



**Journal of Algorithms**  
**Cognition, Informatics and Logic**  
**Elsevier**

**Thematic issue on Algorithmic Reinforcement Learning**

Kostas Stathis, Artur d'Avilla Garcez, Robert Givan  
*Guest Editors.*

*Reinforcement learning* is an area of machine learning seeking to provide a computational approach to understanding and automating goal-directed learning and decision-making. It addresses the question of how an autonomous agent that senses and acts in its environment can learn to choose optimal actions to achieve its goals. The approach originates from previous work in psychology (particularly animal learning), computer science (particularly dynamic programming), with ongoing work in artificial intelligence (particularly stochastic, symbolic and connectionist learning). More recently, reinforcement learning has been used to provide cognitive models that simulate human performance during problem solving and/or skill acquisition.

This thematic issue of the *Journal of Algorithms* seeks to celebrate the increasingly multidisciplinary nature of reinforcement learning and, in line with the Journal's manifesto, it proposes to study and present the subject from an algorithmic perspective that we refer to as *Algorithmic Reinforcement Learning* (ARL). It is hoped that in this way this thematic volume will serve as a reference in the area and will help organise and promote the research across sub-areas.

We welcome the submission of innovative and mature results in specifying, developing and experimenting with ARL. Approaches that relate, compare and contrast, combine or integrate different areas of reinforcement learning are particularly encouraged. Papers describing innovative developments in the area are also encouraged. Areas of interest include, but are not limited to the following topics:

- Multi-agent reinforcement learning
- Relational reinforcement learning
- Neuro-symbolic reinforcement learning
- Bayesian reinforcement learning
- Reinforcement learning and logic/ILP
- Reinforcement learning with background knowledge
- Robust reinforcement learning
- Reinforcement learning in game theory and bounded rationality
- Applications

**Important Dates & Submission details**

Submission Deadline: 1<sup>st</sup> Oct 2008

Acceptance Notice: 20<sup>th</sup> Jan 2009

Final Manuscript: 1<sup>st</sup> March 2009

Expected Publication Date: Summer 2009

Submission details: <http://www.cs.rhul.ac.uk/~kostas/arl/cfp.html>