



# ANNUAL CONFERENCE OF THE IEEE INDUSTRIAL ELECTRONICS SOCIETY

Chicago | Illinois, November 3-6, 2024

## Special Session on

### Advanced Control Techniques for Power Electronics Converters

#### Organized and co-chaired by:

Prof. Hasan Komurcugil, Eastern Mediterranean University, Famagusta, Turkey

Prof. Sertac Bayhan, Hamad Bin Khalifa University, Doha, Qatar

Prof. Naki Guler, Gazi University, Turkey

[hasan.komurcugil@emu.edu.tr](mailto:hasan.komurcugil@emu.edu.tr)

[sbayhan@hbku.edu.qa](mailto:sbayhan@hbku.edu.qa)

[gulern@gazi.edu.tr](mailto:gulern@gazi.edu.tr)

#### Call for Papers

##### Technical Outline of the Session and Topics:

The demand for high-quality electrical energy has increased considerably in recent years. Basically, the power electronics converters can be used in wide range of applications which require electrical power conversion, conditioning, compensation, and active filtering through the use of well-designed control methods which should meet the desired objectives set for each application. These applications involve integration of renewable energy sources to the utility grid by means of appropriate converter, uninterruptible power supplies, power quality improvement, electrical vehicle charging, DC traction power systems, smart grids, and energy storage systems. This session is intended to provide an insight on the latest advanced control techniques of various power converters employed in the applications mentioned above.

##### Topics of the Session include, but are not limited to:

- Lyapunov-function based control of power converters
- Sliding mode control (SMC) of power converters
- Finite control set model predictive control (MPC) of power converters
- Continuous control set MPC of power converters
- Repetitive control of power converters
- Deep reinforcement learning control of power converters
- Novel chattering reduction and fixed switching frequency based methods in SMC
- Novel sensorless MPC for electrical machines
- Novel cost function design and weighting factors tuning in MPC
- Application to microgrids
- Application to mega-watt range wind turbines
- Application to energy storage systems
- Application to electrical vehicle charging.

##### Author's schedule:

Deadline for submission of special session papers April 15, 2024

Notification of acceptance June 10, 2024

Deadline for submission of final manuscript July 01, 2024

Early submission is highly encouraged for early decision notifications!

All the instructions for paper submission are included in the conference website:

[www.iecon-2024.org](http://www.iecon-2024.org)

