

CALL FOR PAPERS

IEEE Signal Processing Society

Two Special Issues
IEEE JOURNAL OF SELECTED TOPICS IN SIGNAL PROCESSING
IEEE SIGNAL PROCESSING MAGAZINE

Special Issues on Adaptation and Learning over Complex Networks

Aims and Scope

Complex networks are prevalent in modern science, including the study of biological networks, power grids, macro-economies, and inference over graphs. In many complex systems, especially those encountered in nature, it is common for emergent behavior to arise from the interaction among individual agents, as happens with fish schooling or bird flight formations. While each individual agent in these biological networks is not capable of complex behavior, it is the combined coordination among multiple agents that leads to the manifestation of sophisticated behavior at the network level. Research efforts to decipher the intricacies of such complex networks have been progressing almost independently across several disciplines, including signal processing, machine learning, optimization, control, statistics, physics, biology, economics, computer science, and the social sciences. In all these fields, there is growing interest in performing inference and learning over graphs, such as deducing relationships from interconnections over social networks, modeling interactions among agents in biological networks, performing resource allocation distributively, passing information among distributed agents, optimizing utility functions over graphs, etc. Commonalities, and significant signal processing, run across these applications, and there are ample opportunities for cross-disciplinary research. In the realm of signal processing, these applications motivate the need to study and develop decentralized strategies for information processing that are able to endow networks with real-time adaptation and learning abilities. This call for papers therefore encourages submissions from a broad range of experts that study fundamental questions related to the problems of *inference, adaptation, and learning over complex cognitive networks*. Cognitive networks consist of spatially distributed agents that are linked together through a connection topology. The topology may vary with time and the agents may also move. The agents cooperate with each other through local interactions and by means of in-network processing. Such networks are well-suited to perform decentralized information processing, optimization, and inference tasks, and to model self-organized and complex behavior encountered in nature and in social and economic networks.

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

- Adaptation and learning over networks.
- Bio-inspired processing; cooperative processing.
- Estimation, filtering, detection, and inference over networks.
- Distributed machine learning; online learning.
- Distributed optimization; stochastic approximation.
- Game-theoretic strategies.
- Message-passing strategies; consensus strategies; diffusion strategies.
- Mobile adaptive networks; learning over graphs with dynamic or random topologies.
- Multi-agent coordination and processing over networks; multi-agent formations.
- Signal processing for biological, economic, and social networks.

Submission Process

Articles submitted to either issue must contain significant relevance to the science of distributed *signal and information processing over graphs*. All submissions will be peer reviewed according to the IEEE and Signal Processing Society guidelines for both publications. Submitted articles should not have been published or under review elsewhere. Manuscripts should be submitted online at <http://mc.manuscriptcentral.com/sps-ieee> using the Manuscript Central interface. Submissions to the special issue in the IEEE JOURNAL OF SELECTED TOPICS IN SIGNAL PROCESSING should be original. Prospective authors should consult the site <http://www.signalprocessingsociety.org/publications/periodicals/jstsp/> for guidelines and information on paper submission. Submissions to the special issue in the IEEE SIGNAL PROCESSING MAGAZINE should have significant tutorial value. Prospective authors should consult the site <http://www.signalprocessingsociety.org/publications/periodicals/spm/> for guidelines and information on paper submission.

Important Dates for each Journal: Expected publication date for both special issues is **May 2013**.

Time Schedule	Signal Processing Magazine	Time Schedule	IEEE J. Sel. Top. Signal Proc.
White paper due	June 1, 2012		
Invitation notification	June 15, 2012		
Manuscript submission due	August 15, 2012	Manuscript submission due	August 15, 2012
Acceptance notification	September 30, 2012	First review completed	October 30, 2012
Revised manuscript due	October 30, 2012	Revised manuscript due	November 30, 2012
Final acceptance notification	November 15, 2012	Second review completed	January 15, 2013
Final material from authors	December 15, 2012 (strict)	Final material from authors	February 8, 2013 (strict)

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