

Special Issue

Fairness in Machine Learning: Information Theoretic Perspectives

Message from the Guest Editors

Recent literature has found that machine learning algorithms can amplify biases present in data and even produce systemic prejudice. As the adoption of machine learning algorithms in a wide range of applications accelerates, including in critical workflows such as healthcare management, employment screening, and automated loan processing, the legal and reputational risks of such algorithms increase. Numerous metrics and criteria have been proposed with the aim of enforcing fairness in machine learning to mitigate biases. For this Special Issue, we are inviting submissions presenting novel information-theoretic approaches to fair machine learning, including but not limited to: fairness criteria defined considering an information-theoretic perspective, fairness loss function involving information measures, and new applications in fair reinforcement learning or transfer learning.

Keywords: fair machine learning; group fairness; individual fairness; information-theoretic approach; sensitive attribute

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Deadline for manuscript submissions

closed (30 June 2023)



Entropy

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Impact Factor 2.1
CiteScore 4.9
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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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