

## IEEE Journal on Selected Topics in Signal Processing

Call for Papers

Special Issue on

### ***“Information-Theoretic Methods in Data Acquisition, Analysis, and Processing”***

The field of information theory addresses fundamental questions in various areas including statistical decision theory, data communications, data compression, security, and networking. In particular, information-theoretic methods can be used to illuminate fundamental limits and gauge the effectiveness of algorithms for various problems associated with these fields.

Recent years have witnessed a renaissance in the use of information-theoretic methods to address various problems in the general field of information processing beyond communications and networking, including signal acquisition, signal analysis and processing, compressive sensing, dictionary learning, supervised and unsupervised learning, reinforcement learning, graph mining, and more.

With a world-wide drive in both academia and industry for new approaches to data science, it is generally believed that information-theoretic methods have the potential to illuminate theory and algorithms that will underpin this emerging field.

This special issue covers emerging topics at the interface of information theory and data acquisition, analysis, and processing, with applications to the general area of data science. Its overarching aim is to map out this emerging research landscape as well as current and future research directions.

#### **Topics of interest include (but are not limited to):**

- New information measures to capture limits in modern data acquisition, analysis, and processing problems
- Information-theoretic limits on and algorithms for data acquisition and processing
- Limits on and algorithms for feature extraction, data sketching, and information embedding
- Limits on and algorithms for community detection, graph selection, and ranking
- Limits in active learning, supervised and unsupervised learning, reinforcement learning, and deep learning
- Limits on and algorithms for data acquisition, analysis, and processing problems in the presence of communication and / or computation constraints
- New approaches from the fields of approximation theory and harmonic analysis to unveil limits on and algorithms for data acquisition, analysis, and processing
- Application of new techniques to problems in signal processing, imaging, decision theory, machine learning, data analysis, security, and privacy.

Prospective authors should follow the instructions given on the IEEE JSTSP webpage: <https://signalprocessingsociety.org/publications-resources/ieee-journal-selected-topics-signal-processing>, and submit their manuscript through the web submission system at: <https://mc.manuscriptcentral.com/jstsp-ieee>.

#### **Important Dates:**

- Manuscript submission: December 1, 2017
- 1st review completed: February 1, 2018
- Revised manuscript due: April 1, 2018
- 2nd review completed: June 1, 2018
- Final manuscript due: July 1, 2018
- Publication: October 2018

#### **Guest Editors:**

- Helmut Bölcskei, ETH Zurich
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