

CALL FOR PAPERS

Special Issue on Cognitive Knowledge Representation

Guest Editors: Prof. Yingxu Wang (Univ. of Calgary) and **Prof. Keith C.C. Chan** (Hong Kong Polytechnic Univ.)
<http://www.springer.com/west/home/computer/lncs?SGWID=4-164-6-151275-0>

It is recognized that all forms of intelligence are memory-based. Therefore, the mechanisms of knowledge representation in memory play a crucial role in computational science, intelligence science, and cognitive informatics. Conventional technologies dealt with *external* knowledge representation in computing and machines. This special issue puts emphasis on *internal* knowledge representation mechanisms of the brain and its engineering applications. Latest research results of internal knowledge representation at the logical, functional, physiological, and biological levels are solicited from multi-disciplines, in order to put together a whole picture to explain the mechanisms and methodologies of internal knowledge representations of the brain and their impacts on computing, artificial intelligence, and computational intelligence.

This special issue on *Cognitive Knowledge Representation* in the Springer Journal of TCS focuses on novel internal knowledge representation theories, methodologies, mathematical means, models, and technological implementations or simulations. Original papers are solicited for this special issue. Particular emphases will be put on real-world and industrial applied research based on experimental or empirical studies. Suggested topics include, but are not limited to:

- **Internal Knowledge Representation Theories**
 - Natural of knowledge as results of learning
 - Concept algebra
 - The Object-Attribute-Relation (OAR) model
 - Concept networks
 - Semantic networks
 - Relationship between internal/external knowledge
 - Mathematical means for modeling knowledge
- **Neural Informatics Models of Cognitive Knowledge**
 - Transformation between data and knowledge
 - Roles of intelligence in knowledge generation
 - Cognitive informatics
 - Knowledge representation at the neural level
 - Knowledge representation at the cognitive level
 - Knowledge representation and linguistics
 - Knowledge and memory
- **Logical Models of Cognitive Knowledge**
 - Mathematical models of knowledge
 - Logic-based modeling of knowledge
 - Process-based modeling of knowledge
 - Rule-based modeling of knowledge
 - Knowledge bases
 - Cognitive complexity of knowledge
 - Formal inferences based on knowledge
 - Fuzzy and rough representation of knowledge
- **Knowledge Manipulation Technologies**
 - Knowledge engineering methodologies
 - Autonomic knowledge processing
 - Intelligent data mining
 - Knowledge modeling
 - Knowledge acquisition
 - Knowledge manipulation
 - Knowledge transformation
 - WordNet and ConceptNet

Prospective authors may check the *Guidelines for Authors of TCS* at <http://www.springer.com/west/home/computer/lncs?SGWID=4-164-6-151275-0>. Submitted papers must not have been previously published or be currently under consideration for publication elsewhere. Conference papers should be significantly extended and revised. All papers will be rigorously refereed. Complete manuscripts in PDF format should be submitted to the Guest Editors before **Jan. 7, 2008**.

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Important Dates Manuscript Submission – Jan. 7, 2008
Final Paper Due – May 1, 2008

Review Notification – March 1, 2008
Expected Publication – Fall 2008