Sample Entropy: Theory and Application

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Message from the Guest Editors

Sample entropy has found widespread use as a robust metric for comparing the non-linear dynamical properties of time series. It is based solidly on fundamental ideas and constructs from thermodynamics, information theory, and non-linear dynamical systems, and the works of Boltzmann, Gibbs, Shannon, Kolmogorov, Sinai, Renyi, Grassberger, Procaccia, Eckmann, Ruelle, Pincus, Richman, Moorman, Lake, Costa, Chen, Goldberger and others.

Sample entropy has been successfully applied in many fields, particularly in clinical medicine. The family of members of the sample entropy family is growing, and includes multiscale entropy, quadratic entropy rate, coefficient of sample entropy, and others, all of them with advances in theoretical and application-specific features. New applications of information theory, including techniques of deep learning and recurrent neural networks utilize entropy-based measures, as well. As a result, we see a need to bring together new developments in the theory and application of sample entropy.

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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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