TEXAS A&M UNIVERSITY
Department of Electrical & Computer Engineering

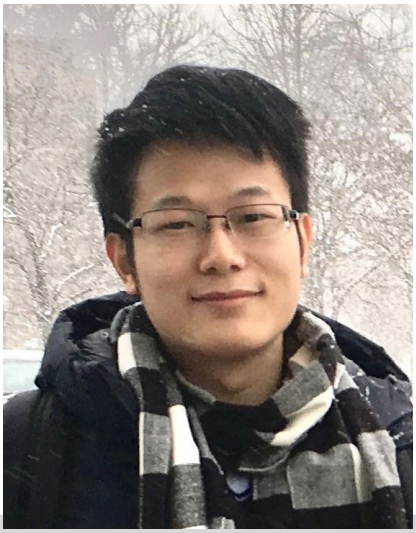
TRANSFORMING ENGINEERING EDUCATION

ENERGY & POWER SEMINAR

Carbon-Aware Optimal Power Flow

Abstract

To facilitate effective decarbonization of the electric power sector, this talk introduces a generic Carbon-aware Optimal Power Flow (C-OPF) method for power system decision-making that considers demand-side carbon accounting and emission management. Built upon the classic optimal power flow (OPF) model, the C-OPF method incorporates carbon emission flow equations and constraints, as well as carbon-related objectives, to jointly optimize power flow and carbon flow. In particular, we propose modeling and linearization techniques to address the issues of undetermined power flow directions and bilinear terms in the C-OPF model. Additionally, two novel carbon emission models, together with the carbon accounting schemes, for energy storage systems are developed and integrated into the C-OPF model.



Dr. Xin Chen
Assistant Professor
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Friday, November 3
11:30 am - 12:20 pm
244 ZACH

Biography

Dr. Xin Chen is an Assistant Professor in the Department of Electrical and Computer Engineering at Texas A&M University. Prior to joining TAMU, he was a Postdoctoral Associate affiliated with MIT Energy Initiative at Massachusetts Institute of Technology. He received the Ph.D. degree in electrical engineering from Harvard University, the master's degree in electrical engineering and two bachelor's degrees in engineering and economics from Tsinghua University. The research of Dr. Chen's group lies in the intersection of control, machine/reinforcement learning, and optimization for human-cyber-physical systems, with particular applications to sustainable power and energy systems.

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