*Editorial Introduction to the Special Articles in the Winter Issue*

# Guest Editors' Note

*Sergei Nirenburg, Micah Clark*

■ *The special articles in this issue of* AI Magazine *offer a new look at the research issues in cognitive science.*

In his 2012 essay *The Cognitive Systems Paradigm*, Pat Langley motivated the genesis of this research community as follows: "The early days of artificial intelligence were guided by a common vision: understanding and reproducing, in computational systems, the full range of intelligent behavior that we observe in humans… The field's central goal was to understand the nature of the mind…. [S]ince mainstream AI has largely abandoned this goal, we require a new name for research that remains committed to the original vision" (Langley 2012). He noted the shared interest of the members of this community in studying high-level cognition, structured representations, comprehensive system development, heuristics, and openness to insights into human cognition.

The developments of the last five years warrant a new look at the issues. The five thematic articles in this issue offers such a look. The contributions are diverse and cover a representative — though by no means a complete — set of issues and opinions.

Sergei Nirenburg's introductory essay offers a bird's eye view of the current directions of research in the field and suggests some aspirational issues that need attention for the cognitive systems community to make a lasting impact.

# It's Mardi Gras Season!

## *Join Us for AAAI-18/IAAI-18/EAAI-18 in New Orleans! February 2–7, 2018*

The Thirty-Second AAAI Conference on Artificial Intelligence (AAAI-18), the Thirtieth Conference on Innovative Applications of Artificial Intelligence (IAAI-18), and the Eighth Symposium on Educational Advances in Artificial Intelligence (EAAI-18) will be held February 2–7 at the Hilton New Orleans Riverside in New Orleans, Louisiana, USA. AAAI-18 will arrive in New Orleans just prior to Mardi Gras and festivities will already be underway. Enjoy legendary jazz music, the French Quarter filled with lively clubs and restaurants, world-class museums, and signature architecture. New Orleans' multicultural and diverse communities will make your experience in the Big Easy unique. The Hilton New Orleans Riverside is located in the thriving Warehouse and Arts District and is an easy walk to the French Quarter, the Audubon Aquarium, and the Butterfly Garden and Zoo. For complete information about options in New Orleans, please see www.neworleanscvb.com/visit/.

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John Laird, Christian Lebiere, and Paul Rosenbloom review the tradition of work on cognitive architectures and make initial steps toward formulating a "standard model of the mind" whose purpose is to provide a uniform reference for work on developing computational accounts of the mind across a variety of disciplines, including artificial intelligence, cognitive science, neuroscience, and robotics.

Paul Bello and Will Bridewell argue that a satisfactory account of the concept of agency must rely on a more detailed specification of the concept of control than what is currently the case in AI. They suggest that the highest, human-level mode of control depends on societal norms and argue for the central role of attention in moderating between norms, commitments, and action.

Kenneth Forbus and Thomas Hinrichs describe progress toward reaching human-level AI within the Companion cognitive architecture. Their work is guided by two central hypotheses: the centrality of analogical reasoning and the utility of qualitative representations.

Marjorie McShane demonstrates that to endow artificial intelligent agents with human-level language understanding capabilities one must integrate language processing with the agent's reasoning about the world, about itself, and other agents (human or artificial). She argues that this level of understanding cannot be achieved within the currently dominant natural language processing paradigm that stresses knowledge-lean processing of vast amounts of text.

Matthias Sheutz argues that cognitive systems must be endowed with a morality dimension. This is necessary because such systems will be deployed in human settings and must abide by the ethical norms of human societies. This contribution analyzes ethical requirements inherent in autonomous cars, assistive robots, and robot companions and discusses implementation of legal theories, human-level moral competence, and theories of philosophical ethics within cognitive architectures.

## Reference

Langley, P. 2012. The Cognitive Systems Paradigm. *Advances in Cognitive Systems* 1: 3–13.

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