



IEEE World Congress on
Computational Intelligence
June 30 – July 5, 2024



CALL FOR PAPERS - CEC 2024 - SPECIAL SESSION



IMPORTANT DATES

15 January 2024

Paper Submission
Deadline

15 March 2024

Paper Acceptance
& Notification

1 May 2024

Final Paper Submission &
Early Registration Deadline

30 June - 5 July 2024

IEEE WCCI 2024
Yokohama, Japan



Further information:
wcci.llg.mx



Evolutionary Algorithms for Neural Architecture Search from Theory to Practice

SUMMARY

Evolutionary Algorithms (EAs) have been developed to tackle complex optimization problems in different scientific, engineering, and industrial fields. EAs can deal with discrete, continuous, or even mixed search spaces and they do not require the objective functions to be analytically defined. Hence, EAs are black-box optimizers which are very versatile. These capabilities can be exploited in applications of significant importance in today's Artificial Intelligence revolution. One of these applications is the Neural Architecture Search (NAS) whose aim is to automatize the construction of Deep Neural Networks (DNNs) regardless of the specific problem they are meant to tackle. The automation of the design of DNNs is a remarkable problem because a DNN involves thousands or even millions of parameters that currently are set in a human-centered fashion.

This special session aims to explore the current advances on the utilization of EAs for NAS since this field rapidly evolves and implies the utilization of two techniques at heart of computational intelligence. Our goal is to delve into the challenges and opportunities of exploiting the power of EAs to find near-optimal neural architectures.

Researchers, academics, and practitioners at the intersection of evolutionary computation, neural networks, and machine learning are invited to contribute new EAs (for single- and multi-objective optimization), methodologies, applications, and theoretical advances to this impactful research domain.

CALL FOR PAPERS

This special session invites pioneering research leveraging **Evolutionary Algorithms (EAs) for Neural Architecture Search (NAS)**. We seek studies at the confluence of evolutionary computation, neural networks, and machine learning that focus on:

- Representation and Encoding of Neural Networks
- Design of Special Search Operators
- Adaptation and Dynamic Search Spaces
- Large-Scale EAs for NAS
- Design of Objective Functions to Evaluate the Quality of Neural Networks
- Multi-Objective NAS
- Surrogate Models
- Parallel and Distributed NAS using EAs
- Benchmarking. Hyperparameter Tuning
- Transfer Learning and Knowledge Transfer in NAS and EAs
- Interpretability and Explainability
- Theoretical Advances

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