3rd International Conference on Self-Organization and Autonomous Systems in Computing and Communications (SOAS'2007)

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http://siwn.org.uk/SOAS2007/

SCOPE

SOAS 2007 solicits papers on theory, methodologies, technologies, and implementations in the following themes:

Theme 1: Principles and Methodologies for Self-Organization and Adaptation
Theme 2: Self-Organization/Adaptation of Multi-Agent Systems
Theme 3: Self-Organizing/Autonomic Grid
Theme 4: Autonomic Computing in General and Adaptive Transactional Environments
Theme 5: Autonomic Communications

Full lists of indicative topics in each Theme are downloadable.

Theme 1: Basic Principles and Methodologies for Self-Organization and Adaptation

(1) General

- Analysis of coupled feedback loops for self-managing systems
- Architectures of self-organizing systems
- Characterization and analysis of agility, fault tolerance, scalability, robustness
- Characterization and analysis of learning and adaptation
- Characterization frameworks of self-organizing software
- Entropy approaches to self-organization and adaptation
- Holonic systems for self-organization and adaptation
- Methodologies for engineering self-organization
- Multiple granularity of knowledge in large complex systems
- Nested, hierarchical systems for self-organization and adaptation
- Performance metrics for self-organizing systems
- Self-organization to support multi-agent scalability

(2) Emergence and interactions

- Cybernetic principles and self-organization
- Analytic models of emergent behaviors
- Autonomy based interactions
- Cellular automata approaches to emergence in multi-agent systems
- Controllability of emergence
- Emergent properties of large complex systems
- Formal approaches to handling local/global agent behaviors
- Game theoretic approaches to emergence in multi-agent systems
- Interaction mechanisms for self-organization and adaptation
- Relation between high-level goals and local interactions
- Specification based interaction mechanisms
- Models, methods and tools for achieving global coherent behaviors
- Performance engineering of emergent behaviors in multi-agent systems
- Principles of emergence, understanding, controlling, or exploiting emergent behaviors
- Trust-based interaction mechanisms

(3) Biologically inspired

- Artificial life
- Biologically inspired computing
- Biologically inspired interaction mechanisms

- Biologically inspired process algebra and formal specifications
- Computational pheromones, potential field, economy
- Models of social insects
- Self-organization in biological systems
- Stigmergy

(4) Control theory

- Convergence analysis of multi-agent systems
- Cybernetics, general systems theory for self-organization and adaptation
- Decentralized control, adaptive control, robust control of large complex systems
- Feedback control of chaos in complex systems
- Feedback control of uncertainties in large complex systems
- Interactions as feedback to influence and control multi-agent systems
- Market based control of multi-agent systems
- Modeling and supervisory control of discrete event systems
- Self-stabilization of multi-agent systems

(5) Complex adaptive systems

- Cellular automata model of multi-agent systems
- Complex adaptive systems theory
- Dissipative systems
- Complex non-linear systems
- Game theory, decision theory for self-organization and adaptation
- Self-organization and adaptation principles and methodologies borrowed from systems theory, control theory, game theory, decision theory, etc.
- Open complex systems

Theme 2: Self-Organization/Adaptation of Multi-Agent Systems

(1) Self-organization and adaptation

- Adaptive negotiation
- Adjustable autonomy
- Dynamic/re-configurable coalition formation/teamwork
- Dynamic, re-configurable, flexible organization of agent societies and ensembles
- Emergent properties and behaviors of large-scale multi-agent systems
- Entropy based, computational economy based performance models of self-organizing multi-agent systems
- Evolution, adaptation of multi-agent systems
- Feedback control, decentralized control of large-scale multi-agent systems
- Game theory, decision theory for multi-agent systems
- Holonic self-organization of multi-agent systems
- Organizational principles for large, open multi-agent systems
- Scalability, robustness of large, open multi-agent systems
- Self-configuring multi-agent problem solving
- Self-organization, self-structuring, adaptation of ontologies for multi-agent based problem solving
- Self-organization/self-structuring, self-optimization of multi-agent systems
- Software engineering methodologies for self-organizing/adaptive multi-agent systems

(2) Learning

- Complexity of multi-agent systems with learning and adaptation
- Distributed learning in multi-agent systems
- Co-evolving multiple agents with similar/opposing interests.
- Learning and adaptation strategies, for environments with cooperative agents, selfish agents, partially cooperative agents or heterogeneous agents.
- Learning and mutual modeling in multi-agent systems
- Learning of coordination
- Multi-agent based distributed learning
- Social/organizational learning

Theme 3: Self-Organizing/Autonomic Grid Computing

(1) Grid computing and resource management

- Agent based Grids
- Autonomic/organic Grid computing
- Autonomic (self-configuring, self-healing, self-optimizing, self-protecting) Grid/peer-to-peer middleware
- Feedback control mechanism for Grid resource management
- Dependability, fault diagnosis and tolerance of Grids
- Machine learning for resource management in Grid/peer-to-peer computing, collaborative computing
- Market models of Grid computing, Grid economy, utility based computing
- Self-diagnosis and self-detection of Grid security breaks and intrusions
- Self-healing and self-protection of Grid/peer-to-peer computing
- Self-configuring workflows planning and composition in Grid/peer-to-peer computing
- Self-organizing Grid based problem solving environments
- Self-organizing, self-configuring, self-optimization of Grid resource management
- Self-organization of semantic web, metadata and ontologies in Grid computing

(2) Grid Service Management

- Adaptive Grid service composition and configuration
- Adaptive management, coordination, monitoring and control of Grid services and applications
- Adaptive framework for description, modeling, negotiation and discovery of services
- Autonomic service oriented computing, service oriented architectures
- Feedback control mechanism for Grid service management
- Intelligent agents for Grid service management, agent based service oriented architectures
- Machine learning for Grid service discovery and composition
- Performance evaluation, QoS, simulation of Grids
- Self-organization and adaptation of service oriented computing

Theme 4: Autonomic Computing in General and Adaptive Transactional Environments

(1) Principles and methodologies

- Autonomy based interactions
- Characterization of autonomic systems: self-governing, self-managing, self-regulating, self-organizing, self-configuring, self-adaptation, self-optimizing, self-correction, self-healing, self-protection, self-monitoring, context self-awareness, performance self-measuring/modeling, etc.
- Decentralized autonomic computing
- Fault diagnosis, fault detection and localization, fault tolerance for autonomic computing systems, automated definition and generation of faults control policies
- Feedback based paradigms for autonomic computing systems
- Frameworks, architectures of autonomic systems
- Knowledge-based systems methodology for autonomic computing
- Nature-inspired self-managing/regulating systems
- Pattern recognition of intrusions and attacks for autonomic computing systems, automated definition and generation of security policies
- Paradigms and methodologies of autonomic/organic computing
- Policy based control, rule-based autonomic management of large-scale computing systems
- Scalability, robustness of self-managing computing systems
- Self-organization of large, open distributed computing systems
- Self-organizing emergent behaviors
- System theoretic methodology for autonomic computing: complex adaptive systems, hybrid systems, discrete event systems
- Utility function driven, computational economy based resource allocation in autonomic systems

(2) Systems and implementations

- Automated workloads balancing in distributed computing

- Autonomic computing systems: multi-tier Internet, network, server, mass storage systems, web systems, database/knowledge systems
- Autonomic framework of software process improvement
- Autonomic workflow engine
- Health monitoring, dependency analysis, problem localization or remediation for autonomic computing systems
- Intrusion tolerant and self-recoverable network service system
- Large-scale autonomic server monitoring
- Learning policy for pervasive computing environments
- Programming languages/tools for autonomic systems
- Self-configuring hardware for distributed computer systems
- System-level technologies, middleware or services for self-managing systems
- Web services, semantic web, ontology, metadata for autonomic computing systems

Theme 5: Autonomic Communications

- Architectures of self-organizing networks
- Self-configuring and self-optimizing mobile ad hoc networks
- Self-organization/adaptation in large-scale programmable/active networks
- Self-configuration, self-management and self-optimization of wireless mesh networks
- Self-configuration, self-management and self-optimization of wireless sensors networks
- Self-optimization of QoS in communication networks
- Self-organization in communication networks
- Self-organization in communication networks