

Special Issue

Computational and Applied Mathematics for Advancing Deep Learning in Imaging and Vision Fields

Message from the Guest Editor

We have witnessed groundbreaking innovations in deep learning (DL) that are fundamentally transforming the imaging and vision fields. These innovations, predominantly driven by data-centric methodologies, are typically achieved through empirical approaches, such as the design of heuristic novel architectures or optimization schemes. Despite their success, a comprehensive theoretical understanding of the underlying mechanisms remains insufficient.

Computational and applied mathematics have emerged as a key enabler in uncovering these foundational mechanisms, thereby enhancing the performance, robustness, credibility, and explainability of DL. Such improvements are especially vital in critical imaging applications, such as autonomous driving, medical imaging, and hard sciences. This Special Issue aims to gather interdisciplinary research that tackles the fundamental challenges of DL with the aid of mathematical ideas and techniques.

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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