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Information Theory for Anomaly Detection in Complex Systems

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Message from the Guest Editor

In the future, humans and technology-enabled systems will interact in smart spaces which are increasingly open, connected, and intelligent. Data from very large, ubiquitous, complex systems consisting of many interacting components will routinely be collected through IoT sensors, video surveillance, social network streams, transactions, economic activities, etc. Modelling complex systems for monitoring, forecasting, and decision-making is challenging due to their dynamic nature and complex patterns in the data that evolve over time.

In many applications, rare events dominate the importance of the total information of the collected big data. The fundamental question from the perspective of information theory is the effective measurement of the information with importance for the low-probability events. Thus, information-theoretic measures can be used to create novel anomaly detection models.

We welcome the submission of original research and survey articles on anomaly detection in multivariate time series using information-theoretic methods.



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Special Issue



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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.

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