



## Navigating Complexity: Advanced Optimization Techniques for Machine Learning

Guest Editors:

**Dr. Seyyed Ahmad  
Edalatpanah**

Department of Applied  
Mathematics, Ayandegan  
Institute of Higher Education,  
Tonekabon, Iran

**Dr. Mohammad Javad Ebadi**

Section of Mathematics,  
International Telematic  
University Uninettuno, Corso  
Vittorio Emanuele II, Roma, Italy

Deadline for manuscript  
submissions:

**1 November 2024**

### Message from the Guest Editors

Dear Colleagues,

The rapid advancements in machine learning have brought forth complex challenges that necessitate equally advanced optimization techniques. As machine learning finds applications in diverse sectors such as healthcare, finance, and autonomous systems, the need for optimized algorithms becomes crucial. Traditional optimization methods often fall short in navigating the high-dimensionality, non-convexity, and real-time requirements of modern ML problems. This Special Issue aims to explore the frontier of optimization techniques designed to address these complexities in ML applications. Potential topics include, but are not limited to: advanced gradient descent variants in ML, Smith-objective optimization for hyperparameter tuning, meta-learning for algorithmic optimization, Bayesian optimization in ML, optimization under uncertainty and indeterminacy in ML, soft computing approaches for ML optimization, scalability challenges in ML optimization, real-world applications of optimized ML algorithms, and performance analysis of new optimization techniques in ML.

Dr. Seyyed Ahmad Edalatpanah

Dr. Mohammad Javad Ebadi

*Guest Editors*





## Editor-in-Chief

**Prof. Dr. Francisco Chiclana**

School of Computer Science and  
Informatics, De Montfort  
University, The Gateway,  
Leicester LE1 9BH, UK

## 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.

## Author Benefits

**Open Access:** free for readers, with article processing charges (APC) paid by authors or their institutions.

**High Visibility:** indexed within Scopus, SCIE (Web of Science), RePEc, and other databases.

**Journal Rank:** JCR - Q1 (*Mathematics*) / CiteScore - Q1 (*General Mathematics*)

## Contact Us

---

*Mathematics* Editorial Office  
MDPI, St. Alban-Anlage 66  
4052 Basel, Switzerland

Tel: +41 61 683 77 34  
[www.mdpi.com](http://www.mdpi.com)

[mdpi.com/journal/mathematics](http://mdpi.com/journal/mathematics)  
[mathematics@mdpi.com](mailto:mathematics@mdpi.com)  
[X@MathematicsMDPI](https://twitter.com/MathematicsMDPI)