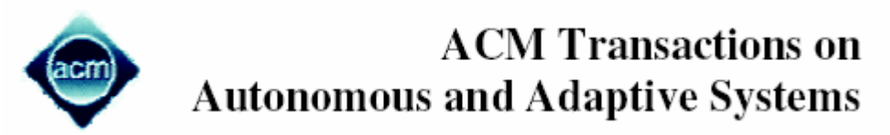

ACM TRANSACTIONS on AUTONOMOUS and ADAPTIVE SYSTEMS

SPECIAL ISSUE on AMBIENT INTELLIGENCE

CALL FOR PAPERS

Ambient Intelligence (AmI) is a novel computer paradigm oriented towards the development of advanced living environments containing a large number of heterogeneous computing and networking devices capable of providing a set of innovative functionalities and enhancing user productivity. Ubiquitous computing technology represents the main feature of AmI systems. In fact, Ubiquitous Computers will improve the way human being live and work through a transparent analysis of large amounts of information present into living spaces. Such data-intensive, unstructured spaces featured by minimal or no centralised control, present a challenge for traditional methods of analysis, design and integration of advanced, distributed and intelligent computer systems. In particular, by analysing these data, AmI systems try to optimise the environment in order to satisfy user's needs and preferences.

This scenario changes the viewpoint about computer applications that will be influenced by a set of innovative and dynamic features as the physical and behavioural contexts surrounding the users. The computer applications will move from static and well-defined software entities to a complex and not-fixed architectures able to deal with dynamic ecosystems made of users and ubiquitous computers.

The combination of different features arising from AmI definition (heterogeneity and mobility of devices, physical and behavioural user information, etc.) makes the analysis and design of these computer ecosystems very complex. This complexity is due to the large number of unforeseeable interactions between ecosystem inhabitants (users and devices). Computational intelligence techniques and methods (fuzzy logic, neural networks, genetic algorithms, etc.) offer a good way to map and anticipate these interactions. Moreover, advanced computer networking technologies (Web Services, Mobile Agents, Wireless networking theory, etc.) provide an optimal solution to deal with the intrinsic interoperability of AmI system. The joint use of the aforementioned computer science methodologies aim at the realisation of intelligent integrated computer networks capable to optimise the AmI environments achieving the prefixed user satisfaction.

The goal of the proposed special issue is to highlight new opportunities and challenges in the development of next-generation of smart objects composing AmI environments, where a key role is played by recent research on advanced computational intelligence methods and advanced computer networking technique and discuss their applicability to AmI systems. This issue helps to expose the networking and Computational Intelligence communities to a variety of new and highly challenging problems along with the feasible solutions designed within the realm of AmI systems. Expected contributions may cover methodological issues related to techniques, tools, methods, architecture that allow to build AmI scenarios, especially we welcome papers which will base their findings on new approaches suitable to define and use contextual adaptation in design and development processes for AmI systems. Systems deployed on such infrastructures need to run in highly dynamic environments, where content, network topologies and work loads are continuously changing. Adaptation thus becomes a key feature of an AmI system's behaviour.

Within this context, original contributions are solicited in all relevant areas, including but not limited to:

- Context Awareness
- Self-Organising Sensor Networking
- Ubiquitous computing
- Autonomous systems
- Agents and intelligent components for resource limited devices (requirements, porting, downsizing, etc)
- Hybrids systems, integration and interworking of wired and wireless networks in ubiquitous computing
- Computational Intelligence and Machine Learning algorithms
- Augmented reality in AmI systems
- Intelligent and Natural Human/Computer Interactions
- Technological support of Ambient Intelligence
- Applications in AmI environment (AmI and Arts, Smart Homes, AmI learning ,Ambient Healthcare, Ambient Entertainment etc)
- Embedded Controls
- Security , Privacy and Legal aspects for the AmI space
- Social Emergence and Evolution
- Bio-Inspired Techniques
- Emergent Information Systems for AmI environments
- Self-Organising Software Agents
- Evolutionary Computation for AmI environments
- Biological Computation for AmI environments
- Adaptive Nanomachines and Nanorobotics for AmI environments

Guest Editors: Dr. Vincenzo Loia, Dr.Athanasios Vasilakos

Submission deadline: **Sept 1, 2007**. Papers (pdf files) should be submitted electronically to both Guest Editors:

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Authors should prepare manuscripts, no longer than 12000 words, according to the ACM accepted manuscript preparation guidelines.