Special Issue

Mathematical Modelling and Computational Methods in Real-World Applications

Message from the Guest Editors

In today's digital era, information security and machine learning are more intertwined than ever. Mathematical models play a vital role in this intersection by offering rigorous tools for analysing algorithms, evaluating vulnerabilities, and ensuring security properties such as confidentiality, authenticity, and non-repudiation. This Special Issue seeks to highlight fundamental theories, innovative methods, and practical applications where mathematical models enhance the effectiveness and reliability of machine learning in securing data and communication. Topics of interest include, but are not limited to:

- Mathematical foundations of machine learning in security;
- ML-based security protocols with mathematical optimisation;
- Secure multiparty computation and ML models;
- Post-quantum cryptography with ML and mathematical theory;
- Cryptanalysis using ML with mathematical support;
- Privacy-enhancing technologies via ML and cryptography;
- Authentication/anonymity protocols using ML and maths;
- Federated learning, crowdsourcing, cloud security with ML;
- ML and mathematical models in IoT and blockchain security.

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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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