
Further Developments in Cognitive Systems

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This is the fifth volume of *Advances in Cognitive Systems*, an electronic journal that reports progress toward understanding intelligent behavior and reproducing it in computational artifacts. This publication, along with the annual conference that shares its name, has become a primary venue for researchers who remain committed to the original aims and vision of artificial intelligence. Members of this community adopt many core assumptions of AI's founders and attempt to build on those insights to develop both deeper and broader accounts of the mind.

One striking feature of the cognitive systems movement is its diversity. Researchers tackle a wide range of high-level cognitive phenomena, including conceptual inference, problem solving, memory storage and retrieval, language processing, visual understanding, social interaction, and structural learning. Yet they attempt to reproduce these abilities within a common framework that recognizes the importance of structured representations, studies integrated systems rather than isolated components, incorporates theoretical ideas from psychology, and acknowledges the value of heuristic methods. The paradigm inherits these assumptions from the AI revolution of the 1950s and 1960s, when they led repeatedly to major intellectual breakthroughs.

The current volume includes expanded versions of papers from the *Fourth Conference on Advances in Cognitive Systems* (<http://www.cogsys.org/conference/2015/>), which was held at Northwestern University in Evanston, Illinois, from June 24 to 26, 2016, a little over a year after the previous meeting in Georgia. The event included a student workshop that took place on June 23, the day before the main conference. The Evanston meeting comprised 23 oral presentations, including three invited talks by senior researchers, and eight poster presentations at an evening reception. Participation was high, with over 60 registered attendees, most from North America but also many from elsewhere. The majority of the meeting's participants were PhD-level researchers, but an encouraging number of graduate students were also present.

The Northwestern conference received 34 submissions that were evaluated by a 40-person program committee. Based on its feedback, the program chairs – Kenneth Forbus and Tom Hinrichs – selected 20 papers for publication in the proceedings (<http://www.cogsys.org/proceedings/2013/>), a subset of which underwent substantial revision before appearing here. The volume also includes three essays and one refereed article that was not associated with the conference. The contents cover a variety of topics, including semantic analysis, problem solving, goal reasoning, dialogue processing, qualitative simulation, learning by reading, and agent collaboration. What they share is a focus on rich representations and system-level accounts of intelligent behavior. Each paper is an excellent role model for researchers who plan to publish results in the cognitive systems paradigm.