Special Issue

Optimization and Modeling in Spatio-Temporal Data Mining Using Graph Neural Networks

Message from the Guest Editors

Recent advances in Graph Neural Networks (GNNs) have revolutionized spatio-temporal data analysis by effectively modeling complex spatial and temporal dependencies through dynamic graph representations, where nodes capture spatial entities and edges encode temporal interactions. This paradigm enables breakthroughs in trajectory prediction, urban mobility analysis, and anomaly detection. However, significant challenges remain in scaling GNNs for large spatio-temporal datasets, handling temporal evolution, integrating heterogeneous data sources, and developing interpretable models. This Special Issue aims to address these gaps by exploring cutting-edge methodologies, theoretical foundations, and practical applications of GNNs in spatio-temporal data mining. Contributions will focus on innovative optimization strategies, hybrid modeling techniques, and scalable architectures tailored to the unique properties of spatio-temporal data, thereby advancing the field of intelligent data analysis in spatial and temporal domains.

Guest Editors

Dr. Guangyin Jin

1. National Innovative Institute of Defense Technology, Academy of Military Sciences, Beijing, China
2. School of Computer Science and Engineering, Nanjing University of Science and Technology, Nanjing 210094, China

Dr. Zezhi Shao

Institute of Computing Technology, Chinese Academy of Sciences, Beijing, China

Deadline for manuscript submissions

31 May 2026

Σ

Mathematics

**an Open Access Journal
by MDPI**

**Impact Factor 2.2
CiteScore 4.6**

mdpi.com/journal/
mathematics

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.

Editor-in-Chief

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

Author Benefits

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

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

Rapid Publication:
manuscripts are peer-reviewed and a first decision is provided to authors approximately 18.4 days after submission; acceptance to publication is undertaken in 2.4 days (median values for papers published in this journal in the first half of 2025).

MDPI