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***2007 Annual Report of the  
Cellular Neural Network and Array Computing Technical Committee***

The activities of the technical committee cover a broad area of scientific work including not only the organization of international workshops and conferences but also the publication of CNN related investigations in scientific journals and the organization of CNN tutorials and lectures.

***Organization of conferences, tracks within larger conferences, and  
special sessions***

**International Symposium on Circuits and Systems (ISCAS 2007), New Orleans, USA**

The committee organized the review of about 20 submitted papers finally leading to 3 sessions for the track *Cellular Neural Networks and Array Computing*. The three sessions (which also included some papers submitted to a special session that was not included in the conference program) were devoted to the main aspects of CNN theory and applications. They were entitled “*Spatio Temporal Computing & Design Issues*,” “*Modeling & Learning Algorithms*,” “*Theory & Bio-Inspired Algorithms of Cellular Neural Networks*.”

Ronald Tetzlaff and Marco Gilli served as the track chairs and the review committee consists of Paolo Arena, Mauro Forti, Marco Gilli, Maciej Ogorzalek, Ari Paasio, Csaba Rekeczky, Peter Szolgay, and Ronald Tetzlaff.

**European Conference on Circuit Theory and Design (ECCTD'07), Seville, Spain.**

The conference was attended by many members of the Committee, who also joined the Scientific and the Organizing Committee. It traditionally includes some sessions entirely devoted to CNNs. In 2007, CNN papers were grouped in four session, mainly covering CNN implementation and application, with specific reference to biomedical signal processing. They were entitled: “*CNN Implementations*,” “*Digital CNN Applications*,” “*CNN Algorithms*,” “*Emerging Trends in Biomedical Signal Processing*.”

Piotr Dudek and Bertran Shi served as Track Chair for the Track “*Gigascale Systems: Neural Networks, CNNs and Fuzzy Systems.*” Marco Gilli served for the Track “*Nonlinear Circuits.*”

### **International Joint Conference on Neural Networks (IJCNN’07), Orlando, USA.**

Some Committee members attended the conference and one session entitled “Neurodynamics, Complex systems, and Chaos” were mainly composed of CNN papers.

## ***Technical Activities of Committee Members***

### ***Bertran Shi***

- Distinguished Lecture on “*CNN Hardware for Implementing Early Visual Processing,*” Tokushima University, Japan.
- Invited Lecture on “*Neuromorphic hardware models of visual cortical neuron populations,*” GCOE Global Seminar on Advances in Neuroengineering, Osaka, Japan.
- Invited Lecture on “*Building active vision systems with POPCORN: hardware simulating POPulations of CORtical Neuron models,*” Workshop on the active vision of humanoid robots, organized by Yiannis Aloimonos and Giulio Sandini as part of the IEEE-RAS 7th International Conference on Humanoid Robots, Pittsburgh, PA, USA.
- Invited Lectures on “*Designing Populations of Image Motion Selective Cellular Neural Networks*” International Workshop on Nonlinear Dynamics of Electronic Systems, Tokushima, Japan.

### ***Angela Slavova***

- Organization of a special session on CNNs, included in the Conference of the Bulgarian Section of SIAM (Society for Industrial and Applied Mathematics)

### ***Bing Sheu***

- Editor of Editorial Board of Proceedings of IEEE (2005 - 2007, and 2008 - 2010)

### ***Piotr Dudek***

- Member of the Scientific/Technical/Program Committee of the following International Conferences (which include CNN as a topic): International Conference on Sensing Technology (ICST 2007), National Conference on Information Technologies (TI 2007, Poland).

- Grand Challenges in Microelectronic Design in the UK: coordinator of the “*Silicon meets Life*” group.

**Marco Gilli**

- Editor of the International Journal of Circuit Theory and Applications, which has published some significant regular papers on CNNs and regularly organized a special issue on CNNs (the last one was in 2006, the next one is going to be published in 2008). Some Committee members serves in the Editorial Board of the Journal.