

## Decentralized Generation Scheduling in Energy Networks

**ABSTRACT** – Day-ahead scheduling of electricity generation or unit commitment is an important and challenging operational activity of power system operators. Mixed integer programming (MIP) has been firmly established as an effective technology for this problem for moderate scale integrated systems. In this work, we consider decentralized unit commitment in a large-scale network of generation systems. We develop a decomposition-coordination approach by which independent unit commitment MIP models can be integrated to achieve high quality solutions to the network-wide problem. The approach is based on the alternating direction method of multipliers (ADMM) originally developed for decentralized convex optimization. We adapt ADMM to the highly nonconvex unit commitment problem and demonstrate its computational effectiveness.

This talk is based on joint works with Javad Feizollahi, Mitch Costley, Andy Sun and Santiago Grijalva.



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**SPEAKER BIO** – **Shabbir Ahmed** is the Anderson-Interface Chaired Professor in the School Industrial & Systems Engineering at the Georgia Institute of Technology. His research interests are in large-scale stochastic and discrete optimization, and their applications in energy systems. Dr. Ahmed is a past Chair of the Stochastic Programming Society, is a council member of the Mathematical Optimization Society, and serves on the editorial board of several journals. Dr. Ahmed's honors include the National Science Foundation CAREER award, two IBM Faculty Awards, the INFORMS Dantzig Dissertation award, and the INFORMS Computing Society Prize. He is a Senior Member of IEEE and a Fellow of INFORMS.