

Special Issue

Mathematical and Statistical Methods for Prediction and Optimisation in Artificial Intelligence

Message from the Guest Editor

This Special Issue aims to showcase recent advances in mathematical and statistical methods that support prediction and optimisation in artificial intelligence (AI). As AI continues to transform fields such as healthcare, transport, energy, finance, and environmental science, the demand for robust theoretical foundations and efficient computational techniques grows. We welcome original research and reviews that advance mathematical modelling, statistical inference, and optimisation techniques relevant to AI. Contributions may present novel theoretical insights, methodological innovations, or practical applications that enhance the performance, interpretability, or trustworthiness of AI systems. Topics of interest include but are not limited to:

- Mathematical modelling for AI
- Statistical learning and inference in AI applications
- Predictive analytics using Bayesian or frequentist methods
- Optimisation algorithms for machine learning and data science
- Uncertainty quantification and decision support
- Interpretable and transparent AI
- Hybrid methods combining mathematics, statistics, and data-driven approaches
- Applications in health, climate, urban systems, finance, manufacturing, transport, and more

Guest Editor

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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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manuscripts are peer-reviewed and a first decision is provided to authors approximately 18.4 days after submission; acceptance to publication is undertaken in 2.4 days (median values for papers published in this journal in the first half of 2025).