IEEE Technical Committee on Nonlinear Circuits and Systems

Annual Report to the IEEE Circuits and Systems Society 2013

During the period May 2012-2013, members of the Nonlinear Circuits and Systems Technical Committee (TC-NCAS) co-edited 6 books, wrote 5 book chapters, (co-)edited 3 special issues, organized/took part in the organization of 15 conferences and workshops, organized 14 special sessions, and delivered 21 invited lectures in major conferences and workshops related to Circuits and Systems.

Books written/edited

1. A. Adamatzky and G. R. Chen (eds.), *Chaos, CNN, Memristors and Beyond*, World Scientific, January 2013.
2. G. R. Chen, X. F. Wang and X. Li, *Introduction to Complex Networks: Models, Structures and Dynamics*, High Education Press, Beijing, China, 2012.
3. H. Chen, J. Feng and C.K. Tse, *Blind Source Separation and Signal Reconstruction in Sensor Networks*, Beijing: Publishing House of Electronics Industry, 2012.
4. H.H.C. Iu and A.L. Fitch, *Development of Memristor Based Circuits*, Nonlinear Science Series A, Vol. 82, World Scientific, Singapore, 2013.
5. S.C. Tan, Y.M. Lai and C.K. Tse, *Sliding Mode Control of Switching Power Converters: Techniques and Implementation*, Boca Raton: CRC Press, 2012.
6. S. Yu, Jinhu Lü, and G. Chen, *Chaotification of Dynamical Systems and Its Applications*, Science Press, Beijing, China, 2013.

Book chapters written

1. F. Corinto, A. Ascoli, and M. Gilli, "Memristor models for pattern recognition systems," *Springer Series in Cognitive and Neural Systems*, Vol. 4, Kozma, Robert; Pino, Robinson E.; Pazienza, Giovanni E. (Eds.), 2012.

2. A.L. Fitch, H.H.C. Iu and C.K. Tse, "Chapter 44: Hardware memristor emulators," *Chaos, CNN, Memristors and Beyond*, Edited by A. Adamatzky and G. Chen, Singapore: World Scientific, pp. 540-548, 2013.

3. T. Freeborn, B. Maundy and A. S. Elwakil, "Chapter 11: Fractional Step Analog Filter Design," *Analog/RF and Mixed Signal Circuit Systematic Design*, edited by Mourad Fakhfakh, Esteban Tlelo-Cuautle, Rafael Castro-Lopez, pp. 243-267, Springer, 2013.

4. Shujun Li, "Chapter 14: Perceptual Encryption of Digital Images and Videos," *Perceptual Digital Imaging: Methods and Applications*, pp. 431-468, edited by Rastislav Lukac, CRC LLC, October 2012.

5. S.C. Tan and C.K. Tse, "Chapter 1: Converter Topologies," *Dynamics and Control of Switched Electronic Systems*, Edited by F. Vasca and L. Iannelli, New York: Springer, pp. 3-24, 2012.

Special issues edited

1. Mario di Bernardo, *Special Issue on Evolving Dynamical Networks, Physica D*, to be published in 2013.
2. S. Elwakil (Corresponding Guest Editor), Luigi Fortuna (Guest Editor), Ron Chen (Guest Editor) and Brent Maundy (Guest Editor), *Special Issue on Fractional-Order Circuits and Systems, IEEE Journal on Emerging and Selected Topics in Circuits and Systems*, scheduled for publication in September 2013.
3. Shujun Li and Edgar Weippl, *Information Security Technical Report*, Special issue for selected papers from ARES 2012 (7th International Conference on Availability, Reliability and Security), Elsevier, April 2013.

Conferences/workshops organized

1. Mario di Bernardo, International Workshop on Piecewise Smooth Dynamical Systems to be held at the University of Urbino, Italy, September 2013.
2. G. Ron Chen, The 5th International Workshop on Chaos-Fractals Theories and Applications, October 2012, Dalian, China.
3. G. Ron Chen, The 8th Chinese Conference on Complex Networks, October 2012, Nanjing, China .
4. G. Ron Chen, 2012 International Workshop on Complex Systems and Networks, September 2012, Minneapolis, USA.
5. G. Ron Chen, 2012 Nostradamus Conference, September 2012, Ostrava, Czech Republic.
6. F. Corinto, 3rd Memristor and Memristive Symposium, Turin, Italy, August 2012.
7. Y. Nishio (Publication Co-Chair), International Symposium on Circuits and Systems (ISCAS'12), Seoul, Korea, May 20-23, 2012.
8. Y. Nishio (General Co-Chair) and Y. Uwate (Secretary), EEE CASS Shanghai and Shikoku Chapters Joint Workshop on Nonlinear Circuits and Systems (SSJW'12), Shanghai, China, November 2012.
9. Y. Nishio (Technical Program Co-Chair), Asia Pacific Conference on Circuits and Systems (APCCAS'12), Kaohsiung, Taiwan, December 2012.
10. Hiroo Sekiya (General Secretary) and Y. Uwate (Publicity Chair), RISP International Workshop on Nonlinear Circuits, Communications and Signal Processing (NCSP'13), Hawaii, U.S.A, March 2013.
11. Hiroo Sekiya (Finance Secretary) of International Symposium on Nonlinear Theory and its Applications (NOLTA'12), Palma, Majorca, Spain, October 2012.
12. Hiroo Sekiya, Nonlinear Phenomena in Power Electronics Track Chair, The 10th IEEE International Conference on Power Electronics and Drive System (PEDS 2013).
13. Marco Storace, Explicit MPC: from specifications to circuit implementations, Noordwijkerhout, The Netherlands, August 2012.
14. Lj. Trajkovic, International Workshop on Complex Systems and Networks (IWCSN 2012), Institute for Mathematics and its Applications, Minneapolis, USA, Sept. 2012.

15. Lj. Trajkovic, Coast to Coast Seminars at the IRMACS, Spring 2012: Complex Networks in Science and Technology, Feb. 2012.

Special sessions organized

1. E. Alarcon, O. Feely, H. Sekiya, A. Aroudi, and Y. Tanji, Special session on Analysis, Design and control of Power Electronic Circuits from a Nonlinear Circuit Theory Perspective, International Symposium on Nonlinear Theory and its Applications (NOLTA'12), Palma, Majorca, Spain, October 2012.
2. Hideki Asai, Special session on Advanced Modeling, Simulation and Design of SI/PI/EMI, APEMC2012 (Asia-Pacific Symposium on Electromagnetic Compatibility 2012), Singapore, May 2012.
3. Hideki Asai, Special session on Advanced modeling and simulation techniques for power/signal integrity in 3D design, ASP-DAC2013 (Asia and South Pacific Design Automation Conference), Yokohama, Jan. 2013.
4. Mario di Bernardo, Minisymposia on Complex Networks at the SIAM Conference on Applied Dynamical Systems, Utah, USA, May 2013.
5. Elena Blokhina, Abdelali El Aroudi, Dimitri Galayko, Special session on Nonlinearity in Energy Harvesters - Analysis and Applications, ISCAS 2013, Beijing, China, May 2013.
6. G. Ron Chen, The 5th Shanghai International Symposium on Nonlinear Sciences and Applications, China, June – July 2012.
7. G. Ron Chen, The 6th Int. Conference on Recent Advances in Applied Dynamical Systems, Guangzhou, China, June 2012.
8. G. Ron Chen, Special Session on Complex Systems and Networks, IEEE International Symposium on Circuits and Systems, Seoul, Korea, May 2012.
9. G. Ron Chen, Special Session on Bifurcation analysis and chaos control, IEEE International Symposium on Circuits and Systems, Seoul, Korea, May 2012.
10. F. Corinto, Special session on Memristor-based neural circuitry, IEEE International Symposium on Circuits and Systems, Beijing, China, May, 2013.
11. H. Sekiya and H. Funato, Special session on Contactless power transfer and its related topics, PEDS 2013.
12. Marco Storace, Special Session on Digital circuits for embedded control and security, 19th IEEE International Conference on Electronics, Circuits, and Systems, Seville, Spain, December 2012.
13. Lj. Trajkovic, Special Session on Advances in Complex Networks: Theories and Applications, ISCAS 2013, Beijing, China, May 2013.
14. Y. Uwate, Special Session on Coupled Oscillatory Circuits and Networks, International Symposium on Nonlinear Theory and its Applications (NOLTA'12), Palma, Majorca, Spain, October 2012.

Invited lectures delivered.

1. Hideki Asai, Fundamentals of PI/SI/EMI simulation techniques, EMC fundamental workshop organized by IEICE, Tokyo, June 2012.

2. Hideki Asai, Fundamentals of circuit simulation techniques, SSSS2012 (Solid-State Systems Symposium 2012), Ho Chi Minh, Aug. 2012.
3. Hideki Asai, Advanced PI/SI/EMI simulation techniques based on leapfrog scheme, EMC Europe2012, Rome, Sept. 2012.
4. E. Blokhina. Electrostatic vibration energy harvesters: analysis from the perspective of piecewise-smooth dynamical systems, University of Limerick, Ireland.
5. F. Corinto, Tutorial on Memristor Technology in Neuromorphic Circuits, ICECS 2012, Sevilla, Dec. 2012.
6. Mario di Bernardo, Invited PhD course on Complex Networks at Universitat Politecnica de Catalunya, Barcelona, Spain, September 2012.
7. Mario di Bernardo, Invited Plenary Talk on Synchronization and Control of Complex Networks at ET2013, Padoa, Italy, June 2013
8. G. R. Chen, Searching for undirected networks with best synchronizability, Keynote Speech, 19th International Conference on Neural Information Processing, Doha, Qatar, Nov. 2012.
9. G. R. Chen, Searching for networks with best synchronizability, Invited Talk, Int. Workshop on Complex Systems and Networks, Univ. of Minnesota, Minneapolis, USA, Sept. 2012.
10. F. Corinto, Invited speaker at IRUN Winter School on Nonlinear Dynamics in Cellular Wave Computing, Architectures for Nanoscale Hybrid Computing Systems, Budapest, January 2013.
11. F.C.M. Lau, Chaos Communications: The Past, The Present and The Future, Invited Plenary Talk at The International Conference on Advanced Technologies for Communications, Hanoi, Vietnam, Oct. 2012.
12. Jinhu Lü, Multi-Agent Systems: Nexus of All Realities in Systems and Control, The Fifth International Joint Conference on Computational Sciences and Optimization, June 2012, Harbin, China (Plenary Talk).
13. Jinhu Lü, Multi-Agent Systems: Modeling, Analysis and Control, The fifth Shanghai International Symposium on Nonlinear Sciences and Applications, June - July 2012, Shanghai and Three-Gorge, China (Plenary Talk).
14. Jinhu Lü, Multi-Agent Systems: Dynamics and Control, The 6th National Youth Workshop on Dynamics and Control, July 2012, Shanghai, China (Plenary Talk).
15. Jinhu Lü, Recent Advances in Evolutionary Dynamics of Structured Populations 2012, Workshop on Network Transmission Dynamics, Nov. - Dec. 2012, Shanghai, China (Plenary Talk).
16. Hiroo Sekiya, Inductor designs using Ap and Kg methods, IEEE Industrial Electronics Society/Power Electronics Society and IEEE Industry Applications Society Taipei Chapter, 2012 Lecture Series, National Tsing Hua University, Taiwan, Dec. 2012
17. Hiroo Sekiya, High-efficiency power amplifiers and their design procedures, IEEE CASS (Circuits and Systems Society) Networking CASS Chapters in Asia-Pacific, Ajou University, Korea, Nov. 2012.

18. Lj. Trajkovic, "Machine learning models for classification of BGP anomalies," South China University of Technology, Guangzhou, China, July 2012.
19. Lj. Trajkovic, Spectral analysis and dynamical behavior of complex networks, Computational Math Day 2012, IRMACS, Simon Fraser University, Aug. 2012.
20. Lj. Trajkovic, Machine learning models for feature selection and classification of traffic anomalies, International Workshop on Complex Systems and Networks, Minneapolis, USA, Sept. 2012.
21. Lj. Trajkovic, Understanding communication networks, APEC Smart City Industrial Technology Cooperation Forum, Changzhou, China, Dec. 2012.

TC-NCAS Officers, term ending at ISCAS 2013

    Chair: Francis Lau, encmlau at polyu.edu.hk

    Past Chair: Orla Feely, orla.feely at icd.ie

    Chair Elect: Hiroo Sekiya, sekiya at faculty.chiba-u.jp

    Secretary: Jinhu Lü, jhlu at iss.ac.cn

    Track Chair for NCAS track at ISCAS 2013: Sergio Callegari, scallegari at arces.unibo.it

    Prepared by Francis Lau, May 2013