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Information-Theoretic Approach to Privacy and Security

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Message from the Guest Editors

Information theory provides an alternative approach to computational-based methods to address important security and privacy issues in modern distributed information systems. In contrast to computational-based methods, an information-theoretic approach offers unconditional (or perfect) security and privacy guarantees without relying on the hardness of certain computational problems. The approach dates back to the work of Shannon, and the literature on the topic is vast. There are a variety of security tasks for which information-theoretic security is a meaningful and useful requirement, such as secret sharing, secure multiparty computation, and private information retrieval. Today, this a very active research area within the information theory, cryptography, and computer science communities. Despite many recent advances in the area, however, important research problems still remain open—for instance, within new emerging technologies such as the Internet of Things (IoT), edge caching/computing in 5G wireless networks, and machine learning, which impose serious security and privacy challenges.



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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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