

2026 IEEE 9th International Conference on PATTERN RECOGNITION AND ARTIFICIAL INTELLIGENCE

SPECIAL SESSION 13

Intelligent Signal Processing and State Perception for Power Systems

With the rapid development of smart grids and the deep integration of artificial intelligence (AI) and pattern recognition technologies into power systems, the demand for intelligent signal processing and accurate state perception has become increasingly urgent. This special session focuses on the latest research advances, innovative technologies, and practical applications of intelligent signal processing and state perception in power systems, aiming to bridge the gap between pattern recognition, AI algorithms and power system engineering practice. It provides an academic exchange platform for researchers, engineers and experts in related fields to share cutting-edge achievements, discuss key challenges, and promote the intelligent transformation of power systems. The session will cover the integration of pattern recognition, machine learning, deep learning, graph neural networks and multimodal fusion algorithms with power system signal processing and state perception, focusing on solving practical problems such as harmonic detection, frequency and state estimation, transient analysis in power system operation, as well as low signal-to-noise ratio, complex interference, and difficult state evaluation, so as to support the safe, stable and efficient operation of smart grids.

Related Topics

Topics of interest include, but are not limited to:

- Intelligent processing of power system signals
- Pattern recognition and feature extraction for power system signals (with graph neural networks)
- AI-driven state perception and health assessment of power equipment
- Multimodal data fusion for power system state perception
- Noise suppression and signal enhancement for power monitoring
- Deep learning-based power system fault diagnosis and prediction
- Edge computing-based real-time state perception (with distributed multi-task computing)
- Power system harmonic detection, frequency estimation and transient analysis
- Intelligent signal processing in renewable energy integration
- Intelligent state perception for smart distribution networks and microgrids

Publication



Accepted papers will be published in PRAI 2026 Conference Proceedings, and submitted for inclusion into **IEEE Xplore** and indexed by **El Compindex & Scopus**.

Submission Way

Submit Online: <https://www.easychair.org/conferences/?conf=prai2026>

(Please choose Special Session 13)

Paper Templates: Latex: <https://www.prai.net/ieee-conference-latex-template.zip>

Word: <https://www.prai.net/instruct8.5x11x2.doc>

**For oral presentation without publication, please submit only the abstract initially.

For General Inquire Please Contact: praiconf@outlook.com

For Submission Question Please Contact: praiconf@foxmail.com

Wechat ID: iconf-ras (Send: PRAI 2026)

Important Date

Final Submission Deadline July 05, 2026

Final Notification Date July 20, 2026

Final Registration Deadline July 25, 2026

* The review period for submissions is typically one month.

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