Apologies for cross posting.

Neural Networks Special Issue: Autonomous Learning

Autonomous learning is a very broad term and includes many different kinds of learning. Fundamental to all of them is some kind of a learning algorithm. Whatever the kind of learning, we generally have not been able to deploy the learning systems on a very wide scale, although there certainly are exceptions.

One of the biggest challenges to wider deployment of existing learning systems comes from algorithmic control. Most of the current learning algorithms require parameters to be set individually for almost every problem to be solved. The limitations of the current learning systems, compared to biological ones, was pointed out in a 2007 National Science Foundation (USA) report (http://www.cnl.salk.edu/Downloads/NSFWorkshopReport_v4.pdf). Here's a part of the summary of that report: "Biological learners have the ability to learn autonomously, in an ever changing and uncertain world. This property includes the ability to generate their own supervision, select the most informative training samples, produce their own loss function, and evaluate their own performance. More importantly, it appears that biological learners can effectively produce appropriate internal representations for composable percepts -- a kind of organizational scaffold - as part of the learning process. By contrast, virtually all current approaches to machine learning typically require a human supervisor to design the learning architecture, select the training examples, design the form of the representation of the training examples, choose the learning algorithm, set the learning parameters, decide when to stop learning, and choose the way in which the performance of the learning algorithm is evaluated. This strong dependence on human supervision is greatly retarding the development and ubiquitous deployment autonomous artificial learning systems."

This special issue of Neural Networks will be on the topic of autonomous learning, focusing mainly on automation of learning methods that can avoid the kinds of dependencies highlighted in the NSF report. We invite original and unpublished research contributions on algorithms for any type of learning problem.

RECOMMENDED TOPICS:
Topics of interest include – but are not limited to:
* Unsupervised learning systems;
* Autonomous learning of reasoning;
* Autonomous learning of motor control;
* Autonomous control systems and free will;
* Autonomous robotic systems;
* Autonomy as based on internal reward and value systems and their learning and development;
* Autonomous systems and the human situation
* Emergent models of perception, cognition and action

* Emergent cognitive architectures
* Developmental and embodied models of learning

SUBMISSION PROCEDURE:
Prospective authors should visit http://ees.elsevier.com/neunet/ for information on paper submission. On the first page of the manuscript as well as on the cover letter, indicate clearly that the manuscript is submitted to the Neural Networks Special Issue: Autonomous Learning. Manuscripts will be peer reviewed using Neural Networks guidelines.

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First review completed: April 1, 2012
Revised manuscript due: June 1, 2012
Second review completed, final decisions to authors: July 1, 2012
Final manuscript due: August 1, 2012

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