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Special Issue Reprint

Numerical Optimization and Algorithms

Edited by: Dunhui Xiao and Shuai (Steven) Li

The Special Issue “Numerical Optimization and Algorithms (3rd Edition)”, hosted by the MDPI journal *Algorithms*, provides a crucial forum for the latest advancements in computational mathematics. As science and engineering problems grow increasingly complex, this edition focuses on the urgent need for robust solvers capable of navigating high-dimensional and nonlinear landscapes. The scope of the Special Issue encompasses a broad range of scientific fields, including physics, data science, economics, and biology. It specifically addresses modern challenges like the “curse of dimensionality,” uncertainty in modeling, and the integration of data science with traditional numerical methods. Key areas of interest include the following: Graph Theory and Algebra: Developing fundamental structures for modern computing; Linear and Nonlinear Programming: Refining optimization under complex constraints; Stochastic Modeling: Handling the inherent unpredictability in real-world data; Differential Equations: Advancing numerical solvers for mechanical and environmental systems.

Led by Guest Editors Prof. Dr. Dunhui Xiao and Prof. Dr. Shuai (Steven) Li, this collection highlights the shift from purely theoretical algorithms to scalable, practical solutions. By fostering multidisciplinary collaboration, the Special Issue aims to promote innovative techniques—from metaheuristics to AI-driven optimization—that empower researchers to solve high-stakes problems in global logistics, finance, and industrial automation more efficiently.

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