

Call for Papers: Open Invited Track, IFAC World Congress 2023
The 22nd World Congress of the International Federation of Automatic Control
July 9-14, 2023, Yokohama, JAPAN

Advances in control, communication, and optimization for smart charging and vehicle-to-everything (V2X)

(Submission Code: ai95i)

Track proposed by:

- Dr. Yang Li, Chalmers University of Technology, Sweden, yang.li@chalmers.se
- Dr. Chih Feng Lee, Polestar, Sweden, chih.feng.lee@polestar.com
- Dr. Francesco Liberati, Sapienza University of Rome, Italy, liberati@diag.uniroma1.it
- Dr. Volkan Kumtepelı, University of Oxford, UK, volkan.kumtepelı@eng.ox.ac.uk
- Prof. Daniel Quevedo, Queensland University of Technology, Australia, daniel.quevedo@qut.edu.au

Abstract: Electric vehicles (EVs) are increasing significantly due to their advantageous characteristics, including higher energy efficiency, lower environmental impacts, and better economic performance. Smartly managing and controlling the charging patterns of EVs is considered a crucial step for the large adoption of EVs, while the limitation on battery degradation and efficiency and ambient conditions must be well addressed. In addition, the integration of EVs and electrical grids is vital in terms of charging management for reducing the grid impact and providing an opportunity for EVs to actively participate in supporting the grid through vehicle-to-home (V2H) and vehicle-to-grid (V2G) technologies. This track focuses on several aspects related to charging control strategies and vehicle-to-everything (V2X) functions and covers a broad range of technology, regulation, standards, demonstration, and social influences.

Topics of interest include but are not limited to

- Smart charging algorithms for minimization of battery degradation and self-healing
- Charging strategy optimization and control techniques, e.g., model predictive model and learning-based control
- Coordination and communication of large-scale charging infrastructure and network
- Implementation and analysis of V2X interaction for grid regulation
- Improved state estimation algorithms for enhanced charging management (state of charge, state of health, state of power, etc.)
- High-efficient EV charger development
- Renewable- and storage-integrated charging station design and control

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- Pricing mechanisms for optimal charging scheduling
- Wireless power charging control
- Charging and load-balancing hardware design
- Cyber-physical systems for V2X
- Business case analysis for V2X
- Regulatory and political challenges to V2X

IFAC technical committee for evaluation: 7.4 - Transportation Systems

Important Dates:

Invited Paper Submission: October 31, 2022

Discussion Paper: November 30, 2022

Notification of Acceptance: February 21, 2023

Final Paper Submission: March 31, 2023

Conference Dates: July 9-14, 2023

Submission Information:

Papers must be submitted electronically using the IFAC PaperPlaza conference manuscript management system (see the Submission Link below). All submissions must be in PDF format, written in English, and prepared according to IFAC format, see: www.ifac.papercept.net/conferences/support/support.php. The submission procedure is described in detail at <https://www.ifac2023.org/submission/submit-contribution/>

Submission Link:

<https://ifac.papercept.net/conferences/scripts/start.pl>

Open Invited Track Code:

ai95i

Website for additional information on this open invited track:

<https://sites.google.com/view/ifac2023-v2x/>