

Special Issue

Multi-Objective Optimizations and Their Applications

Message from the Guest Editors

Multi-objective optimization addresses the challenge of optimizing multiple conflicting objectives in engineering, science, and industry. Unlike single-objective problems, it aims to find Pareto-optimal solutions that reflect trade-offs among objectives, providing decision-makers with diverse alternatives. Evolutionary multi-objective optimization (EMO) algorithms are widely used due to their population-based nature, which naturally supports the discovery of multiple optimal solutions. However, many real-world applications involve expensive evaluations such as simulations or physical experiments. Surrogate-assisted and data-driven approaches tackle this challenge by integrating machine learning models to approximate costly functions, enabling efficient design space exploration with lower computational cost. These methods also incorporate prior knowledge and uncertainty modeling. Techniques like infill criteria, model management, and data fusion further enhance performance, making such approaches practical in aerospace, automotive, drug discovery, and environmental engineering.

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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.

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