

# Special Issue

## Mathematical Foundations and Deep Learning Advances in Computer Vision and Image Analysis

### Message from the Guest Editor

This Special Issue focuses on the intersection of applied mathematics and deep learning (DL) in advancing computer vision and image analysis. It aims to bridge rigorous theory with impactful applications across domains such as medical imaging, remote sensing, robotics, and multimedia understanding.

**Theoretical Contributions** may include mathematical modeling of neural architectures (convergence, expressivity, generalization), variational formulations for segmentation, restoration, and registration, non-linear optimization and training dynamics, topological and geometric DL (manifold learning, GNNs, shape analysis), and probabilistic or statistical frameworks for robustness and interpretability.

**Applied Contributions** may cover multi-modal and multi-scale fusion, explainable AI emphasizing mathematical transparency, hybrid models integrating DL with classical methods (e.g., fuzzy logic, differential equations), and domain-specific applications demonstrating how mathematics informs DL deployment in real-world image analysis.

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### Guest Editor

Dr. Paramate Horkaew

School of Computer Engineering, Institute of Engineering, Suranaree University of Technology, Nakhon Ratchasima 30000, Thailand

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### Deadline for manuscript submissions

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## Mathematics

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*Mathematics*  
Editorial Office  
MDPI, Grosspeteranlage 5  
4052 Basel, Switzerland  
Tel: +41 61 683 77 34  
[mathematics@mdpi.com](mailto:mathematics@mdpi.com)

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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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### Editor-in-Chief

Prof. Dr. Francisco Chiclana  
School of Computer Science and Informatics, De Montfort University,  
The Gateway, Leicester LE1 9BH, UK

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manuscripts are peer-reviewed and a first decision is provided to authors approximately 17.3 days after submission; acceptance to publication is undertaken in 2.8 days (median values for papers published in this journal in the second half of 2025).