

Special Issue

Heuristic Search for Combinatorial Optimization Problems and Symmetry Applications

Message from the Guest Editors

Symmetry and asymmetry are present in various combinatorial optimization problems. The combinatorial optimization is integral to solving complex decision-making problems that arise in diverse areas such as logistics, telecommunications, manufacturing, and artificial intelligence. This Special Issue focuses on heuristic search techniques, which are essential tools for tackling the computationally intensive nature of combinatorial optimization problems. Unlike exact algorithms, which guarantee an optimal solution but may be impractical for large-scale problems due to their high computational demands, heuristic approaches provide near-optimal solutions within a reasonable timeframe, making them invaluable in real-world applications. This collection of papers explores various heuristic methods, including but not limited to genetic algorithms, simulated annealing, tabu search, and ant colony optimization. These methods are evaluated on a range of classical and emerging combinatorial optimization problems. This Special Issue also highlights advancements in hybrid approaches that combine heuristics with exact methods...

Guest Editors

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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.

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