Editorial

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Biographical note: Vasilakos is a Professor at the Department of Computer and Telecommunications Engineering, University of Western Macedonia, Greece; and a Visiting Professor at the Graduate Programme, Department of Electrical and Computer Engineering, National Technical University of Athens, Greece. He serves at the editorial board of several international journals, including *Int. J. Adaptive and Autonomous Communications Systems*; and *Int. J. Arts and Technology*. He has published more than 150 articles in international journals and conferences. He has Co-Authored a number of books, including Ambient Intelligence, Wireless Networking, Ubiquitous Computing, Louisville, Colorado, Artech House, USA 2006; Computational Intelligence in Telecommunication Networks, Artech House, USA 2001; Arts and Technologies, MIT Press, USA to appear; Game Theory in Communication Systems, IGI Global, MA, USA, to appear; Autonomic Communications, Springer, to appear.

The emerging world is pervasive and strives towards integrating people, technology, environment and knowledge. This emerging vision is moving towards approaches that set the user at the centre of attention, while technology becomes invisible, hidden in the natural surrounding, but still functional, autonomous, self-adaptive, present when needed and interactive (Vasilakos and Pedrycz, 2006). Achieving this vision requires innovative network architectures and services. Communication/networking approaches should become task- and knowledge-driven, enabling a service-oriented, requirement and trust driven development of communication networks. The growing complexity of control requires increasingly distributed and self-organising structures (Pedrycz and Vasilakos, 2001), relying on simple and dependable elements that are able to collaborate to produce sophisticated behaviours and that can adapt to an evolving situation, in which new resources can become available, administrative domains can change and economic models can vary accordingly. The networking and seamless integration of concepts, technologies, devices in a dynamically changing environment sets many challenges to the research community, including interoperability, programmability, management, openness, reliability, performance, context awareness, intelligence, autonomy, security, privacy, safety, semantics, etc. IJAACS explores the challenges in technologies that will help realise the vision where devices and applications seamlessly interconnect, intelligently cooperate and autonomously manage themselves, and as a result, the borders of virtual and real world will vanish or become significantly blurred.

The launch of IJAACS provides a prestigious forum for the timely reporting of advances in autonomous and adaptive computer and communications networks.

IJAACS is a top venue for high quality research that advances state-of-the-art contributions addressing foundational, engineering and technological aspects of communications systems exhibiting emergent and adaptive behaviour. IJAACS encourages contributions aimed at supporting the understanding, development and control of such communication systems based on sound theoretical models, including, but not limited to bio-inspired, natural computing, game theory and economic models. IJAACS spans complexity, self-adaptation, autonomic communication, Ambient Intelligence (AmI) and multi-agent systems.

Many current communication systems and infrastructures, such as the World Wide Web, Peer-2-Peer systems and *ad hoc* wireless and sensor networks, have the characteristic of being decentralised, pervasive and composed of a large number of autonomous entities. Frequently, communication systems deployed on such infrastructures need to run in highly dynamic environments, where content network topologies and work loads are continuously changing. Thus, adaptation becomes a key feature of a system's behaviour.

In addition, such communication systems involve a social dimension; for example, the entities within such communication systems can engage in interactions, discover suitable other participants, negotiate and perform transactions. In certain cases, the complexity of the communication system is such that no centralised or hierarchical control is possible. These characteristics are similar to those which one finds in self-organising systems seen in nature, such as physical, biological and social systems.

Reviews, research articles and short communications covering all areas of research and applications in autonomous and adaptive communications systems contributed by academia and industry will be published in both regular and special issues.

The topics of interest relevant to this journal include, but are not limited to:

- computer networks
- internet computing
- multi-agent systems
- autonomic communication systems
- security, trust and survivability for autonomic communication systems
- AmI
- self-organising ad hoc and sensor networks
- pervasive and ubiquitous communication networks
- mobile communication networks
- wireless communication networks
- web services
- multi-media networking
- emergent behaviour in grid and peer-to-peer communication systems
- swarm intelligence and ant-based algorithms in communication systems
- bio-inspired computing in communication systems

- computational intelligence (evolutionary algorithms, neural networks, fuzzy systems and chaotic systems) in communication systems

- natural computing (molecular computing and quantum computing) in communication systems

- autonomic communication approaches in enterprise environments

- smart materials and emergent behaviour

- Adaptive nanomachines and nanorobotics for AmI environments

- non-linear dynamical systems

- game theory and economic models in adaptive and autonomous communication systems.

Research results having applications in other application domains such as the following will also be considered:

- biological networks

- molecular networks

- chemical networks

- social networks.

The inaugural issue includes 20 papers divided into three issues which span fairly wide spectra of the research carried out in autonomous and adaptive communication systems.

We conclude this editorial by taking this opportunity to thank all the authors who contributed their quality papers to this new journal. The call-for-papers received an overwhelming response from the community. We received a good number of submissions ensuring the success of this new journal, as clearly reflected by the quality of the accepted papers in this inaugural issue. We also thank all the dedicated anonymous reviewers for their timely peer reviews that allowed a very quick turn-around time. A short review cycle is one of the major characteristic features of this journal and we are committed to the goal of publishing quality research works quickly by improving the time from submission to publications of our journal. Thereby, we improve its impact factor. Finally, we would like also to thank all Inderscience staff for their strong and efficient technical support, without which it would have been impossible to launch this new journal along such a smooth and successful path. Thank you all!

References

Vasilakos, A. and Pedrycz, W. (2006) *Ambient Intelligence, Wireless Networking, Ubiquitous Computing*. Louisville, Colorado: Ártech House Press.

Pedrycz, W. and Vasilakos, A. (2001) *Computational Intelligence in Telecommunications Networks*. Boca Raton, FL: CRC Press.