



CALL FOR PAPERS

APPLIED ARTIFICIAL INTELLIGENCE: AN INTERNATIONAL JOURNAL

Special Issue on

MACHINE LEARNING IN COMPUTER VISION

Learning is one of the next challenging frontiers for computer vision research, and it has been receiving increasing attention in the recent years.

From the standpoint of computer vision systems, machine learning can offer effective methods for automating the acquisition of visual models, adapting task parameters and representation, transforming signals to symbols, building trainable image processing systems, focusing attention on target object. To develop successful applications, however, we need to address the following issues:

- How is machine learning used in current computer vision systems?
- What are the models of a computer vision system that might be learned rather than hand-crafted by the designer?
- What machine learning paradigms and strategies are appropriate to the computer vision domain?
- How do we represent visual information?
- How does machine learning help to transfer the experience gained in creating a vision system in one application domain to a vision system for another domain?

From the standpoint of machine learning systems, computer vision can provide interesting and challenging problems. Many studies in machine learning assume that a careful trainer provides internal representations of the observed environment, thus paying little attention to the problems of perception. Unfortunately, this assumption leads to the development of brittle systems with noisy, excessively detailed or quite coarse descriptions of the perceived environment. Some specific machine learning research issues raised by the computer vision domain are:

- How dealing with noisy observations?
- How can large sets of images with no annotation be used for learning?
- How dealing with mutual dependency of visual concepts?
- What are the criteria for evaluating the quality of learning processes in computer vision systems?
- When a computer vision system should start/stop the learning process and/or revise acquired models?
- When is it useful to adopt several representations of the perceived environment with different levels of abstraction?

Papers are welcome in any area concerning the application of machine learning techniques to computer vision and image processing. Works in areas such as statistical pattern recognition are also welcome.

Topics of interest include, but are not limited to:

- Learning to recognize shapes
- Supervised learning of visual models
- Unsupervised learning for structure detection in images
- Multistrategy learning in vision
- Learning and refining visual models
- Multi-level learning and reuse of learned concepts
- Learning important features for image analysis
- Relational learning in vision
- Context in visual learning
- Mining from large collections of images and videos
- Interpretation of discovered visual models
- Image segmentation via learning
- Probabilistic model estimation and selection
- Applications such as medical imaging, object recognition, remote sensing, digital maps, document image analysis and recognition, spatial reasoning

SUBMISSION OF PAPERS

Submitted papers must be original (i.e. not already published in other magazines or journals). They should be written according to the AAI Journal style (see detailed instructions for authors at the URL: <http://www.tandfcd.com/jnls/aai.htm>). All papers submitted will be carefully reviewed by an international committee, including members of the organizing committee of the ECAI'2000 Workshop on "Machine Learning in Computer Vision" (<http://www.di.uniba.it/~malerba/ws-ecai2000/>). The submitted papers should be sent electronically to the guest editor by **October 30, 2000**. Acceptance and revision notices will be E-mailed by **December 15, 2000**. Revised papers must be submitted by **January 15, 2001**. The publication is scheduled for **June 2001**.

The title page should include name, affiliation, and e-mail address of the authors. Authors are asked to submit their papers electronically in PDF or PostScript:

- either by giving an URL, where to find the file tared or compressed in .Z, .zip or .gz format.
- or by sending the file tared or compressed in .Z, .zip or .gz format by E-mail to the guest editors.

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