ENERGY MANAGEMENT FOR LARGE SCALE CHARGING OF ELECTRIC VEHICLES

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Abstract: The electrification of the transportation system is one of the key components toward a sustainable society. The technology for Electrical Vehicles (EVs) has sufficiently advanced that an accelerated adoption of EVs is increasingly likely. Crucial to the transition toward EV based transportation is a Large Scale Charging (LSC) infrastructure. By LSC we mean charging systems at public parking facilities, work places, and apartment complexes where a large number of EVs are charged simultaneously.

In this talk, we consider the design of an energy management system for the large scale charging of electric vehicles based on the concept of network switched charging where charging ports are activated based on the available renewable sources, real-time price of electricity, and the level of local storage. At the heart of the energy management system is a deadline scheduling algorithm that exploits the available charging capacity and customers’ flexible schedule.

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Host: Arye Nehorai, PhD

Short Bio: Lang Tong is the Irwin and Joan Jacobs Chair Professor in Engineering at Cornell University and the site director of the Power Systems Engineering Research Center (PSERC). He received the B.E. degree from Tsinghua University, Beijing, P.R. China, and PhD degree in EE from the University of Notre Dame, Notre Dame. He was a Postdoctoral Research Affiliate at the Information Systems Laboratory, Stanford University.

Lang Tong works in the general area of statistical inference, decisions, communications, and complex networks. His current research focuses on energy systems. He received the 2004 Best Paper Award from the IEEE Signal Processing Society, the 2004 Leonard G. Abraham Prize Paper Award from the IEEE Communications Society, and the 1993 Outstanding Young Author Award from the IEEE Circuits and Systems Society. He is also a coauthor of seven student paper awards. He is a Fellow of IEEE.