Call for Papers

Special Issue on Self-Management through Self-Organization in Information Systems

Submissions due 2 September 2005

Given the scale and complexity of today's information systems, it's becoming increasingly important that they're able to deal with most of the problems and tasks of systems management themselves, intelligently and autonomously. Errors and failures must be worked around, and configuration should be adaptively optimized responding to the actual state of the system itself or its environment, with minimal or no human intervention. The motivations are that self-management allows for significant cost reduction and increased robustness and that sometimes it's simply inevitable because human management isn't possible owing to time or location constraints. Bringing self-management about in a wide variety of systems such as wired or wireless networks, peer-to-peer systems, and the computational Grid, and in distributed systems and applications in general, is an exciting, quickly growing research area.

One popular approach is based on the observation that we're surrounded by self-organizing systems that successfully solve self-management. Multicellular organisms, social insects, ecosystems, and so on are made of components that obey some local rules and act on the basis of local observations, yet the system as a whole shows nice properties such as self-healing, self-tuning, and self-organization—exactly the properties we're after. Distilling the key ideas from these systems and incorporating them into information systems could lead to cheap, straightforward, and highly robust solutions. However, self-organization isn't a panacea.

This special issue seeks contributions that help us better understand both the advantages and drawbacks of self-organization in information systems. Submissions discussing realistic applications and comparing them with alternative state-of-the-art techniques are especially welcome, but practically relevant theoretical papers will also be considered. Examples for complex information systems and self-organizing approaches include, but aren't limited to,

- the Internet;
- peer-to-peer systems and overlay networks;
- the Grid;
- distributed databases and file systems;
- distributed OSs and middleware;
- biology-inspired methods;
- sociology-inspired methods;
- wireless, sensor, and mobile ad hoc networks;
- game theory;
- multiagent-based approaches; and
- other fully distributed, decentralized approaches.

Special Issue Guest Editors

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Submission Guidelines

Submissions should be 3,000 to 7,500 words (counting a standard figure or table as 200 words) and should follow the magazine's style and presentation guidelines (see http://computer.org/intelligent/author.htm).
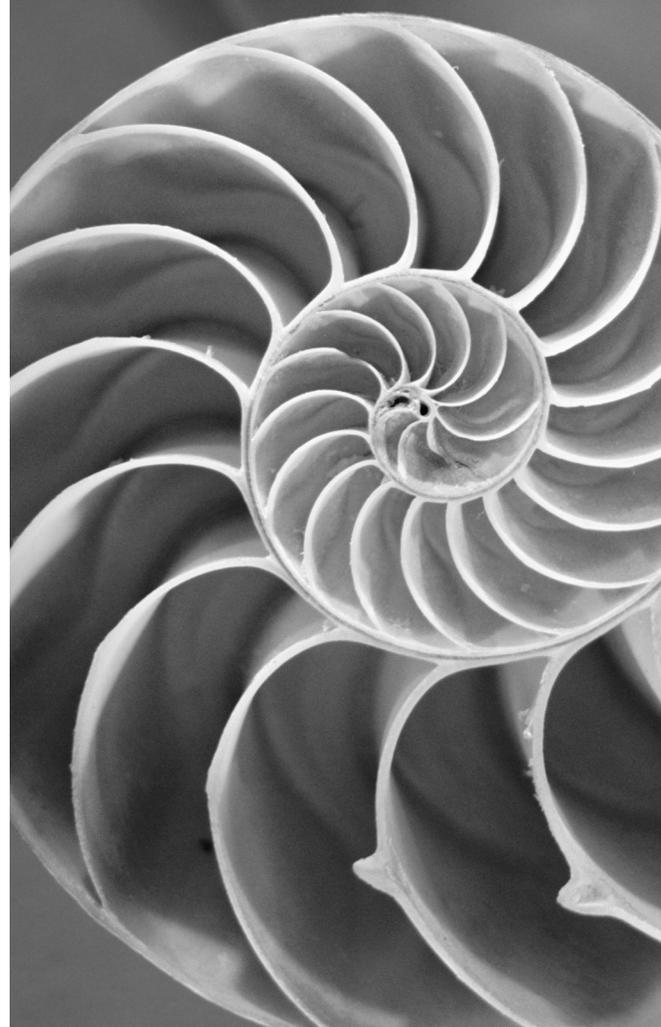
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