Special Issue

Advanced Mathematical Methods for Machine Learning, Neural Networks, and Computer Vision

Message from the Guest Editor

The integration of mathematical methods in machine learning, neural networks, and computer vision has become increasingly vital as AI applications expand across various industries. These methods provide the theoretical foundation for building reliable, interpretable, and efficient AI systems. Recent advances in geometric deep learning, statistical learning theory, and sparse representation have significantly enhanced the performance of AI systems, yet many theoretical challenges remain to be addressed.

We are pleased to invite you to contribute to this Special Issue, which focuses on the application and theoretical underpinnings of mathematical methods in machine learning, neural networks, and computer vision. We particularly encourage submissions on geometric deep learning, sparse representation, optimization algorithms, statistical learning theory, and generative models. These studies should provide theoretical support for AI systems and facilitate their application in practical tasks. Other topics of interest include, but are not limited to, sparse models, low-rank structures, stochastic algorithms, and explainability analysis.

Guest Editor

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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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