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IEEE Signal Processing Society

IEEE Journal of Selected Topics in Signal Processing

Special Issue on Signal and Information Processing for Privacy

Aims and Scope

There has been a remarkable increase in the usage of communications and information technology over the past decade. Currently, in the backend and in the cloud, reside electronic repositories that contain an enormous amount of information and data associated with the world around us. These repositories include databases for data-mining, census, social networking, medical records, etc. It is easy to forecast that our society will become increasingly reliant on applications built upon these data repositories. Unfortunately, the rate of technological advancement associated with building applications that produce and use such data has significantly outpaced the development of mechanisms that ensure the privacy of such data and the systems that process it. As a society we are currently witnessing many privacy-related concerns that have resulted from these technologies—there are now grave concerns about our communications being wiretapped, about our SSL/TLS connections being compromised, about our personal data being shared with entities we have no relationship with, etc. The problems of information exchange, interaction, and access lend themselves to fundamental information processing abstractions and theoretical analysis. The tools of rate-distortion theory, distributed compression algorithms, distributed storage codes, machine learning for feature identification and suppression, and compressive sensing and sampling theory are fundamental and can be applied to precisely formulate and quantify the tradeoff between utility and privacy in a variety of domains. Thus, while rate-distortion theory and information-theoretic privacy can provide fundamental bounds on privacy leakage of distributed data systems, the information and signal processing techniques of compressive sensing, machine learning, and graphical models are the key ingredients necessary to achieve these performance limits in a variety of applications involving streaming data, distributed data storage (cloud), and interactive data applications across a number of platforms. This special issue seeks to provide a venue for ongoing research in information and signal processing for applications where privacy concerns are paramount.

Topics of Interest include (but are not limited to):

- Signal processing for information-theoretic privacy
- Signal processing techniques for access control with privacy guarantees in distributed storage systems
- Distributed inference and estimation with privacy guarantees
- Location privacy and obfuscation of mobile device positioning
- Interplay of privacy and other information processing tasks
- Formalized models for adversaries and threats in applications where consumer and producer privacy is a major concern
- Techniques to achieve covert or stealthy communication in support of private communications
- Competitive privacy and game theoretic formulations of privacy and obfuscation

Important Dates:

Manuscript submission due: October 20, 2014 (Extended)

First review completed: December 15, 2014

Revised manuscript due: February 1, 2015

Second review completed: March 15, 2015

Final manuscript due: May 1, 2015

Publication date: October 2015

Prospective authors should visit <http://www.signalprocessingsociety.org/publications/periodicals/jstsp/> for information on paper submission. Manuscripts should be submitted using Manuscript Central at <http://mc.manuscriptcentral.com/jstsp-ieee>.

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