Call for Contributions
Special Issue of the <u>ACM Transactions on Autonomous and Adaptive Systems</u>
on
<u>*Self-Adaptive Systems: Models & Algorithms*</u>

Scope

The present special issue is concerned with concepts and techniques which can rely on metaphors of nature and which are inspired from biological and cognitive plausibility. Being the basis for many modeling approaches and computational techniques, this two-fold plausibility offers a very promising foundation for investigating the adaptivity of intelligent systems that evolve in dynamically changing environments. The modeling approaches involve a large spectrum of theories ranging from learning theory to nature inspired optimization meta-heuristics.

Of particular importance are those approaches that allow for <u>incremental update of the systems over time</u>. Such approaches are often referred to as sequential or constructive. Despite the existing literature on adaptivity, the notion of "incrementality" as a property of self-adaptation, self-organization, self-monitoring and self-growing has not yet been well studied.

This special issue aims at presenting the latest advances of self-adaptivity with focus on <u>modeling approaches and computational methods that suit dynamically changing environments</u>. The special issue is intended for a wide audience including neural network scientists, mathematicians, physicists, engineers, computer scientists, biologists, economists and social scientists. The special issue will cover various topics of self-adaptivity, self-organization, self-monitoring and self-growing concepts. It also aims at presenting a coherent view of these issues and a thorough discussion about the future research avenues. A sample of the targeted topics, which is suggestive rather than exhaustive, includes:

- **Theories and Algorithms**
  - Self growing systems
  - Adaptation in changing environments
  - Online adaptive and life-long learning
  - Plasticity and stability of systems
  - Incremental adaptive neuro-fuzzy systems
  - Incremental and single-pass data mining
  - Incremental classification systems
  - Incremental clustering
  - Concept drift in evolving systems
  - Self-monitoring in evolving systems
  - Incremental diagnostics
  - Novelty detection in evolving learning
  - Incremental feature selection and reduction
  - Adaptive decision systems
  - Principles of self-organization
  - Methodologies of self-organization
  - Dynamic optimization
  - Accommodating adaptation in:
    - Neural networks
    - Evolutionary computation

- ▪ Swarm intelligence
- ▪ Fuzzy systems

- **Applications : Adaptivity and learning in**
    - o Smart systems
    - o Ambient / ubiquitous environments
    - o Distributed intelligence
    - o Intelligent agent technology
    - o Robotics
    - o Industrial applications
    - o Internet applications
    - o E-commerce, etc

Schedule

- Submission due date: December 15th, 2009
- Notification Acceptance (including ICAIS'09 papers): May 15th, 2010
- Submission of camera ready version: July 15th., 2010
- Publication: Early 2011

Submission

This special issue of the journal will target high quality papers selected from the International Conference on Adaptive and Intelligent Systems (ICAIS'09). The selected papers must be significantly extended by at least 30% and improved to meet the requirement of the journal. The special issue welcomes also regular papers beyond the ICAIS'09 circle. Manuscripts submitted to the Special Issue of TAAS on *Self-Adaptive Systems: Models & Algorithms* should be formatted according to the journal template available at: http://taas.acm.org/ and must be sent to one of the guest editors.

Guest Editors:

Hamid Bouchachia, University of Klagenfurt, Austria
Hamid@isys.uni-klu.ac.at

Nadia Nedjah, State University of Rio de Janeiro, Brazil
nadia@eng.uerj.br