Special Issue

AI-Driven Innovation in Healthcare: Mathematical Methods, Security, and Applications

Message from the Guest Editors

Artificial Intelligence (AI) is reshaping healthcare by driving innovation in diagnostics, treatment planning, mental healthcare, and healthcare system security. This Special Issue aims to highlight emerging AI methods, applications, and security considerations in healthcare. We welcome interdisciplinary research that addresses key challenges such as data privacy, multimodal data integration and visualisation, robustness, explainability, and real-world deployment. Contributions at the intersection of AI and cybersecurity are particularly encouraged to address the growing need to protect sensitive health data and infrastructure. We also seek to explore the transformative potential of generative AI (e.g., large language models and synthetic data generation) and AI agents (e.g., autonomous virtual assistants) in healthcare. Submissions grounded in mathematical modelling, computational frameworks, optimisation, or statistical learning theory are particularly welcome. Topics may include the mathematical formulation of AI models, algorithmic performance analysis, graph-based learning, and the development of interpretable and robust methods with a solid mathematical foundation.

Guest Editors

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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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