

**CALL FOR PAPERS
SPECIAL SESSION ON**

**AI-Empowered Advanced Control, Optimization, Stability, and Reliability of
Power Systems Integrating Renewable Energy and Plug-In Electric Vehicles**

for CDMA'25

Feb. 16-17, 2025, Riyadh, Saudi Arabia

Session/Workshop Chair:

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Session description:

This Special Session focuses on the stability and reliability of advanced control of power systems integrating renewable energy and plug-in electric vehicles (PEVs) based on Artificial Intelligence (AI). Power control is the fundamental basis for the efficient operation of power systems. It involves regulating the active and reactive power to maintain the desired output and ensure the system operates within its limits. Optimization in power systems seeks to maximize efficiency and minimize costs. Stability means maintaining system equilibrium under normal and disturbed conditions. A reliable power system can withstand disturbances while continuing to supply electricity. These performances include a wide range of studies, approaches, and applications, emphasizing the critical role of AI-powered grids. Thus, the electric power grid is undergoing substantial transformation due to rapid advancements in renewable energy technologies, the Internet of Things (IoT), AI, Blockchain, etc. Control, optimization, stability, and reliability are interconnected elements that define efficient and effective power systems. By leveraging advanced techniques, we can create systems that are not only functional but also robust and efficient. Integrating renewable energy sources and PEVs, into microgrids poses challenges in control, optimization, stability, and reliability. On the other hand, today, the market of PEVs is more popular than ever and is moving with astonishing progress. One of the main reasons for this tangible progress is the important challenge of traditional vehicles, namely environmental pollution, along with the development and price reduction in technology related to PEVs. This Special Session emphasizes recent advances in these topics and provides a platform for researchers and practitioners to share knowledge and discuss the latest developments. It aims to delve into various aspects of power systems and PEVs to address the evolving challenges and opportunities in the energy sector. This Special session invites submissions investigating advanced control strategies, emphasizing the need for efficient and adaptable control in power systems.

Topics of interest for this Special session include but are not limited to the following:

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| ✓ Advanced control of AC and DC microgrids | ✓ AI- optimization techniques enhancing microgrids and power systems performances |
| ✓ IoT-enabled grids | ✓ Stability of microgrids and power systems under significant penetration |
| ✓ Evolution of intelligent energy management | ✓ AI-driven predictive maintenance |
| ✓ Cybersecurity and Blockchain | ✓ Smart charging |

Submission

Papers must be submitted electronically for peer review by: **October 31, 2024**
https://easychair.org/account2/signin_timeout?l=6366112383385508012

All papers must be written in English and should describe original work. The length of the paper is limited to a maximum of 6 pages (in the standard IEEE conference double column format).