
New Developments in Cognitive Systems

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Advances in Cognitive Systems is an electronic journal that presents research reports and commentaries on computational accounts of intelligence. Unlike many other publications on the topic, it emphasizes high-level cognition, structured representations, integrated systems, heuristic methods, and links to psychology, themes that hark back to the original vision for artificial intelligence. The cognitive systems movement adopts these key tenets while building on the intellectual advances made during the 65 years since AI's inception. The journal reports new developments within this venerable tradition; these approach different facets of the mind from different theoretical perspectives, but they nevertheless draw upon a powerful, shared framework.

This volume includes expanded versions of papers from the *Eighth Annual Conference on Advances in Cognitive Systems* (<http://www.cogsys.org/conference/2020/>), which took place virtually during August, 2020. The meeting received 31 full submissions and 12 extended abstracts that were evaluated by a 39-person program committee and a six-person organizing committee. The program chairs – Matt Klenk and Shiwali Mohan – used this feedback to select 13 papers for oral presentation and further consideration for journal publication. The current collection reports progress on many fronts, including content modeling, analogical reasoning, language processing, problem solving, goal reasoning, motor control, procedure learning, and tutoring. Together, these further demonstrate the breadth and vitality of the cognitive systems paradigm.

Two of the meeting's highlights were related to the Herbert A. Simon Prize for Advances in Cognitive Systems, which recognizes scientists who have made important and sustained contributions to understanding human and machine intelligence through the design, creation, and study of computational artifacts that exhibit high-level cognition. One event was a posthumous symposium in honor of Patrick Henry Winston, who received the third Simon Prize in 2019. Another was the announcement of the fourth award in the series, which read:

The recipient of the 2020 Herbert A. Simon Prize for Advances in Cognitive Systems is James Allen for his research on temporal reasoning, language understanding, dialogue systems, interactive planning, and knowledge extraction.

The awardee has been active in AI and cognitive science for over 40 years. His research has emphasized core themes of the cognitive systems movement, especially the role of structured representations and the development of integrated computational artifacts. The Prize is co-sponsored by the Herbert Simon Society, comes with a \$10,000 cash award, and reminds the community of its namesake's revolutionary ideas about the nature of mental processing in both humans and machines. Like previous recipients, James Allen's contributions have built on these foundational insights.