



CHAIR

Ronald Tetzlaff
Institute of Applied Physics
Johann Wolfgang Goethe University
Max-von-Laue-Str. 1
60438 Frankfurt/Main, Germany
email: R.Tetzlaff@iap.uni-frankfurt.de

PAST CHAIR

Bertram Shi
Department of Electrical and Electronic Engr.
Hong Kong Univ. of Science and Technology
Clear Water Bay
Kowloon, HONG KONG SAR
email: eebert@ee.ust.hk

SECRETARY

Marco Gilli
Dept. Electronics
Politecnico di Torino
Corso Duca degli Abruzzi 24
I-10129, Torino, Italy
e-mail: marco.gilli@polito.it

2006 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

10th IEEE International Workshop on Cellular Neural Networks and Their Applications (CNNA 2006) in Istanbul, Turkey

With exception of the CNNA 2005 in Hsinchu, Taiwan this workshop followed a biennial series of workshops which are organized from members of the committee. The CNNA 2006 will be held in Istanbul between 28-30 August 2006. Traditionally, this conference features a keynote talk, several plenary talks, a live demo session, and panel discussions. The CNNA will be chaired by Prof. Vedat Tavsanoğlu. The technical program will be organized by Prof. Sabri Arik.

RISP International Workshop on Nonlinear Circuits and Signal Processing (NCSP 2006)

The technical committee sponsored the NCSP 2006, which was held in Honolulu, Hawaii between 3-5 March 2006. CNNAC TC members Mamoru Tanaka, Akio Ushida, and Yoshifumi Nishio served in the technical program committee.

International Symposium on Circuits and Systems (ISCAS 2006) in Kos, Greece

The committee organized the review of 32 submitted papers finally leading to 4 sessions for the track *Cellular Neural Networks and Array Computing*. 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. Chin-Teng Lin was chair of the track *Nano-Giga Technology* and a technical program committee member.

Especially, the committee was involved in the organization of special sessions and of a tutorial. While Lambert Spaanenburg and Ulrich Rueckert organized the session entitled *Bio-Inspired Digital Systems-on-Chip*, the session *Bio-Inspired Networks & Biomedical Applications* was organized by Ronald Tetzlaff and Marco Gilli. Furthermore, Marco Gilli, Csaba Rekeczky, and Bert Shi organized a CNN Tutorial but unfortunately it was cancelled due to lack of registration.

44th IEEE Conference on Decision and Control and European Control Conference

Paolo Arena organized a special session entitled *Nonlinear Dynamics, Perception and Bio-inspired System Control*. This session aimed at presenting the latest results in the circuits and systems used for the generation and control of nonlinear dynamics for perception purposes. Six papers were presented whereas two of them are authored by members of the committee and are characterized by a high level of multidisciplinary. About 60 active participating people attend to the session.

International Joint Conference on Neural Networks (IJCNN 2006) in Vancouver, Canada

Tamas Roska, Csaba Rekeczky, and Bert Shi organized a special session entitled *Cellular Sensory Wave Computers*. The committee member Paolo Arena, Marco Gilli, Chin-Teng Lin, Ronald Tetzlaff, Angel Rodríguez-Vázquez, and Ákos Zarándy contribute to this session which will be held in July 2006.

International Congress of Mathematics, Cyprus
organized by Mathematical Society of South-Eastern Europe (MASSEE)

The member Angela Slavova and Valeri Mladenov organized a special session entitled *Cellular Neural Networks: Complexity and Computing* at the Masee congress which will be held between May 31 – June 4, 2006.

The 12th International Conference on Neural Information Processing (ICONIP 2005), APPNA in Taipei, Taiwan

The member Chin-Teng Lin was a program co-chair of this conference, which was held in October, 2005 in Taipei, Taiwan.

IEEE International Conference on Systems, Man, and Cybernetics (SMC 2006) in Taipei, Taiwan

Chin-Teng Lin is the Program Chair of this conference, which will be held in October, 2006 in Taipei, Taiwan. The member L.O. Chua will give a plenary talk entitled *What's new in Wolfram's new kind of science?*

Books and Special Issues in Journals

The second issue of the IEEE CAS MAGAZINE was devoted to CNN technology hosting three key papers on CNNs. They are entitled: *Cellular wave computers for brain-like spatial-temporal sensory computing* by T.Roska; *New horizon for CNN: with fuzzy paradigms for multimedia* by Chin-Teng Lin, Chun-Lung Chang, and Jen-Feng Chung; *Bi-i: a standalone ultra high speed cellular vision system* by Akos Zarándy and Csaba Rekeczky.

The technical committee members Tamas Roska, Paolo Arena, and Csaba Rekeczky are the guest editors of a two-part special issue on Cellular Wave Computing and CNN Technology *Wave algorithms, Bio-relevance and Applications* in the International Journal on Circuit Theory and Applications. The second part is scheduled to appear in summer 2006.

A new, paperback edition of the CNN textbook: L.O.Chua and T. Roska , Cellular Neural Networks and Visual Computing, Cambridge University Press came out in October 2005, ISBN 0521018633.

Short Courses

The member Luigi Fortuna, Angela Slavova, and Valeri Mladenov are organizing CIME School (International Mathematical Summer Center) on Complex Systems *Analysis via Cellular Nonlinear Networks* in Italy, 2007.

Technical activities of committee members

Bing Sheu

(A) Conferences where TC Members were involved in 2005:

Competition and Sustainable Strength of High-Tech Companies in U.S. and Worldwide, Panel at VLSI Design & CAD Conference, Hua-Lien City, Taiwan, Aug. 2005.

(B) Conferences where TC Members are involved in 2006:

21st Century Success Philosophy. Search and Research, Invited Talk at MediaTek Workshop, Hsinchu City, Taiwan, Jan. 2006.

High-Tech Engineering Success in 21st Century, Plenary Speaker, 6th International Caribbean Conference on Devices, Circuits and Systems, April 2006, Cozumel, Mexico.

(C) Editorial Services:

Editor on the Editorial Board, Proceedings of the IEEE, 2005 -2007.

Co-Editor, *Views on Modern Education in 21st Century*, NCTU Press, Apr. 2006.

(D) Other Services:

Chair of Constitution & Bylaws Committee, CAS Society, till Aug. 2005.

Chair of Van Valkenburg Award Subcommittee, CAS Society, 2006.

Chin-Teng Lin

Deputy Editor in Chief, IEEE Transactions on Circuits and Systems Part I (2006-2007)

Member of Board of Governors (2005-2008), IEEE Circuits and Systems Society

Chairman of IEEE CASS *Neural Systems and Applications* technical committee (2005-2006)