Special Issue

Navigating Complexity: Advanced Optimization Techniques for Machine Learning

Message from the Guest Editors

The rapid advancements in machine learning have brought forth complex challenges that necessitate equally advanced optimization techniques.As machine learning finds applications in diverse sectors such as healthcare,finance,and autonomous systems,the need for optimized algorithms becomes crucial.Traditional optimization methods often fall short in navigating the high-dimensionality,non-convexity,and real-time requirements of modern ML problems.This Special Issue aims to explore the frontier of optimization techniques designed to address these complexities in ML applications.Potential topics include,but are not limited to:advanced gradient descent variants in ML,Smith-objective optimization for hyperparameter tuning,meta-learning for algorithmic optimization,Bayesian optimization in ML,optimization under uncertainty and indeterminacy in ML,soft computing approaches for ML optimization,scalability challenges in ML optimization,real-world applications of optimized ML algorithms, and performance analysis of new optimization techniques in ML.

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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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