



Call for Papers
Pattern Recognition
Special Issue on



**Semi-Supervised Learning for
Visual Content Analysis and Understanding**

With the rapid development of digital imaging and computer technologies, systems for the large scale analysis of visual contents have become an imperative necessity. At the core of such systems are algorithms for the efficient automatic management, editing and analysis of visual contents. These tasks are frequently posed as ones of machine learning. However, typical visual content, such as image, video, or documents, are characterized by large amounts of cheaply available data and small amounts of expensively acquired knowledge. Insufficient labeled training data becomes a major obstacle for the automatic analysis and understanding of the semantic information conveyed by visual content.

In such situations, semi-supervised learning techniques are of great practical value for high-level semantic content analysis. There are for several reasons for this. Firstly, the small amounts of available knowledge can be effectively modeled a priori or annotated by interaction with users in a semi-supervised learning framework. Secondly, it has been proven that abundant, and easily available unlabeled data can be efficiently incorporated using the semi-supervised learning strategy to boost the overall performance. The most representative approach is active learning which exploits the unlabeled data between multi-view classifiers. Thirdly, the visual content usually contains cross-modal information such as visual and textural components. Such data can be handled using a semi-supervised learning framework using co-training or a collaborative learning strategy. Fourthly, in related areas, such as object recognition or image retrieval the use of techniques such as graph based semi-supervised learning, transfer learning, transductive learning have yielded promising results.

The goal of this special issue is to gather together high-quality and original contributions that reach beyond the conventional ideas and approaches, and to address the following challenges when applying semi-supervised learning techniques in pattern recognition, computer vision:

- 1) How to efficiently fuse the multi-modality features for analysis?
- 2) How to incorporate unlabeled data into the training process?
- 3) How to take full advantage of large volume of unlabeled or weakly labeled data to facilitate content analysis and understanding?

Submitted papers should have a significant element of pattern recognition methodology or practice, and be interesting to the general readership of "Pattern Recognition". Topics of interest include, but are not limited to:

- (1) Semi-supervised clustering, classification, and regression
- (2) Semi-supervised dimensionality reduction
- (3) Graph-based semi-supervised learning
- (4) Self- training, Co-training, and Multi-view training
- (5) Active learning
- (6) Transductive learning
- (7) Transfer learning
- (8) Semi-supervised methods for object detection, recognition, and categorization
- (9) Semi-supervised methods for image, video database index and retrieval
- (10) Semi-supervised methods for video analysis and event recognition

Important Dates

Manuscript submission: **1 February, 2010**

Preliminary review results: **1 May, 2010**

Revised version: **15 June, 2010**

Notification of Acceptance: **15 July, 2010**

Anticipated publication: TBA

Submission guidance

Manuscripts should be formatted according to Elsevier's requirements for the Pattern Recognition journal and be submitted via Elsevier's Electronic Editorial System: <http://ees.elsevier.com/pr>, with article type: **Special session: semi-supervised learning**.

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