DEPARTMENT of INDUSTRIAL ENGINEERING
UNIVERSITY of HOUSTON

FRIDAY SEMINAR SERIES
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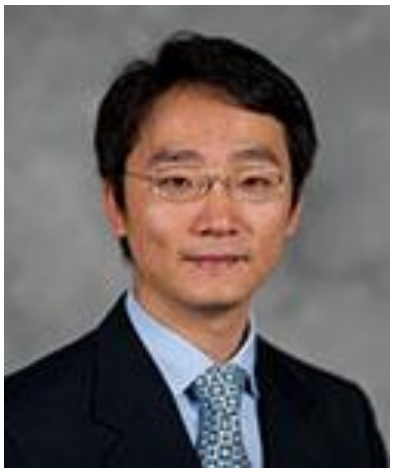

Dr. Andy Sun, Associate Professor
H. Milton Stewart School of Industrial and Systems Engr.
Georgia Institute of Technology

Date: Friday, Oct 9, 2020

Time: 1 - 2pm

Zoom Meeting ID: 970 7656 5407

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Solving Real-World Power Grid Optimization Problems

Abstract: The electric power system is in a fast evolution in both its physical composition and its decision-making capability. The former is mainly driven by renewable energy integration accelerating worldwide, which has brought significant changes to the generation facilities of the power grid. The latter is driven by algorithmic innovations to support renewable energy integration and day-to-day operation. In this talk, I will present our recent works in developing a suite of new algorithms to solve one of the core power grid optimization problems, the AC optimal power flow (OPF) problem, which is a nonconvex quadratic program. I will discuss new strong convex relaxations based on second-order conic programming, which outperforms the traditional semi-definite relaxations, and distributed optimization with convergence guarantees. Our team has won top positions in the recent ARPA-E Grid Optimization Competition, the first international competition in solving real-world AC OPF problems. If time permits, I will also discuss the new stochastic dual dynamic integer programming (SDDiP) algorithm in solving multistage stochastic integer programs and its complexity analysis.

Biography: Dr. Andy Sun is an associate professor and Anderson-Interface Early Career Professor in the School of Industrial and Systems Engineering at the Georgia Tech. Sun has a broad research agenda on nonconvex optimization in both continuous and discrete domains, multistage stage stochastic and robust optimization, distributed optimization of nonconvex network constrained programs, and stability of second-order oscillators. Sun's research has won several awards, including the Dantzig Dissertation Award, the NSF CAREER Award, the INFORMS ENRE Best Publication in Energy, the Best paper Published in IEEE Trans. Power System in 2017-2019, among others. Sun's work has been implemented in the electricity markets in the US. Sun obtained his PhD degree in Operations Research from MIT, and was a postdoctoral researcher at the IBM Watson Research Center, before joining Georgia Tech.