



entropy



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Information Theory and Deep Neural Networks

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Message from the Guest Editors

Dear,

Information theory answers two fundamental questions in communication theory, but its impact has expanded far beyond the field of communication. Many methods and ideas developed in information theory have been adopted to explain and uncover the internal mechanism in modern deep neural networks. Neural networks aim to understand how the human brain works and how what we call intelligence is formed. Neural networks with many layers, known as deep neural networks (DNNs), encompassing convolutional neural networks (CNN) and recurrent neural networks (RNN), have become popular and achieved state-of-the-art performance in various computer vision tasks.

This SI aims to provide an opportunity for the presentation of novel progress regarding the intersection between information theory and DNNs. Specifically, the information theoretic analysis and interpretation of DNN-based applications and induced phenomena, in addition to the design of improved coding schemes by DNNs in signal processing, data compression, channel coding or other topics in information theory. Contributions addressing any of these issues are very welcome.

Prof. Dr. Shu-Tao Xia

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Guest Editors



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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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