

Call for Papers

Elsevier Journal on Image and Vision Computing

Special Issue on

Machine Learning in Motion Analysis

With the ubiquitous presence of video data and the increasing importance in a wide range of real-world applications such as visual surveillance, human-machine interfaces and sport event interpretation, there is an increasing demand for the automatic analysis and understanding of object motions from large amounts of video footage.

Vision-based motion analysis aims to detect, track, and identify objects, and more generally, to understand their behaviors, from video sequences. This exciting research area has received growing interest in recent years due to a wide spectrum of real world applications such as biomedical image analysis and modeling, visual surveillance, human-machine interfaces, and virtual reality.

Although there has been much progress in the past decades, many challenging problems remain unsolved, such as robust object detection and tracking, unconstrained object activity recognition, and communicative behavior analysis. Recently, statistical machine learning algorithms, such as manifold learning, probabilistic graphical models, and kernel machines, have been successfully applied in this area for object tracking, activity modeling and recognition. We believe that novel statistical learning technologies have a strong potential to further contribute to the development of robust yet flexible vision systems. The increasing performance of vision systems has also brought new challenges to the field of machine learning, e.g., learning from partial or limited annotations, online and incremental learning, and learning with very large datasets. Solving the problems involved in object motion analysis will naturally lead to the development of new machine learning algorithms. In return, new machine learning algorithms are able to address more realistic problems in object motion analysis and understanding.

This special issue aims to solicit original research contributions that address vision-based object motion by using machine learning approaches, or that develop new machine learning and motion analysis approaches. Submissions that address real-world challenging applications are especially encouraged. Topics of interest include, but are not limited to:

1) Machine Learning Theories

- Supervised/unsupervised/semi-supervised learning
- Generative and discriminative approaches
- Probabilistic graphical models and exponential families
- Large-margin methods with structured output
- Manifold learning
- Structured Prediction

2) Motion Analysis and Understanding

- Motion segmentation and object recognition
- Motion feature extraction and representation
- Activity analysis and unusual event detection

3) Biological and medical applications, such as:

- Fluoroscopic sequence analysis
- Live cell/tissue motion analysis
- Image guided surgery

Important Dates

Papers should be received by December 1, 2011

First reviews will be returned to authors by March 1, 2012

Revised manuscripts should be submitted by May 1, 2012

Possible second reviews will be returned to authors by July 1, 2012

Revised manuscripts should be submitted by August 1, 2012

Final decisions will be communicated by August 15, 2012

Final manuscripts are due by September 15, 2012

The special issue will be (tentatively) published in December 2012

Guest Editors

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Submission Procedure

Prospective authors should follow the regular guidelines of the Image and Vision Computing Journal for electronic submission: (<http://ees.elsevier.com/imavis>). During submission authors must select the “Special Issue: Machine Learning in Motion Analysis” when they reach the “Article Type”.