

Special Issue

Entropy-Aware Graph Neural Networks: Theory, Methods, and Applications

Message from the Guest Editors

Graph neural networks (GNNs) have emerged as a fundamental framework for learning from graph-structured data, demonstrating remarkable success across domains such as social network analysis, recommender systems, bioinformatics, and financial modeling. Entropy and information-theoretic principles provide a natural lens for analyzing the expressivity, generalization, and robustness of GNNs. From the viewpoint of Fisher information, mutual information, and information bottlenecks, entropy-aware frameworks can help explain and improve the propagation, compression, and preservation of structural information in networks.

This Special Issue aims to advance the understanding of entropy-aware graph neural networks by bridging information theory and graph representation learning. We invite original research and review articles that

- provide information-theoretic analysis of GNN mechanisms and architectures,
- propose new entropy- or information-driven GNN methods, or
- explore applications of entropy-aware graph learning in scientific, industrial, and social domains.

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About the Journal

Message from the Editor-in-Chief

The concept of entropy is traditionally a quantity in physics that has to do with temperature. However, it is now clear that entropy is deeply related to information theory and the process of inference. As such, entropic techniques have found broad application in the sciences.

Entropy is an online open access journal providing an advanced forum for the development and/or application of entropic and information-theoretic studies in a wide variety of applications. *Entropy* is inviting innovative and insightful contributions. Please consider *Entropy* as an exceptional home for your manuscript.

Editor-in-Chief

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