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Special Session on

"Emerging Trends in Modelling and Control of Cyber-Physical Energy Systems"

Organized by

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Call for Papers

Cyber-Physical energy systems (CPESs) are expected to be formed by a large variety of technologies and components for different applications. However, the various natures, behaviours, models, and communications with environments of these components lead to a remarkable level of complexity, particularly at large scales. Typical examples of such systems are robotics systems, electrified transportation systems, and smart grids. Modelling these components at the component and system levels as well as controlling them, particularly in a distributed manner, have received significant attention by researchers over the past decades. A comprehensive effort is needed to provide flexibility, scalability, and controllability of CPES in dynamic environments.

This Special Section on "Emerging Trends in Modelling and Control of Cyber-Physical Energy Systems" focuses on the development, adoption and application of design,

Accepted papers will be published in an IEEE proceedings volume and will be also submitted for the International Publication in *IEEE xplore*

modelling, communication, energy management and control technologies for future CPES.

Topics of the Session

Topics of interest include, but are not limited to:

- Architectures and designs of CPESs;
- Key states measurement, estimation, and monitoring;
- Both component-level and system-level modelling and analysis, including physical, intelligent, human-in-loop (user) behavioural, and economical models;
- Learning abilities, self-manageable, and adaptable strategies of CPESs in their environments;
- Communication and interaction among the CPESs;
- Control and energy management of charging and navigation of electric vehicle (EV) fleet and smart grids;
- Neural network-based control, distributed control, intelligent control, artificial intelligence-based control, optimal control, and coordinated control;
- Big data analysis for CPESs real-time control;
- Controllability, observability, security, reliability, and scalability of CPESs;
- Applications of CPESs, including smart grids, EVs, autonomous automobile, and robotics systems.