ACM Transactions on Autonomous and Adaptive Systems (TAAS)

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CALL FOR PAPERS

Special Issue on
Autonomic Machine Learning

Guest Editors: Prof. Yingxu Wang (Univ. of Calgary) and **Prof. Phil Sheu** (UC Irvine)

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Recent studies in autonomous and adaptive systems reveal that the foundations of autonomic machine learning technologies are rooted in cognitive informatics theories and autonomic computing methodologies. Conventional machine learning systems were designed and implemented by imperative and instructive programming techniques in AI. The improved understanding of the learning mechanisms in the brain and natural intelligence has greatly enhanced and inspired the investigation into autonomic machine learning systems, where autonomic refers to the emerging non-imperative and highly autonomous machine learning mechanisms. The autonomic machine learning systems are a fully goal-driven and non-imperative system that possesses powerful machine intelligence for knowledge acquisition, processing, comprehension, and memorization based on contemporary denotational mathematics and autonomic-learning mechanisms. Rigorous theories, empirical methodologies, and industrial applications of autonomic machine learning systems are sought for this special issue to advance the cross fertilization between autonomous systems, cognitive informatics, and autonomic computing.

This special issue on *Autonomic Machine Learning* in ACM TAAS focuses on *autonomic, autonomous,* and *adaptive* machine learning theories, technologies, and systems. Original papers that study and implement run-time autonomic behaviors and applications are solicited for this special issue. Suggested topics include, but are not limited to:

• Novel autonomic learning theories
- Autonomic learning mechanisms
- Denotational mathematics
- Concept algebra
- Cognitive informatics
- Relations among information, data, and knowledge
- Taxonomy of learning
- Modeling of learning processes
- Internal knowledge representation

• Autonomic machine learning systems (AMLS's)
- AMLS architectures
- AMLS behaviors
- AMLS interactions
- AMLS communications
- AMLS knowledge-base representations
- AMLS knowledge acquisitions
- AMLS inference engines
- AMLS learning processes implementations

• Autonomic learning methodologies
- Autonomic computing
- Formal inferences methods
- Non-imperative learning methods
- Fuzzy inference methods
- Learning and problem-solving
- Learning and memorization
- Cognitive agents
- Taxonomy of learning

• Industrial applications of AMLS's
- Problem domains for AMLS's
- Web-based learning engines
- AMLS simulations
- Industrial requirements
- Case studies on AMLS's
- Autonomic robots
- Autonomic learning support systems
- Machine tutoring systems

Prospective authors may check the *Guidelines for Authors* of ACM TAAS at http://www.acm.org/pubs/taas/. 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 **December 1, 2007.**

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