callforpaper.org

China June 8-12, 2025

CONFERENCE WEBSITE: https://www.cec2025.org/

About the Conference

Call for Papers: Special Session on Integrating Machine Learning Methods into Evolutionary Optimization

IEEE Congress on Evolutionary Computation (CEC) 2025, Hangzhou, China, June 8–12, 2025

Overview and Scope

Evolutionary algorithms (EAs) have proven to be highly effective tools for tackling complex optimization challenges, particularly in scenarios where traditional methods struggle. Their flexibility makes them suitable for a wide range of applications, but their success often relies on fine-tuning parameters, selecting appropriate algorithms, and managing computational demands. The integration of machine learning (ML) techniques into EAs offers a promising approach to addressing these challenges and advancing the field of optimization.

This session aims to bring together researchers and practitioners to delve into the complementary strengths of evolutionary computation and

Important Dates

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machine learning. By incorporating ML techniques, EAs can dynamically adapt to different optimization tasks, enhancing their efficiency, robustness, and scalability. This integration facilitates innovations such as automated parameter adjustment, intelligent algorithm selection, surrogate modeling for expensive functions, and adaptive search strategies, opening the door to more efficient solutions for large-scale and real-world problems.

We welcome contributions that introduce novel methods, empirical validations, and theoretical insights, with a special emphasis on the role of ML in enhancing exploration-exploitation trade-offs and adaptability of evolutionary algorithms.

Topics of Interest:

Submissions are encouraged (but not limited to) the following topics:
Machine learning for dynamic parameter tuning in evolutionary algorithms
Automated algorithm/operator selection using ML techniques
Surrogate-assisted optimization for computationally expensive problems
Reinforcement learning and deep learning for guiding search strategies
Adaptive evolutionary approaches for large-scale or real-world optimization
Data-driven approaches to enhance exploration and exploitation balance
ML-driven hybridization of evolutionary algorithms with other optimization techniques

Empirical studies demonstrating ML-enhanced EAs on benchmark or industrial problems

Submission Guidelines:

All submissions must follow the general guidelines of the IEEE CEC 2025 Submission Website (https://www.cec2025.org/). Authors should explicitly mention that their paper is being submitted to the Special Session on Integrating Machine Learning Methods into Evolutionary Optimization. Accepted papers will be included in the CEC 2025 proceedings, published by IEEE Xplore.

Important Dates:

Paper Submission Deadline: January 15, 2025
Paper Acceptance Notification: March 15, 2025
Final Paper Submission and Early Registration Deadline: May 1, 2025
Conference Dates: June 8–12, 2025

Session Organizers:

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TOPICS OF INTEREST

4 topics

Research papers are invited in, but not limited to, the following areas:

- Computer Science & Software Engineering
- Uncategorized
- Mathematics & Statistics
- Artificial Intelligence & Machine Learning