordan Electric Power Company is working with Itron to maximise the benefits of its smart meter roll-out project and bolster the region's energy security. "As Jepco uplevels its smart grid, Itron's solution will play a a?|



Initially, the status of breakers and grid information is utilized to ascertain the network topology, whether it operates in grid-connected mode or islanding mode. Subsequently, the current state of the network topology is compared to its previous state, and if it remains unchanged, the previously saved settings are employed.



The implementation of a smart grid in Jordan offers many potential advantages, such as improved reliability and efficiency of the power grid, expanded integration of renewable energy sources, a?|



The explanation of the smart grid is not essentially unique, as its visualization to the investors and the technological complications can be different . The US Department of Energy (DOE) has suggested the definition of smart grid as "Smart Grid is an automated broadly distributed energy delivery network".



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 a?|

JORDAN SMART GRID TOPOLOGY



smart grid advancement [2]. Industrial and academic research on smart distribution grids has advocated the participation. Grid topology is captured by the branch-bus incidence matrix A $2f0; 1gL$ ($N+1$), which can be partitioned into its rst and the $a?$



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