

Special Section on: Latest Advancements of Artificial Intelligence in Power Electronics

Theme: Power electronics community has been investigating artificial intelligence (AI) techniques since the 1990s, covering renewable energy integration, design automation, intelligent control, and smart predictive maintenance. To date, power electronic systems have been evolving towards data-rich paradigms with ubiquitous connections that support data-driven applications. Many exciting new concepts, state-of-the-art AI tools, and cutting-edge hardware have been emerging and adding new dimensions to power electronics. There are further and greater opportunities for imparting learning capability into systems and underpinning the next quantum leap of smart power electronic systems. In view of the fast-growing implementations of AI in power electronics, this special issue aims to inspire ideas and cover the latest research achievements in this synergy field. Prospective authors are invited to submit original contributions or survey papers for review for publication in this special issue. Topics of interest include (but are not limited to):

- ✓ AI-assisted design (heatsink, circuitry, magnetics, etc.)
- ✓ AI in Design for Reliability (DfR)
- ✓ AI for accelerated test planning and experiment
- ✓ Intelligent data-driven control and optimization
- ✓ Online learning and adaptive control
- ✓ Intelligent lifetime extension and power routing
- ✓ Digital twin and surrogate models
- ✓ Cybersecurity and attack identification
- ✓ Physics-informed machine learning for power electronics
- ✓ Condition & health monitoring
- ✓ Anomaly detection, fault diagnostics, failure prognostics
- ✓ Tailored AI for data- and computation-light applications
- ✓ Uncertainty quantification and repeatability verification
- ✓ Transfer learning and domain adaption
- ✓ IoT, cloud computing, hardware implementation
- ✓ Public dataset collection and dissemination

Manuscript Preparation and Submission

Check carefully the style of the journal described in the guidelines “Information for Authors” in the IEEE- IES website: <http://www.ieee-ies.org/pubs/jestie>. Please submit your manuscript in electronic form through: <https://mc.manuscriptcentral.com/jestie-ieee/>. On the submitting page, in pop-up menu of manuscript type, select: “**SS on Latest Advancements of Artificial Intelligence in Power Electronics**”, then upload all your manuscript files following the instructions.

Guest Editor

Prof. Shuai Zhao
Aalborg University, Denmark
Email: szh@energy.aau.dk

Corresponding Guest Editor

Prof. Marcelo G. Simões
University of Vaasa, Finland
Email: marcelo.godoy.simoese@uwasa.fi

Guest Editor

Dr. Burak Ozpineci
Oak Ridge National Laboratory, USA
Email: burak@ornl.gov

Timetable

Deadline for manuscript submissions: **July 31, 2023**

Information about manuscript acceptance: **November 30, 2023**

Publication Date: **January, 2024**