

Special Issue

Diversity Metrics in Combinatorial Problems

Message from the Guest Editors

Diversity metrics have become essential tools for understanding and enhancing the behavior of metaheuristic algorithms, helping prevent premature convergence and promote more adaptive and efficient search processes.

This Special Issue invites researchers to contribute theoretical, methodological, or applied studies that explore the role of diversity in combinatorial optimization. Contributions may include new diversity measures, hybrid strategies, integration with reinforcement learning, as well as applications in engineering, planning, or complex systems.

Topics of interest include, but are not limited to, the following:

- Diversity metrics in metaheuristic algorithms;
- Diversity in combinatorial optimization;
- Reinforcement learning integrated with metaheuristics;
- Adaptive parameter control driven by diversity;
- Population-based and swarm-intelligence diversity;
- Hybridization of heuristic and exact methods;
- Exploration-exploitation balance and theoretical analysis;
- Applications in civil engineering, transportation, energy, and intelligent systems.

We warmly invite the research community to share advances that foster more diverse, robust, and sustainable optimization approaches.

Guest Editors

Dr. José Lemus-Romani
Prof. Dr. Gino Astorga
Dr. Marcelo Becerra

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

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About the Journal

Message from the Editor-in-Chief

The journal *Mathematics* publishes high-quality, refereed papers that treat both pure and applied mathematics. The journal highlights articles devoted to the mathematical treatment of questions arising in physics, chemistry, biology, statistics, finance, computer science, engineering and sociology, particularly those that stress analytical/algebraic aspects and novel problems and their solutions. One of the missions of the journal is to serve mathematicians and scientists through the prompt publication of significant advances in any branch of science and technology, and to provide a forum for the discussion of new scientific developments.

Editor-in-Chief

Prof. Dr. Francisco Chiclana
School of Computer Science and Informatics, De Montfort University,
The Gateway, Leicester LE1 9BH, UK

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