

Papers I Selected

1. Distributed Holistic Framework for Smart City Infrastructures: Tale of Interdependent Electrified Transportation Network and Power Grid
2. Operating mechanism for profit improvement of a smart microgrid based on dynamic demand response
3. Distributed Control for Distributed Energy Resources: Long-Term Challenges and Lessons Learned

Problem Statement

1. If all things becomes smart and vehicles also run on electricity then a complete infrastructure need for this, that provides places where anyone can charge their vehicle to and to manage electricity cost.
2. Mcrogrid helps to reduce the consumption of fossil fuel by utilizing distributed renewable energies (DREs). However, the stochastic nature of renewable energy makes it a big challenge for the microgrid operators to maximize the consumption of DREs while ensuring the balance between supply and demand.

Finding and Conclusions

1. Distributed algorithm and framework for the LOT-based interdependent networks. Our solution enables distributed coordination of agents in the network-of-networks, such as smart city infrastructures. To this end, we propose a fully distributed consensus + innovations approach. Our distributed iterative algorithm achieves a distributed solution of decision making for each agent through local computations and limited communication with other neighboring agents that are influential in that specific decision. For instance, the optimal routing decision of a PEV involves a different set of agents as compared with optimal charging strategy of the same PEV.
2. This work identified several long-term drivers which together cause the introduction of distributed energy resources at the grid's periphery. This, in turn, poses significant long-term challenges. Power grid assessment must be increasingly holistic considering technical and economic trade-offs as well as variations that span multiple layers. Such techniques demand multi-layer approaches that represent hybrid dynamic phenomena

which are difficult to design formally. Demand side resources (DSRs) are also expected to play a significant role in promoting grid reliability.

Review

1. In this paper, Researcher introduce a holistic framework to model interdependent nature of power systems and electrified transportation networks, enhance the operational performance of these systems as a network-of-networks, and explain the required information exchange via coupling agents (e.g., PEVs and charging stations). We develop a holistic framework that enables distributed coordination of interdependent networks through the IoT lens. To this end, we propose to use a fully distributed consensus + innovations approach. This iterative algorithm achieves a distributed solution of the decision making for each agent through local computations and limited communication with other neighboring agents that are influential in that specific decision.
2. In this paper Traditional power systems were built upon the assumption that generation was controlled by a few centralized generation facilities that were designed to serve fairly passive loads. This assumption has since controlled the structure of the physical power grid, power systems economics as well as regulatory measures. However, several drivers have emerged to challenge this assumption.

Stakeholders in Pakistan

Pakistan have not that much resourses to fulfill the current demand of energy and electricity due to which the Grids and others stakeholders are not in that much benefits. But If these researches are implemented in Pakistan these will be very beneficial for stakeholders because people like modern and reliable technology and which are which is user friendly and can save both time and money of user.
