Guest Editorial

WELCOME to the ninth (June 2022) issue of the IEEE JOURNAL ON SELECTED AREAS IN INFORMATION THEORY (JSAIT), dedicated to "Distributed Coding and Computation".

This special issue focuses on information theoretic aspects of distributed coding and computing.

While applications and platforms such as distributed learning, cloud storage and computing, content delivery networks, and distributed ledgers are increasingly popular, there is a tremendous need to evaluate the fundamental limits of the existing solutions and develop efficient approaches to operate them. This is particularly important considering the growing list of constraints and requirements in terms of scalability, privacy, security, fault tolerance, speed, accuracy, and verifiability. In this context, information theory and coding can play a major role in expanding and employing various tools and techniques to deal with those challenging tasks.

This special issue covers contributions investigating the fundamental limits of distributed systems and developing practical coding techniques. The focus ranges from distributed and federated learning, straggler-resilient secure computing, private information and function retrieval, distributed coded storage and caching, secure message transmission and broadcasting, to resource-efficient blockchain architectures.

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