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Seminar Presentation by

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Tuesday, February 23, 2021
11:00am – 12:00pm
https://usc.zoom.us/j/97228056404
Meeting ID: 972 2805 6404
Passcode: 864779

Data Driven Smart Buildings

Abstract:

In this seminar, an overview on the current status of data-driven smart building technologies, especially in the areas of Automated Fault Detection and Diagnosis (AFDD) and building-to-grid integration, will be presented. Malfunctioning control, operation, and building equipment, such as unstable control loop, biased sensor, and stuck outdoor air damper, are considered as the top cause for "deficient" building systems, which strongly affect a building's performance. Meanwhile, extensive research has shown that buildings and building equipment can provide flexible electrical loads to improve grid resilience and overall efficiency and reduce peak demand. Yet significant challenges still exist to allow easy-to-use and cost-efficient AFDD and building-to-grid solutions to be adopted in the field. Data-driven methods, especially those that use machine learning and artificial intelligence strategies, have shown great promises to overcome many of the barricades. This seminar will discuss the needs, gaps, and promising data-driven methods in the areas of building system AFDD and building-to-grid integration. Issues with data-driven methods and future research directions will also be presented.

Bio:

Dr. Jin Wen is a Professor in the Department of Civil, Architectural, and Environmental Engineering at Drexel University. She currently serves as the Member of American Society of Heating Refrigeration and Air-conditioning Engineers (ASHRAE)'s Research Administration Committee (RAC), which oversees and coordinates all ASHRAE research activities. She is the Task Leader for International Energy Agency (IEA)'s's Energy in Buildings and Communities (EBC) Annex 81 (Data-Driven Smart Buildings Task C (Applications)and an associated editor for ASME Journal of Engineering for Sustainable Buildings and Cities. Dr. Wen was selected as the U.S. Fulbright Scholar for 2019-2020, Sweden.

Dr. Wen obtained her Ph.D. degree in Mechanical Engineering from the University of Iowa in 2003. She also has a Master of Science degree and a Bachelor of Science degree from the Department of Flying Vehicles Design and Applied Mechanics in Beihang University.

Dr. Wen has about twenty-years experiences in the smart building field, firstly as an application engineer working for Johnson Controls Inc. and later as a researcher in the areas of automated fault detection and diagnosis, building-to-grid integration, model predictive control, regional energy modeling, and occupant behavior simulation. Her work has been funded by the U.S. Department of Energy, the National Institute of Standard Technology, the National Science Foundation, the Department of Homeland Security, and ASHRAE.