

Special Issue

Advances in Statistical AI and Causal Inference, 2nd Edition

Message from the Guest Editor

This Special Issue focuses on recent advancements in statistical models and machine learning methods at the intersection of artificial intelligence (AI) and causal inference, with applications in genomics, bioinformatics, and precision medicine. This Special Issue principally highlights theoretical advancements involving deep neural networks and causal inference, particularly with regard to non-asymptotic theory and small sample learning. The theoretical analysis of deep neural networks can be divided into three components: approximation, optimization, and generalization. We highlight how machine learning and deep learning can be effectively integrated with causal inference, enabling researchers to address potential biases in estimating causal effects and heterogeneous causal effects. The sub-topics to be covered within the issue are as follows:

- deep neural networks
- finite sample theory
- non-asymptotic statistics
- precision medicine
- treatment effect estimation
- uncertainty quantification
- reinforcement learning
- adaptive experiments and bandit algorithms
- experimental design
- high-dimensional statistics
- multiple testing

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About the Journal

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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