Special Issue of Signal Processing (Elsevier)
Machine Learning for Big Visual Analysis

Special Issue Description and Topics

With the proliferation of smartphones and handheld devices, the amount of visual data in our world has been exploding. Visual data has become so large and complex that the traditional data processing applications are inadequate to deal with it. As a result, the emergence of big visual data has brought a paradigm shift to many fields of visual data analysis. Visual data is not only big in volume and size, but also can be unstructured, incomplete, noisy, redundant, and heterogeneous. A variety of methods have been developed for addressing numerous challenging problems. However, many problems remain challenging especially on the scalability of computationally complex algorithms, the shortage of accurately annotated raw data, the issue of integrating heterogeneous data from different sources, the difficulty in discovering valuable knowledge from noisy and redundant data.

This special issue aims to demonstrate the contribution of machine learning techniques to the research and development of big visual data analysis. Many machine learning techniques have already been applied to address the relevant problems. For example, convolutional neural networks have demonstrated superior performance on large-scale image classification. Semi- and weakly-supervised learning methods have significantly improved the performance when only small amount of annotated data is available. Correlation analysis, transfer learning, and multi-task learning have shown the potential in integrating severely heterogeneous data. Sparse representation and clustering approaches have been exploited in denoising and selecting of exemplary samples from the raw data.

We target researchers from several communities including signal processing, machine learning, computer vision, data mining, and distributed computing. Manuscripts are solicited to address a wide range of topics on big visual data analysis techniques and applications, including but not limited to the following:

- Data storage and management for big visual data
- Data fusion for heterogeneous data
- Multimodal Learning algorithms for large scale visual data
- Visual learning in large scale data with semantic information
- Learning for large missing or incomplete data
- Incremental learning for big visual data
- Structure learning for big visual data
- Learning for ranking and recommendation on big visual data
- Learning for classification and segmentation on big visual data

- Learning for large scale vision-language integration
- Image/video search and retrieval for big visual data
- Cloud computing for social intelligence using big visual data
- Parallel computing platforms for big visual data
- Unsupervised learning for big visual data representation
- Applications of big visual data analysis
- Sparse Modeling and Learning of Large Visual Data

Important dates:

Manuscript submission:	May 01, 2017
Revision submission:	Aug. 01, 2017
Acceptance notification:	Nov. 01, 2017
Final manuscripts due:	Feb. 01, 2018
Anticipated publication:	TBA

Submission:

Authors should prepare their manuscript according to the Instructions for Authors available from the online submission page of the Signal Processing Journal at elsevier.com. All the papers will be peer-reviewed following the Signal Processing reviewing procedures.

Guest Editors:

Jun Yu	Hangzhou Dianzi University, China	yujun@hdu.edu.cn
Xue Mei	Toyota Research Institute, USA	nathanmei@gmail.com
Fatih Porikli	Australian National University, Australia	fatih.porikli@anu.edu.au
Jason Corso	University of Michigan, USA	jjcorso@umich.edu