

Call for Papers
IEEE Signal Processing Society
IEEE Journal of Selected Topics in Signal Processing

**Special Issue on Anomalous Pattern Discovery for Spatial, Temporal,
Networked, and High-Dimensional Signals**

Anomaly detection broadly deals with the problem of identifying patterns in data that deviate from expected behavior. Anomaly detection arises in many application domains including financial fraud detection, airport security, video surveillance, communication and computer networks, spectrum violation in cognitive radios, rare event detection of material defects, change point detection for quality control in industrial processes, hyperspectral imagery for land cover change detection, anomalies in genetic network patterns and anomalous activity patterns in social networks. Approaches to anomaly detection include model-based parametric approaches and have been employed for change point detection in the context of time-series analysis for fraud detection and fault detection. In general when nominal parametric models are unknown approaches based on robust detection theory have attempted to incorporate model uncertainty. Nevertheless, structured model-based approaches may not be meaningful in other contexts such as applications that arise in finance, computer and social networks, imaging, video surveillance and biology. In these cases non-parametric approaches may be more appropriate. Many of the applications in this setting are high-dimensional. Consequently, new methods that exploit the underlying structure such as sparsity, manifold structures, or incorporate dependencies such as in graphical models are warranted. The goal of our proposed guest issue is to solicit submissions from researchers from different disciplines (Statistics, Signal Processing, Decision and Control, Networks, Information Theory, and Machine Learning) and in various application domains. Topics of interest include, but are not limited to:

- Anomaly/Outlier/Novelty Detection in high-dimensional data.
- Sparsity, Manifold, low-rank structured anomaly detection.
- Anomaly detection in spatial, temporal and sequential data.
- Bayesian change detection and fault detection in multi-dimensional stochastic processes.
- Information theoretic analysis and bounds for anomaly detection
- Bayesian non-parametric approaches
- Applications: imaging, video, biology, computer networks, social networks, and homeland security

Prospective authors should visit <http://www.signalprocessingsociety.org/publications/periodicals/jstsp/> for information on paper submission. Manuscripts should be submitted using the ScholarOne Manuscripts system at <http://mc.manuscriptcentral.com/jstsp-ieee>. Manuscripts will be peer reviewed according to the standard IEEE process.

Manuscript submission due:	August 7, 2012
First review completed:	Sept 7, 2012
Revised manuscript due:	Oct. 19, 2012
Second review completed:	Nov. 16, 2012
Final manuscript due:	Nov 30, 2012

Lead guest editor:

Venkatesh Saligrama, Boston University, Boston, MA, USA, svr@bu.edu

Guest editors:

Prof. Rama Chellappa, University of Maryland, College Park, Rama@umiacs.umd.edu

Prof Alfred Hero, University of Michigan, Ann-Arbor, hero@eecs.umich.edu

Prof. Robert Nowak, University of Wisconsin, Madison, nowak@ece.wisc.edu

Prof. Venu Veeravalli, University of Illinois, Urbana-Champaign, vvv@illinois.edu

Prof. Ery Arias-Castro, University of California, San Diego, eariasca@math.ucsd.edu