



Invited Speaker WEBINAR

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A Cooperative Hierarchical Multi-Agent System for EV Charging Scheduling



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Abstract: The increasing penetration of plug-in electric vehicles (EVs) to the electrical grid raises concerns over secure and economic operation of the system. A coordination mechanism between system operator and EV aggregators is necessary to ensure the system is operated within the security limits and the demand peaks are managed while satisfying EV users' energy needs. In this talk, we present a cooperative hierarchical multi-agent system and an EV charging scheduling strategy in order to minimize the demand and energy charges, while meeting the EV users' energy requirements and satisfying the system security constraints. Within the designed framework, the higher-level agents calculate a set of proposed control signals by solving the designated optimization problems and send them to the lower-level agents to facilitate an optimal scheduling in line with the aforementioned objectives. Through this approach, it is possible to effectively coordinate multiple EV aggregators without the need of direct communication or any prior information related to EV arrivals. Moreover, the computational complexity is reduced by distributing the work among agents, and the privacy of sensitive data, such as system topology, load profiles, and EV parameters, is preserved.

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Short Bio: Mr. Can Berk Saner received the B.Sc. degree in Electrical Engineering from Istanbul Technical University, and the M.Sc. degrees in Engineering Business Management, and Electrical Engineering from University of Sussex, and Istanbul Technical University, respectively. He is working towards the Ph.D. degree in National University of Singapore, Electrical and Computer Engineering department. His research interests include optimization and machine applications in electric power systems.



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