

Special Issue

Scalable Algorithms for Large-Scale Graph Neural Networks

Message from the Guest Editor

Graph Neural Networks (GNNs) have emerged as powerful tools for learning from graph-structured data, with applications spanning social network analysis, recommendation systems, bioinformatics, and knowledge graphs. However, as real-world graphs grow to unprecedented scales—with millions of nodes and billions of edges—traditional GNN architectures face significant challenges in scalability, efficiency, and adaptability. This Special Issue focuses on innovative algorithmic solutions designed to overcome these barriers, enabling GNNs to operate effectively in large-scale and dynamic environments. We invite contributions that explore novel methods for scaling GNNs, including but not limited to the following topics: sampling techniques, distributed and parallel training strategies, model compression, efficient attention mechanisms, hardware-aware optimization, and scalable inference frameworks. By bringing together cutting-edge research on scalable GNN algorithms, this Special Issue aims to advance the state of the art and foster next-generation graph learning systems that can handle the complexity and scale of modern graph data.

Guest Editor

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Message from the Editor-in-Chief

Algorithms are the very core of Computer Science. The whole area has been considered from quite different perspectives, having led to the development of many sub-communities: Complexity theory (limitations), approximation or parameterized algorithms (types of problems), geometric algorithms (subject area), metaheuristics, algorithm engineering, medical imaging (applications), indicates the range of perspectives. Our journal welcomes submissions written from any of these perspectives, so that it may become a forum for exchange of ideas between the corresponding scientific subcommunities.

Editor-in-Chief

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