

Call for Papers

ACM Transactions on Intelligent Systems and Technology ([ACM TIST](#)) Special Issue on Brain-Inspired Cognitive Agents (TIST-SI-BICA-10)

Intelligent agents are autonomous hardware or software entities capable of performing specific tasks on behalf of human users. Viewed by many as the new wave of Artificial Intelligence, agents have found applications in many areas, including information management, E-Commerce, decision support, logistic planning, computer vision, simulation and modeling of cognitive functions.

In recent years, a special class of cognitive agents has emerged by integrating the know-how across the fields of computer science, cognitive science and neuroscience. Specifically, with the recent development in cognitive neuroscience and the rapid advances in brain imaging techniques, such as EEG, fMRI and PET, new opportunities have been opened to understand brain functions and behavior in much greater depth. New neurophysiological data are available enabling us to probe into the functions of various brain regions, especially the cerebral cortex and its multi-layered architecture. Based on the understanding of human brain functions and cognitive processes, brain-inspired cognitive agents are expected to show signs of human-level performance and have far-reaching applications in many challenging tasks spanning business and finances, education, entertainment, information retrieval and management, medical and other domains. Some of these agent models draw inspirations from current understanding of cognitive processes at a high, symbolic level, others focus on the sub-symbolic level either using connectionist ideas or neural modeling.

Though highly promising, research in brain-inspired cognitive agents faces many issues and challenges. To say the least, the fields of knowledge involved are huge and the work is multi-disciplinary in nature. By organizing this special issue, we aim to provide a forum for this emerging area, highlighting most important directions and applications of brain-inspired agents. The topics of interest, falling under the theme of brain-inspired architectures/models, include but are not limited to the following:

- embodiment and simulation of cognitive agents
- autonomous learning in real-time environment
- modeling memory systems in cognitive agents
- neurolinguistic and neurocognitive models of language
- drives, motivations and awareness of cognitive agents

- attention and control of cognitive agents
- percept extraction from signals in different modalities: vision, auditory, olfactory etc
- emotions of cognitive agents
- interaction between social and human agents
- performance evaluation of cognitive agents: benchmark and methods
- applications and case studies

Submitted papers are asked to address systems aspects associated with the brain-like cognitive agent models.

Submissions

Original manuscripts can be submitted on-line at: <http://mc.manuscriptcentral.com/tist>. Please select “Special Issue: Brain-Inspired Cognitive Agents” as the manuscript type.

The details of the journal and author instructions for manuscript preparation are available on the website: <http://tist.acm.org/>. Each paper will be peer-reviewed by at least three reviewers.

Important Dates

Full Paper Submission Deadline: **December 31, 2010**

Review Notification: **March 15, 2011**

Final Manuscript Due: **June 15, 2011**

Publication Date (Planned): **November /December 2011**

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