



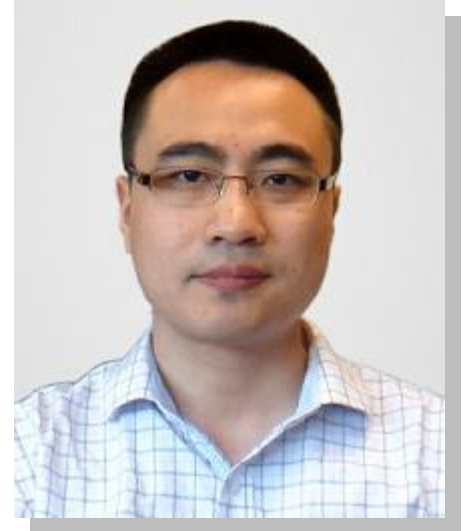
CoCo Seminar Series Fall 2019

Peer-to-Peer Energy Trading in a Microgrid based on Iterative Double Auction

Dr. Yong Wang

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Engineering, Binghamton University**

Wednesday October 16, 2019 11:00am-12:00pm
Engineering Building T-1 (Multipurpose Room)



The research and construction of microgrids provide the possibility of effective use of distributed energy resources (DERs), where electricity is generated and consumed locally. Peer-to-Peer (P2P) energy trading in microgrids helps to create a totally competitive and autonomous market and brings benefits to both the market participants and utility companies. A P2P energy trading model based on iterative double auction is proposed in this research. The iterative double auction mechanism is used to elicit hidden information from all participants to achieve maximum social welfare, where buyers and sellers adjust quotes to better individual profits according to previous individual transaction volumes and the market equilibrium price, without much knowledge about the market itself. The optimal allocation of the energy and market equilibrium is obtained and verified. Numerical examples are used to illustrate the feasibility and validity of the proposed iterative double auction algorithm. The example results show that the average hourly social welfare for the proposed iterative double auction algorithm is 22.3% higher over the zero-intelligence strategy.

Dr. Yong Wang is an Assistant Professor in the Systems Science and Industrial Engineering Department, Binghamton University. He established the Smart Energy Operations Research Lab (SEORL binghamton.edu/seorl). SEORL focuses on the design, modeling, and management of complex energy and manufacturing systems. The central theme of the research is to understand the working principles of these systems and make them more efficient and reliable by optimally integrating various resources such as information, equipment, materials, finance and people.

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