2006 Annual Report (May 2005 – April 2006)
Nanoelectronics and Gigascale Systems (Nano-Giga) Technical Committee
IEEE Circuits and Systems Society

Past Chairman: Prof. Chin-Teng (CT) Lin
Chairman: Prof. Wai-Chi Fang
Secretary: Prof. Salvatore Baglio

Report submitted by Dr. Wai-Chi Fang, Nano-Giga TC Chairman
Date: May 10, 2006

1. Annual Meetings of the Nano-Giga Technical Committee

(1.1) The last Nano-Giga TC annual meeting was held on May 26, 2005 (Thursday, 1:10 pm –
2:00 pm)
during the ISCAS2005, Kobe, Japan, May 23-26, 2005.
(1.2) The next Nano-Giga TC annual meeting is scheduled as a side meeting of the ISCAS2006
on Wednesday May 24, 2006 from 13:20-14:30 at Kos International Convention Center (Room
2.3), Island of Kos, Greece.

2. Honors and Awards

(2.1) Elected IEEE Fellow 2005 (Bin-Da Liu, Andreas Andreou)
(2.2) Best Paper Award for IEEE/ACM Great Lakes Symposium on VLSI 2005 (Eby Friedman)

3. IEEE Office Held and Services

(3.1) Wai-Chi Fang, Member of Board of Governor (2004-2006), IEEE Circuits and Systems
Society
(3.2) Wai-Chi Fang, Member of IEEE Systems Council AdCom
(3.3) Chairman of Liaison and Transnational Committee, IEEE Systems Council
 (3.4) Wai-Chi Fang, Chairman of IEEE CASS Nanoelectronics & Gigascale Systems Technical
Committee (May 2005- May 2007)
(3.5) Wai-Chi Fang, Chairman of IEEE CASS Multimedia Systems and Applications Technical
Committee (Jan. 2004- Dec. 2005)
(3.6) Bing Sheu, 2005 Chair of Constitution & Bylaws Committee for CAS Society
(3.7) Bing Sheu, Chair of Van Valkenburg Award Subcommittee, CAS Society, 2006
(3.8) Eby Friedman, 2004-6 BoG (Board of Governor) Member, IEEE CAS Society
(3.9) Eby Friedman, 2005 Nominations Committee member, IEEE CAS Society
(3.10) Bin-Da Liu, 2005-06 Vice-President, Region 10, IEEE CAS Society
(3.11) C.T. Lin, 2005-2008 BoG (Board of Governor) Member, IEEE CAS Society
(3.12) C. T. Lin, IEEE Gustav R. Kirchhoff Award Committee, 2004-2005
(3.13) C.T. Lin, IEEE CASS representative on the Nanotechnology Council, 2005-2006
(3.14) C.T. Lin, Chairman of IEEE CASS Neural Systems and Applications Technical Committee
(2005-2006)
 (3.15) Orly Yadid-Pecht, Past Chair of the IEEE CAS Technical Sensors Committee (2004-2005)
(3.16) Orly Yadid-Pecht, IEEE Sensors Council – CAS Representative
(3.17) Orly Yadid-Pecht, Member of the IEEE CAS Analog Signal Processing, Neural Networks,
Biocas and Sensors Technical Committees (1996-present).

4. Conferences Activities in 2005

(4.1) Bing Sheu, "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.
(4.2) 2005 IEEE International Symposium on VLSI Design, Automation & Test, Hsinchu, Taiwan, April 27-29, 2005 (Prof. Bin-Da Liu, Technical Program Committee member)
(4.3) 2005 IEEE International Workshop on Design and Test of Defect-Tolerant Nanoscale Architectures (Sorin Cotofana, TPC member)
(4.4) The 9th IEEE International Workshop on Cellular Neural Networks and their Applications (CNNA 2005), Hsinchu, Taiwan, May 28-30, 2005 (C. T. Lin, Technical Program Co-Chair).
(4.5) The 12th International Conference on Neural Information Processing (ICONIP 2005), Taipei, Taiwan, Oct. 30 - Nov. 2, 2005 (C. T. Lin, Program Committee Chair).
(4.6) 2005 IEEE International Conference on Fuzzy Systems, Reno, Nevada, May, 22-25, 2005 (C. T. Lin, Program Committee Member).
(4.7) 2005 International Conference on Systems, Man and Cybernetics (SMC 2005), Hawaii, USA, October 10-12, 2005 (C. T. Lin, Program Committee Member).
(4.8) IEEE ASIC/SoC Conference, 2005 (Eby Friedman, TPC Member)
(4.9) IEEE/ACM Great Lakes Symposium on VLSI, 2005 (Eby Friedman, TPC member)
(4.10) IEEE International Workshop on Design and Implementation of Signal Processing Systems, 2005, (Eby Friedman, TPC Member)
(4.11) International Workshop on Power and Timing Modeling, Optimization and Simulation (PATMOS), 2005 (Eby Friedman, TPC Member)
(4.12) IEEE International Conference on Computer Design, 2005 (Eby Friedman, TPC Member)
(4.13) The 9th International Workshop on Cellular Neural Networks and Its Applications, May 28-30, 2005, Hsinchu, Taiwan (Bin-Da Liu, Meeting Chair)
(4.14) 2005 IEEE International Workshop on VLSI Design and Video Technology, May 28-31, 2005, Suzhou, China (Bin-Da Liu, Technical Program Committee Co-Chair)
(4.15) 2005 International Workshop on Intelligent Information Hiding and Multimedia Signal Processing, Sept. 14-16, 2005, Melbourne, Australia. (Wai-Chi Fang, Program Committee Co-Chiar)
(4.16) SiPS 2005 to be held in Nov. 2005, Athens, Greece (Thanos Stouraitis, General Chair)
(4.18) Bing Sheu, "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.
(4.17) 2005 IEEE International Symposium on Circuits and Systems, Kobe, Japan, May 24-26, 2005 (Andreas Andreou. Nano-Giga Systems Track Chair, RCM Member, Session Chair)
(4.18) 2005 IEEE International Symposium on Circuits and Systems (ISCAS 2005), Kobe, Japan, May 23-26, 2005 (Wai-Chi Fang, Technical Program Committee member, Track Chair of the Multimedia Systems and Application, Session Chair, RCM Member)

5. Conference Activities in 2006

(5.1) Thanos Stouraitis, General Chair, 2006 IEEE International Symposium on Circuits and Systems (ISCAS 2006), Kos, Greece
(5.2) General Co-Chair, 2006 International Conference on Innovative Computing, Control and Information Processing, Peking, China, Aug.. 10-11, 2006.
(5.3) General Chair, International Workshop on Intelligent Information Hiding and Multimedia Signal Processing, Pasadena Convention Center, Pasadena, CA, USA, Dec.. 10-11, 2006.
(5.4) Wai-Chi Fang, Technical Program Co-Chair, 2006 IEEE Workshop on Life Science Systems and Applications, Maryland, USA, July 6-7, 2006.

(5.5) Wai-Chi Fang, Track Chair of Nanoelectronics and Gigascale Systems & Technical Program Committee Member, IEEE International Symposium on Circuits and Systems, Island of Kos, Greece, May 21-24, 2006
(5.6) Wai-Chi Fang, Track Chair of Multimedia Hardware, Architecture, and Systems & Technical Program Committee Member, IEEE International Conference on Multimedia and Expo (ICME'06), Toronto, Canada, July 9-12, 2006
(5.7) Bin-Da Liu, Session Chair of ISCAS 2006
(5.8) Bin-Da Liu, RCM Member, MWSCAS, Aug. 6-9, 2006, San Juan, Puerto Rico
(5.9) Bin-Da Liu, TPC Member, IEEE SMC, Oct. 8-11, 2006, Taipei, Taiwan
(5.10) Bin-Da Liu, TPC Member, IEEE TENCON (Nov. 14-17, 2006, Hong Kong)
(5.11) Bing Sheu, "21st Century Success Philosophy. Search and Research," Invited Talk at MediaTek Workshop, Hsin-Chu City, Taiwan, Jan. 2006.
(5.12) Bing Sheu, "High-Tech Engineering Success in 21st Century," Plenary Speaker, 6th International Caribbean Conference on Devices, Circuits and Systems, April 2006, Cozumel, Mexico.
(5.13) Orly Yadid-Pecht, Member of the SPIE Solid State Sensor Arrays international conference program committee (1997-present).
(5.14) Orly Yadid-Pecht, Member of the Technical Committee for the IEEE workshop on CCDs and Advanced Image Sensors (1998-present).

6. Editorial Services:

(6.1) Wai-Chi Fang, Member of the Advisory Board, IEEE Systems Journal
(6.2) Wai-Chi Fang, "Intelligent Multimedia Hiding and Processing," Springer-Verlag, February, 2006 (Co-Editor)
(6.3) Bing Sheu, Editor for Editorial Board (6005/06/07), Proceedings of the IEEE 2005-2007
(6.4) Bing Sheu, Section Editor of the 2nd Edition of "VLSI Handbook," CRC Press & IEEE Press (Wai-Kai Chen as Handbook, Editor-in-Chief)
(6.5) Bing Sheu, Editor for Globalization Leadership Column at IEEE Circuits & Devices Magazine
(6.6) Bing Sheu, Editor for Nano-Giga Systems Column at IEEE Circuits & Devices Magazine,
(6.7) Bing Sheu, Co-Editor, "Views on Modern Education in 21st Century," Book by NCTU Press, May 2006.
(6.8) Eby Friedman, Journal of Circuits, Systems, and Computers (US Regional Editor)
(6.9) Eby Friedman, AE of the Proceedings of the IEEE, ,
(6.10) Eby Friedman, AE of the Journal of VLSI Signal Processing Systems for Signal, Image, and Video Technology
(6.11) Eby Friedman, AE of the Microelectronics Journal
(6.12) Eby Friedman, AE of the Journal of Low Power Electronics
(6.13) Eby Friedman, Steering Committee Chair of the IEEE Transactions on Very Large Scale Integration (VLSI) Systems
(6.14) C.T. Lin, AE of the IEEE TCAS-II
(6.15) C.T. Lin, AE of the IEEE Trans. on Systems, Man, and Cybernetics - Parts B
(6.16) Chin-Teng Lin, Deputy EIC of the IEEE Transactions on Circuits and Systems Part I (2006-2007)
(6.17) Bin-Da Liu, AE of the IEEE TCAS-I
(6.18) Bin-Da Liu, AE of the IEEE Circuits and Devices Magazine
(6.19) Bin-Da Liu, AE of the IEEE Trans. on Very Large Scale Integration (VLSI) Systems
(6.20) Thanos Stouraitis, Regional Editor-Europe of the Journal of Circuits, Systems, and Computers

(6.21) Orly Yadid-Pecht, Deputy Editor in Chief of the IEEE Trans. on Circuits and Systems I, 2004-2006

7. Keynote and Invited Talks

(7.1) Bing Sheu, "21st Century Success Philosophy. Search and Research," Invited Talk at MediaTek Workshop, Hsin-Chu City, Taiwan, Jan. 2006.
(7.2) Bing Sheu, "High-Tech Engineering Success in 21st Century," Plenary Speaker, 6th International Caribbean Conference on Devices, Circuits and Systems, April 2006, Cozumel, Mexico.
(7.3) Wai-Chi Fang, Plenary Lecture "Embedded Information Processing and Wireless Communication Systems-on-Chip for Intelligent Sensor Networks," International Workshop on Intelligent Information Hiding and Multimedia Signal Processing, Hilton Hotel, Melbourne, Australia, Nov. 11, 2005
(7.4) Pedro Julian, "A 3D Integrated Circuit CMOS Imager: Architecture and Circuit Realization", Hungarian Academy of Sciences, Budapest, Hungary, August 3rd, 2005
(7.5) Orly Yadid-Pecht , "CMOS Imagers – following Biology", Invited lecture as IEEE Distinguished Lecturer, Hungarian Institute of Science, Budapest, Hungary, October 2005
(7.6) Orly Yadid-Pecht , "CMOS Imagers – from Pixels to Systems", Invited lecture as IEEE Distingished Lecturer, National Microelectronics Center, CNM-CSIC, Spain, December 2005.

8. Distinguished Lecturer in 2005-2006
(8.1) C.T. Lin, "Biologically Inspired Information Processing Techniques and their Applications".
(8.2) Orly Yadid-Pecht, 2004-2005 IEEE Circuits and Systems Society - **Distinguished Lecturer**

9. Status Report on ISCAS2006 (by Wai-Chi Fang, ISCAS 2006 Nano-Giga Track Chair)

The Nano-Giga TC actively participated in the technical program committee of the ISCAS 2006. Prof. Wai-Chi Fang and Prof. Andreas Andreou serve as Technical Program Committee (TPC) member to help to organize the ISCAS 2006 TRACK 11 Nanoelectronics and Gigascale Systems that includes nine topics: 11.1 Nano-Circuits and Nano-Architectures, 11.2 Nanoelectronics, Molecular Electronics, 11.3 Nanosensors, Actuators, 11.4 Nano-Optoelectronics, 11.5 Nano-Robotics, Manufacturing Issues, Reliability, 11.6 Modeling and Simulation, 11.7 Nano-Bio Electronic Fusion, 11.8 3D Integration, 11.9 Other Areas in NANO.

Prof. Volkan Kursun, Prof. Salvatore Baglio, Prof. Wai-Chi Fang, Prof. Pamela Ann Abshire, Prof. Malgorzata Chrzanowska-Jeske, Prof. Hsiang-Cheh Huang, Prof. Andreas G. Andreou, Prof. Pedro M. Juli and Prof. Rong-Jian Chen served as Review Committee Members for the track. Prof. Ming-Dou Ker is endorsed by our Nano-Giga TC to give a tutorial entitled "ESD Protection Design for Nanoelectronics in CMOS Technology." For the record, we are acknowledging with gratitude their dedication, diligence, fairness, competence and promptness in completing the review process and providing the ISCAS technical program supports.

A total of 29 papers were submitted to ISCAS2005 from our track, compared to 25 papers submitted to ISCAS2005 last year. Twenty papers are selected and organized in three oral sessions and one poster session: 1) Lecture Session: Nanoelectronics & Nano-Robotics, 2) Lecture Session: 3-Dimensional Integrated Sensing & Computing Systems, 3) Lecture Session: Nanoelectronic Devices & Circuits, and 4) Poster Session: Nanoelectronics & Gigasale Systems.

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