Special Issue

Information-Theoretic Causal Inference and Discovery

Message from the Guest Editor

Causal inference is one of the main focus areas in Al and ML. Causality has received significant interest in ML in recent years in part due to its utility for generalization and robustness. Information-theoretic assumptions and techniques open new avenues for causality research ranging from discovery to inference. Some examples of the success of information theory in causal inference are the use of directed information, minimum entropy couplings and common entropy for bivariate causal discovery, the use of the information bottleneck principle with applications in the generalization of machine learning models, and analyzing causal structures of deep neural networks with information theory, among others.

This Issue focuses on bringing information theory and causality together to expand the scope of current causal reasoning algorithms. The expected contributions range from the introduction of new assumptions to pave the way for better analyses to addressing a causal question in a well-studied setting using a novel informationtheoretic approach. Some applications include causal graph discovery and the identification of interventional or counterfactual distributions from data.

Guest Editor

Dr. Murat Kocaoglu ECE Department, Purdue University, West Lafayette, IN 47907, USA

Deadline for manuscript submissions

closed (30 November 2023)



an Open Access Journal by MDPI

Impact Factor 2.0 CiteScore 5.2 Indexed in PubMed



mdpi.com/si/148876

Entropy Editorial Office MDPI, Grosspeteranlage 5 4052 Basel, Switzerland Tel: +41 61 683 77 34 entropy@mdpi.com

mdpi.com/journal/

entropy





an Open Access Journal by MDPI

Impact Factor 2.0 CiteScore 5.2 Indexed in PubMed



entropy



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

Prof. Dr. Kevin H. Knuth

Department of Physics, University at Albany, 1400 Washington Avenue, Albany, NY 12222, USA

Author Benefits

Open Access:

free for readers, with article processing charges (APC) paid by authors or their institutions.

High Visibility:

indexed within Scopus, SCIE (Web of Science), Inspec, PubMed, PMC, Astrophysics Data System, and other databases.

Journal Rank:

JCR - Q2 (Physics, Multidisciplinary) / CiteScore - Q1 (Mathematical Physics)