

## EDITORIAL

### AGENTS AND MULTI-AGENT SYSTEMS

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The *agent* concept is one of the very few concepts which have been able to cross the borders of scientific disciplines, finding applications not only in computer science and artificial intelligence, but also in biology, economics, engineering, and the social sciences. Thus it is only natural that the research frontiers in this fast growing field develop along interdisciplinary problems. These include the ability of agents to evolve, e.g. through adaptation and learning, but also the emergence of systemic properties which result from the interplay of large numbers of agents, rather than from carefully designed single agent behavior.

This topical issue combines original scientific papers selected from two satellite workshops that were held in conjunction with AAMAS 2010, the Ninth International Conference on Autonomous Agents and Multi-Agent Systems.<sup>a</sup> Each of these workshops had its own focus.

WEIN'2010 — The Fifth International Workshop on Emergent Intelligence on Networked Agents<sup>b</sup> has put forward the complex networks approach as a framework to model multi-agent systems, i.e. agents are represented by nodes and their interactions are represented by links. Thus, the underlying network structure of a multi-agent system plays a crucial role in explaining emergent properties. Networked agents, on the other hand, may be able to actively change this structure by forming new links or cutting existing ones. The selected contributions from this workshop

<sup>a</sup><http://www.cse.yorku.ca/AAMAS2010/>

<sup>b</sup><http://web.sg.ethz.ch/workshops/wein2010/>

have an emphasis on social phenomena, such as the dynamics of social groups, the emergence of social norms, or the role of social networks in adaptation processes.

ALA'2010 — the Adaptive and Learning Agents Workshop<sup>c</sup> was the tenth annual workshop in a series focusing on emerging problems in single and multi-agent learning. The workshop brings together researchers from fields such as reinforcement learning, evolutionary algorithms, and game theory who investigate how autonomous physical and virtual entities can learn from their environment, or even other agents. The selections from the workshop focus on multi-agent learning, and how learning may play a critical on complex systems that cannot be easily modeled.

Our hope is that this selection of papers will stimulate further research in a growing field. One of the threats to such growth is the artificial divisions created between different research fields. As different disciplines continue to meet and publish together, we expect then that an increasing number of truly interdisciplinary approaches to complex multi-agent problems will emerge.

<sup>c</sup><http://www-users.cs.york.ac.uk/~kudenko/ala10/>