

CALL FOR PAPERS
IEEE SIGNAL PROCESSING MAGAZINE
Special Issue on “Video Analytics for Surveillance: Theory and Practice”

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In the past twenty years, various video analytics algorithms have been proposed for autonomous understanding of events occurring in a scene monitored by multiple cameras. The primary applications for such algorithms are surveillance and physical security. While most of the earlier solutions started from raw data and followed with the interpretation at increasing levels of semantic complexity, more recent techniques attempt to bridge the gap between signal-level and semantic-level processing. This trend is coupled with the development of more complex models to describe the observed events and handle complex tasks. More specifically, the direct interpretation of higher-level semantics at signal level as well as the use of complex and general models both aim at improving the capabilities of video analytics in detecting and recognizing abnormal events by reducing ambiguities in the data and reducing error propagation from lower to upper levels. The purpose of this Special Issue is to present tutorial and survey articles covering algorithms and methods that solve complex tasks in semantic scene interpretation for physical security applications, and that use advanced mathematical models exploiting information at the signal level.

This Call for Papers is an invitation for contributed articles that describe the state-of-the-art and the main challenges in video analytics for surveillance and physical-security domain, provide an overview of the algorithms and models currently employed in semantic analysis at the signal level, discuss current research topics and commercial products, and cover signal processing approaches in video analytics applications.

The list of topics of interest to this Special Issue includes but is not limited to:

- Sampling techniques for high-level tasks
- Advanced pixel-based techniques for event detection
- Low-level techniques oriented towards high-level tasks
- Subspace methods for video analytics
- Cooperative and context-dependent tracking
- Bayesian models for tracking and activity monitoring
- Privacy-compliant signal processing for surveillance
- Video-based processing exploiting information coming from heterogeneous sensing modalities (audio, radio, etc).
- Surveillance applications:

- Transport (urban and highway motor traffic, pedestrian traffic, mixed traffic, e.g. airports, seaports);
- Physical security (high-density venues, such as concert halls, stadiums, airports, train stations, etc., and low-density venues, such as nuclear power plants, military installations, etc.),
- Environmental monitoring (animals, forest fires, avalanches, etc.).
- Smart spaces and ambient intelligence (domotics, interactive environments, etc.)

Submission Procedure:

Prospective authors should submit white papers at <http://www.ee.columbia.edu/spm/> according to the timetable below. The white papers should contain an outline, brief summary, and key references, and should be no more than 2 pages in the IEEE single-space double-column format.

Schedule:

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| • White paper due: | July 1, 2009 |
| • Invitation notification: | August 1, 2009 |
| • Initial Manuscript due: | November 1, 2009 |
| • Notification of initial decision: | January 1, 2010 |
| • Revised manuscript due: | February 1, 2010 |
| • Notification of final decision: | April 1, 2010 |
| • Final manuscript due: | May 1, 2010 |
| • Publication date: | September 2010 |