

Special Issue

Symmetry in Evolutionary Algorithms

Message from the Guest Editor

Symmetry is a fundamental and pervasive concept in evolutionary algorithms, influencing the design, efficiency, and performance of these optimization techniques. Symmetry is also a key factor in handling multimodal optimization problems. Moreover, in real-world applications, from engineering design to complex system optimization, symmetry-aware evolutionary algorithms have demonstrated superior performance in solving problems with inherent symmetric structures, such as symmetric constraints or symmetric objective functions. In summary, symmetry is an indispensable element in advancing evolutionary algorithms, offering new perspectives for improving their robustness, efficiency, and applicability. This Special Issue aims to gather cutting-edge research on the integration of symmetry into evolutionary algorithms, exploring novel theories, methodologies, and practical applications. We particularly welcome studies that bridge the gap between symmetry theory and evolutionary algorithm design and demonstrate tangible impacts in solving real-world optimization challenges.

Guest Editor

Prof. Dr. Xiangjuan Yao

School of Mathematics, China University of Mining and Technology,
Xuzhou 221116, China

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Symmetry
Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
symmetry@mdpi.com

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About the Journal

Message from the Editor-in-Chief

Symmetry is ultimately the most important concept in natural sciences. It is not surprising then that very basic and fundamental research achievements are related to symmetry. For instance, the Nobel Prize in Physics 1979 (Glashow, Salam, Weinberg) was received for a unified symmetry description of electromagnetic and weak interactions, while the Nobel Prize in Physics 2008 (Nambu, Kobayashi, Maskawa) was received for the discovery of the mechanism of spontaneous breaking of symmetry, including CP symmetry. Our journal is named *Symmetry* and it manifests its fundamental role in nature.

Editor-in-Chief

Prof. Dr. Sergei Odintsov

1. ICREA, 08010 Barcelona, Spain

2. Institute of Space Sciences (IEEC-CSIC), C. Can Magrans s/n, 08193 Barcelona, Spain

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