

CALL FOR PAPERS
Special Issue on
Cognitive Informatics and Cybernetics

Guest Editors: Prof. Yingxu Wang (Univ. of Calgary),
Prof. Witold Kinsner (Univ. of Manitoba), and **Prof. Du Zhang** (California State Univ.)

The development of classical and contemporary informatics, the cross fertilization between computer science, cybernetics, systems science, computer/software engineering, cognitive science, and neuropsychology, has led to the emergence of Cognitive Informatics (CI). CI is the transdisciplinary study that investigates into the internal information processing mechanisms and processes of natural intelligence and their engineering applications. CI is a cutting-edge and profound interdisciplinary research field that tackles the fundamental problems of modern information theory, cybernetics, systems science, computation, computer/software engineering, artificial intelligence, cognitive science, neuropsychology, and life sciences. Almost all of the hard problems yet to be solved in the aforementioned areas share a common root in the understanding of mechanisms of the natural intelligence and cognitive processes of the brain.

The theme of this special issue is on *Convergence of CI and Cybernetics*, which investigates into the shared foundations of cybernetics and CI, and their impacts on cybernetic and cognitive systems. This special issue focuses on the cognitive, functional, and logical levels of cybernetics that explain what the cognitive mechanisms of the brain are and how it processes cognitive information in cybernetic systems. Original papers are solicited for this special issue on CI and Cybernetics in IEEE TSMC(B). Suggested topics include, but are not limited to:

• **Fundamental Theories of Cybernetics and CI**

- Cybernetics in CI
- CI for cybernetics
- Denotational mathematics for CI/Cybernetics
- System algebra for modeling cybernetic system architectures
- Process algebra for modeling cybernetic system behaviors
- Cybernetics vs. intelligence
- Abstract system theories
- Cybernetic mechanisms shared by natural and machine intelligence
- Neural models of knowledge
- Neural models of intelligence

• **Systems Shared in Cybernetics and CI**

- Cybernetic models of the brain
- CI models of the brain
- Hybrid man-machine systems
- Distributed intelligent systems
- Long life-span systems
- Knowledge systems
- System models of memory
- Cognitive agent systems
- Autonomic learning systems
- Web contents cognition systems

Prospective authors are suggested to check the *Guidelines for Authors* of IEEE TSMC-B at http://www.ieeesmc.org/publications/scope_B.html. 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 via the IEEE Manuscript Center at <http://smcb-ieee.manuscriptcentral.com/> before December 1, 2007.

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