

Call For Papers: Special Issue of *Robotica*

Robotic Self-X Systems

Scope

Self-X systems are systems that are capable of self-assembly, self-organization, self-reconfiguration, self-repair, self-replication, or self-reproduction. The past 25 years have seen the development of several robotic self-X systems, often inspired by John von Neumann's seminal efforts on self-reproducing automata in the late 1940s. The field of Robotic Self-X Systems holds immense promise for advances in such diverse areas as autonomous manufacturing, bioengineering, evolutionary software, and space colonization.

Theoretical and experimental works in this field of Robotic Self-X Systems are invited for a special issue of *Robotica*. The issue will balance novel papers on the hardware, planning, and control aspects of example systems. One of the strengths of self-X systems is their potential ability to respond to uncertain environments and execute a variety of tasks. Hence, contributions that analyze the response of robotic self-X systems to partial system failure and uncertain or changing environments are especially welcomed. Technologies that allow such systems to operate optimally in the presence of uncertainty, adapt to changes in the external environment, and respond rapidly to applied disturbances and disruptions to the internal system states are important because systems equipped with these advances can learn, adapt, evolve, and achieve resiliency to large-scale environment or state variations.

Topics of interest include (but are not limited to):

- Morphology variations in self-assembling systems to accomplish changing goals.
- System adaptation through repeated self-organization.
- Scalability of hardware and control algorithms in self-reconfigurable systems.
- Learning and minimization of module self-repair.
- Self-replication in unstructured environments.
- Evolutionary behaviors that result from self-reproduction.
- Coordination between different types of self-X systems.

Important Dates

- General Announcement: March 10, 2009
- Submission Deadline: November 1, 2009
- Review Decision: January 1, 2010
- Final Submission: March 1, 2010
- Expected Publication: May 1, 2010

Submission

Authors are strongly encouraged to notify the guest editors of their intention to submit a paper. Manuscripts that are submitted to *Robotica* in a single-column double-spaced format should typically be 40 pages or less, and between 8,000 and 12,000 words.

The journal website is: <http://journals.cambridge.org/action/displayJournal?jid=ROB>

The submission website is: <http://mc.manuscriptcentral.com/robotica>

Instructions are available at: http://assets.cambridge.org/ROB/ROB_ifc.pdf

Guest Editors

Pierre Kabamba and Amor Menezes
kabamba and amenezes at umich.edu