

IWANN'2015, Palma de Mallorca, Spain

Special Session Proposal

STRUCTURES, ALGORITHMS AND METHODS IN ARTIFICIAL INTELLIGENCE

Motivation and objectives

The underlying idea of this session is a point of view concerning Artificial Intelligence “in the large”. It is an approach as well as a trend having as main objective the problems solving by producing algorithms and conceiving structures to be implemented in “artifacts” which are in fact programmable structures. This open point of view allows integration of standard numerical approaches for solving the problems of Mathematical Physics and other sciences with such bioinspired approaches as genetic algorithms and various neural networks whose targets are quite non-standard since they arrive from pattern recognition, computer and robotic vision, multimedia and signal processing.

A structural point of view gives the possibility to discover the “hidden” aspects of the existing techniques and devices as well as ways to improve their functionalities. Suggestions for the design of new structures and elements may be also expected to come from various research areas. All those new suggestions and ideas can be benefits for IWANN 2015. It is our point of view that new insights and new emergent structures that have scientifically established functionalities may be of genuine benefit in developing the field of Artificial Intelligence.

Organizers

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Short biography of the organizer(s)

Daniela DANCIU is currently an Associate Professor with the Department of Automation and Electronics, University of Craiova, Romania. She holds Ph.D. in Automatic Control. Her research interests include the qualitative issues in the dynamics of neural networks viewed as nonlinear dynamical systems, time-delays systems, systems with multiple equilibria: stability, synchronization, oscillations, global behavior. The main tools are the Lyapunov function(al) and Lyapunov-like methods and, the frequency domain Popov-like inequalities and methods. A new research interest concerns the

neuromathematics aspects – methods for solving, on a neural networks logical basis, the mathematical problems arising from science and engineering applications. She is author/co-author of more than 65 technical/scientific publications including 2 monographs in Romanian (*Systems with several equilibria. Applications for neural networks* and *Neural networks. Stability, synchronization, time-delays*) and 9 book chapters published by Springer and IGI Global.

D. Danciu has been member of Program Committees for 8 IEEE international conferences (IEEE-SACI 2014, IEEE-ICATE 2014, IEEE-EHB 2013, IEEE-ICSTCC 2013, IEEE-SACI (2009, 2011, 2013), IEEE-ICCC-CONTI 2010), co-organizer and co-chair for 3 special sessions (IWANN 2011, 2013; ICSTCC 2014), referee for scientific journals (IET Control Theory & Applications, Journal of Mechanics in Medicine and Biology, IMA Journal of Mathematical Control and Information, Soft Computing, IEEE Trans. Neural Networks and Learning Systems, Zentralblatt für Mathematik, Kragujevac Journal of Mathematics) and over 15 international conferences.

Daniela Danciu is a Senior member IEEE, member of SIAM (Society for Industrial and Applied Mathematics, SRAIT (Romanian Society of Automation and Technical Information; the Chair of the local division), ANSO (Romanian research centre: *Nonlinear Automation. Stability. Oscillations*), AGIR (The General Association of Romanian Engineers).

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Vladimir RĂSVAN is Professor of System Theory at the University of Craiova, Department of Automation and Electronics. His research interests are concerned with theory and applications of Nonlinear Systems and their qualitative problems – stability of equilibria, existence and stability of forced oscillations, systems with time delays and wave propagation. He is author and co-author of some 200 journal and conference papers in the field, also of 8 monographs among which one was published by Nauka in the former USSR, another by Kluwer and a third by Gordon & Breach. He was organiser of several invited sessions at such conferences as European Control Conference (1999), Mathematical Theory of Networks and Systems – MTNS (1998, 2000, 2004), IFAC Workshops on Time Delay Systems (2001, 2007), being also plenary invited speaker (e.g. IFAC Workshops on Time Delay Systems 2006 or IEEE Conference in Toluca, Mexico, 2009). Senior Member IEEE, member SIAM, AMS, MAA.

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List of prospective contributed papers

1. Structures with emergent computing properties, D. Danciu (ddanciu@automation.ucv.ro) and V. Răsvan (vrasvan@automation.ucv.ro)