Special Issue

Deep Learning for Anomaly Detection

Message from the Guest Editors

Anomaly detection is an important task that tackles the problem of discovering data points or patterns in data that do not conform to normal behavior. Recognizing anomalies is critical for numerous high-impact applications in cyber-security, predictive maintenance, and rare disease diagnosis. Unfortunately, despite the recent developments in deep learning approaches, deep anomaly detection is significantly less explored than many other data mining tasks. Transformer-based architectures are a brilliant example. This issue is due to the characteristics of anomalies (rarity, heterogeneity, unbounded nature, and absence of large data) that poorly fit the strengths of these algorithms in their standard configuration. In this Special Issue, we welcome high-quality research papers addressing and reviewing theoretical and practical issues of deep learning systems focusing on anomaly detection tasks. We encourage solutions based on transformer architectures with explainable predictions or, in the case of graph-structured data, solutions that rely on graph neural networks.

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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.

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