

Special Issue

Computational and Analytical Approaches in Fractional Calculus for Big Data and Digital Twins

Message from the Guest Editors

We are pleased to invite you to contribute to our Special Issue "Computational and Analytical Approaches in Fractional Calculus for Big Data and Digital Twins". The topics of this Special Issue include but are not limited to the following:

- The development and analysis of numerical methods for fractional differential equations;
- Theoretical foundations and interpretations of fractional operators in big data contexts;
- Geometrical, statistical, numerical, and physical interpretations of fractional derivatives and integrals;
- Numerical and analytical methods for solving fractional differential equations in digital twin applications;
- Computational techniques for fractional-order systems with real-time simulation and control;
- Machine learning and artificial intelligence-driven approaches for fractional calculus-based digital twins;
- Optimization and uncertainty quantification in fractional-order digital twin models;
- The multiscale modeling of cyber-physical systems with fractional dynamics;
- Hybrid methods combining fractional calculus with deep learning, neural networks, and optimization techniques;
- Applications in engineering, science, biomedicine, energy systems, and smart infrastructure.

Guest Editors

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Dr. Luís Lima Ferrás

Deadline for manuscript submissions

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About the Journal

Message from the Editor-in-Chief

Fractal and Fractional (*Fractal Fract.*) is a scholarly online journal which provides a forum for discussion on new original models and methods in fractals and fractional calculus both from theory and applications. It is a peer-reviewed, open access journal that publishes high quality original research articles, review papers and short communications.

Editor-in-Chief

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manuscripts are peer-reviewed and a first decision is provided to authors approximately 19.9 days after submission; acceptance to publication is undertaken in 2.7 days (median values for papers published in this journal in the first half of 2025).