Dr. Jie Zhang

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The University of Texas at Dallas

Date: Friday, September 23, 2022

Time: 1 - 1:50 pm

Location: Melcher Hall 180

Learning-enabled Sustainable and Resilient Energy Systems

Abstract: The power and energy system has been undergoing a dramatic transformation because of the increasing penetrations of variable renewable energy resources (such as wind and solar) and behind-the-meter distributed energy resources (DERs). The consistent growth of renewable energy and DERs calls for a paradigm shift in energy systems technologies, aiming to efficiently solve power systems challenges in terms of resilience, reliability, and economic efficiency. To help address these challenges, this talk will discuss several recently developed learning-enabled synergistic methodologies on next generation energy system modeling, simulation, and optimization, including: (i) multi-timescale integrated thermal-electric energy systems (e.g., small modular reactor, renewable, hydrogen, district heating) modeling, control and operations to improve grid resilience, reliability, and economic efficiency; (ii) reinforcement learning over graph for network reconfiguration and service restoration under disruptive events such as natural disasters and adversarial attacks.

Biography: Dr. Jie Zhang is currently an Associate Professor in the Department of Mechanical Engineering and (Affiliated) Department of Electrical and Computer Engineering at the University of Texas at Dallas (UTD). Dr. Zhang received his Ph.D. (2012) in Mechanical Engineering from Rensselaer Polytechnic Institute (RPI), Troy, NY, USA. His research expertise and interests are power & energy systems, renewable integration, grid resilience, big data analytics, machine learning, complex engineered systems, and multidisciplinary design optimization. This research has resulted in over 190 peer-reviewed journal and conference publications. His research has been funded by U.S. Department of Energy, Department of Defense, National Science Foundation, and energy industry. His major awards include: ONR's Young Investigator Award, ASME Design Automation Young Investigator Award, SAS/IIF (International Institute of Forecasters) award, Fulbright U.S. Scholar Award, 9 best paper awards from Renewable Energy journal and multiple IEEE/ASME/AIAA conferences. He is a senior member of IEEE and AIAA. He is a member of AIAA Multidisciplinary Design Optimization technical committee.