

# LEARNING LARGE-SCALE REAL-WORLD DATA FOR CHARACTERIZING AND IMPROVING ENERGY SYSTEM RESILIENCE

THURSDAY: SESSION 4, TRACK 3

## SESSION CHAIR

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## PANELISTS

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## SESSION ABSTRACT

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In recent years, researchers have realized that resilience study based on bottom-up physical models is challenged by the complexities of computation/simulation and the inaccuracies of the models. Data analytics and machine learning, though being able to provide a model-free approach, are often challenged by lack of real-world data and interpretability of results. In this session, we will present several studies where large-scale real-world data are explored by machine learning to better characterize and improve system resilience. The data sets cover electric power outages, extreme weather events, fire incidents, engineering system warning messages, etc. The methods include a variety of machine learning topics, including statistics, stochastic process, neural networks, spatial-temporal models, etc. These studies will demonstrate how big data and machine learning can be used to quantitatively characterize and help improve system resilience.