

Special Issue

Mathematics-Based Methods in Graph Machine Learning

Message from the Guest Editors

Graphs are ubiquitous in the real world. The analysis of graphs has a long history, and fruitful theoretical results are obtained in many fields of mathematics. With the development of information technology and the Internet, graph data are now widely collected for research. In the age of big data, graph analysis is an emerging field in machine learning. In classic machine learning, spectral clustering based on graph cuts and graph-based semi-supervised learning have had a significant impact on many fields. In the period of representation learning, graph embedding has received widespread attention, and many mathematics-based methods dominate this field. Recently, graph neural networks, which originate from spectral graph theory, generalize neural networks and deep learning to the graph. A broad class of models, which leverage results from mathematics are proposed. These models achieve new state-of-the-art performances in practical scenarios. The aim of this Special Issue is to highlight the recent advances in the development of mathematics-based graph machine learning, including theories, models, algorithms, and applications in the real world.

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Deadline for manuscript submissions

closed (31 December 2022)



Mathematics

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Impact Factor 2.2
CiteScore 4.6



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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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