Computer Vision and Image Understanding Special Issue on
Feature-oriented Image and Video Computing for Extracting Contexts and Semantics

Guest Editors

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Summary and Scope

Researchers have been extracting features and designing applicable vision systems for more than 30 years, and the majority of these efforts focused on how to design features (i.e., feature space construction) for image and video representation, and how to build effective mapping from the original features to the semantic labels of the image or video data (i.e., feature extraction or classifier design).

Recent rapid advances in feature-oriented image and video computing have paved roads for image/video analysis and towards successful applications. However, there still exist several critical insufficiently-solved problems, e.g. How to extract effective spatial or spatio-temporal contextual features for classification purpose? How to bridge the gap between the original visual features and semantic concepts of the data? How to find the essential representation over the spatio-temporal dimensions for event analysis and understanding? How to manage large-scale image/video datasets?

Recent advances in the computational aspects have produced a rich tool set for the feature extraction to bridge the gap between the low-level visual features and high-level semantics, e.g., vector subspace modeling, manifold analysis, graph embedding, tensor modeling, etc. Also for feature designing, some attempts have been taken to model the spatial or spatial-temporal contexts for boosting visual classification, e.g., proximity distribution kernels and Markov stationary features. However these attempts are still limited mainly for 2nd order contexts and in unsupervised ways. The exploration of higher-order, supervised/semi-supervised and discriminative context modeling is desirable.

The goal of this special issue is to build a forum for original research in contextual feature design, semantic feature extraction, and their applications in image/video computing. We will invite the pioneering researchers from both industry and academia to identify these critical problems and propose potential solutions. The focuses are not only on the novel fundamental solutions to real-world problems, but also on the robust techniques that are effectively working in real image/video analysis systems. Tentative topics of this special issue include but not limit to the following:

1) Encoding spatial contexts into histogram or local features (LBP, BOW, etc.) for image representation

2) Designing spatio-temporal contextual features for video representation

3) Efficient spatio-temporal contextual feature extraction by subspace learning for image/video search/indexing

4) Combining visual features with extra contextual metadata such as web links, time, text, and/or GPS tags

5) Supervised/semi-supervised subspace learning to facilitate semantic feature extraction of image/video data

6) Event analysis and action recognition with multilinear feature extraction techniques

7) Image/video based biometrics applications with semantic feature extraction techniques (soft-biometrics feature, social networking ontology, etc.)

Timeline

Paper submission due (Extended):   ~~Jan. 31, 2010~~ Feb. 28, 2010 (Firm)
First-round acceptance notification: ~~Apr. 31, 2010~~ May. 15, 2010
Revision: Jun. 01, 2010
Final decision: Jul. 15, 2010
Publication date: Fall 2010

Submission Details

All the accepted papers should be full journal length and follow the CVIU guidelines. For a manuscript including published content at a conference/workshop, the previous material must NOT exceed 50% of the CVIU submission. All the papers will be peer-reviewed by at least three reviews. Submissions can be made at http://ees.elsevier.com/cviu. Please make sure that authors select "**SI: Feature-oriented Image and Video**" as their **Article Type** to ensure be correctly assigned.