2011 Annual report of IEEE CAS CNNAC TC

Activities of TC members during June 2010-May 2011:

Short Courses, Plenary Sessions, Keynote Speakers, Invited Lectures:

1. F. Colinto: Organization of a One-day Workshop supported by IEEE CAS: "Memristor: From Theory to Applications" - held at the Politecnico di Torino (Italy), December 2011, Member of the International Programme Committee of the 3rd World Congress on Nature and Biologically Inspired Computing, held at the Salamanca University, Spain - October 2011
2. A. Slavova: Wave propagation of Cellular Neural Network model of tsunamis – invited lecture, University of Ferrara, May 2011, Mathematical Models of Risk Management and their CNN Realization – invited lecture, Technical University of Lisbon, September 2011, Numerical schemes for solving PDEs from mathematical finance based on new hybrid CNN method- invited lecture, University of Bologna, October 2011
3. P. Dudek: “Example Talk Title”, invited seminar at The University of Madchester, December 2011., “Another Example Title”, keynote talk at 3rd International Workshop on Systems Way Better Than the Ones We Have Already, Grantchester, 31 December 2011
4. R. Tetzlaff: Chair of the 5th International Workshop on Seizure Prediction (IWSP5). T19 – 23 September 2011, TU Dresden, Germany.
5. C. W. Wu: August 3-12, 2011: University of Minnesota, Minneapolis, MN, USA. Industry mentor at Mathematical Modeling Workshop. Mentor a team of graduate students in solving an industrial research problem.

Board memberships in Conferences:

6. P. Szolgay: ECCTD2011, CNNA2012, NOLTA2012
7. A. Slavova: . Conference BGSIAM 2011, December 21-22, 2011, Sofia – chair of the program committee
8. P.Dudek: General Chair of the IEEE International Conference on Great Things to Come ICGTC 2011, Member of the Technical Committee for the IEEE ICABC conference (2004-present), Member of the Programme Committee for the IEEE ICDEF conference (2005-present).
9. R. Tetzlaff: since 2002: Scientific Committee of IEEE International Workshop on Cellular Neural Networks and their Applications (CNNA), since 2009:Member of Scientific Committee NDES
10. 2011:Chair of the 5th International Workshop on Seizure Prediction (IWSP5), Member of Commission C (Signals and Systems Theory) of the International Union of Radio Science (U.R.S.I.)

Editorial board:

1. F. Colinto :Other IEEE Service and Professional Activities
2. P. Szolgay: Int. J on Circuit Theory and Application , associate editor
3. A. Slavova: International Journal of Neural Networks and Applications – Editor-in-chief
4. P. Dudek: Associate Editor of IEEE Transactions on Neuromorphic Circuits and Systems (2010 – present), Review Editor of Frontiers in Sensory Systems (2008 – 2011)
5. R. Tetzlaff: since 2007: Editorial Board of the International Journal of Circuit Theory and Applications since 2008: Editorial Board of the AEÜ – International Journal of Electronics and Communications
6. C.W. Wu: Guest Associate Editor, International Journal of Bifurcation and Chaos, 2010-present, Associate Editor, IEICE NOLTA journal, 2009-present

Other IEEE Service and Professional Activities:

1. A. Slavova: Chair of the Bulgarian Section of SIAM (Society of Industrial and Applied Mathematics), Chair of Commission K of National URSI Committee
2. P. Dudek: IEEE Sensors Council, Board Member (2008-present), Scientific Advisor to UK government (2010-present)
3. C.W. Wu: Board of Governors, IEEE Circuits and Systems Society, 2010-2011., IEEE Educational Activities Board ABET Program Evaluator, 2006-present., Moody's Mega Math Challenge Judge, 2012.
4. Á. Zarándy: Chair of the Cellular Nanoscale Networks and Array Computing (CNNAC)
5. X. Vilasis: Reviewer of ECCTD 2011 and ISCAS 2012

Conference and workshops:

1. F. Colinto participated to the following international conferences: ISCAS 2011, IJCNN 2011, ECCTD 2011, NDES 2011
2. C.W. Wu: Review Committee Member, Session Chair and Track Chair, IEEE International Symposium on Circuits and Systems 2011.
3. Á.Zarándy: Technical Program Committee member ECCTD 2011

Awards, Honors, Patents:

1. US Patent 8,108,537, ``Method and system for improving content diversification in data driven P2P streaming using source push"

Books:

1. F. Corinto, A. Ascoli, and M. Gilli, "Memristor Models for Pattern Recognition Systems", in R. Kozma et al. (eds.), Advances in Neuromorphic Memristor Science and Applications, Springer Series in Cognitive and Neural Systems, DOI 10.1007/978-94-007-4491-2_13, Springer Science+Business Media Dordrecht 2012.
2. P. Popivanov, A. Slavova: Nonlinear waves. Introduction. World Scientific, Singapore, 2011
3. Á. Zarándy (editor) :Focal-Plane Sensor-Processor Chips, Springer, 2011.

Book chapters:

1. M. Markova, A. Slavova, P. Zecca: Wave propagation of Cellular Neural Network model of tsunamis, in "Recent advances in dynamics and control of neural networks", Cambridge Scientific Publishers, 2012.
2. R.Agliardi, P.Popivanov, A. Slavova: Problems for Second Order PDEs Arising in Risk Management and Cellular Neural Networks Approach, in "Risk Management", InTech, 2012.
3. P.Dudek, "SCAMP-3: A Vision Chip with SIMD Current-mode Analogue Processor Array", in "Focal-Plane Sensor-Processor Chips"A.Zarandy (Ed.), p.17-43, Springer, 2011
4. L. Nicolosi, A. Blug, F. Abt, R. Tetzlaff, H. Höfler, D. Carl, "Real time control of laser beam welding processes – Reality", in Focal-Plane Sensor-Processor Chips, edited by Ákos Zarándy, Springer, 1st edition, 2011, pp. 261-282, ISBN: 978-1-4419-6474-8
5. Á.Zarándy, Cs. Rekeczky, P. Földesy, R. Carmona-Galán, G. Liñán-Cembrano, G. Sós, Á. Rodríguez-Vázquez, T. Roska, "VISCUBE: a multi-layer vision chip", in Focal-Plane Sensor-Processor Chips edited by Ákos Zarándy, pp. 181-208, Springer, 2011.
6. Zarandy, T. Fulop, "Implementation and Validation of a looming object detector model derived from mammalian retinal circuit", in Focal-Plane Sensor-Processor Chips edited by Ákos Zarándy, pp. 245-260, Springer, 2011.
7. Zarandy, "Anatomy of the Focal-Plane Sensor-Processor Arrays", in Focal-Plane Sensor-Processor Chips edited by Ákos Zarándy, pp. 1-16, Springer, 2011.
8. N. Bérci, P.Szolgay, „Real-time multi-finger tracking in 3D for a mouseless desktop" in Book Focal-Plane Sensor –Processor Chips, ed. A. Zarándy, Springer, 2011

Journal articles:

1. Corinto F, Ascoli A., Gilli M.,Nonlinear dynamics of memristor oscillators. In: IEEE TRANSACTIONS ON CIRCUITS AND SYSTEMS. I, REGULAR PAPERS, vol. 58 n. 6, pp. 1323-1336. - ISSN 1549-8328
2. Z. Kincses, L. Orzó, Z. Nagy, Gy. Mező, P. Szolgay "High-speed, SAD based wavefront sensor architecture implementation on FPGA", Journal of Signal Processing System, 2011, DOI: 10.1007/s11265-010-0487-4
3. R.Agliardi, P.Popivanov , A. Slavova: Nonhypoellipticity and comparison principle for partial differential equations of Black-Scholes type, Nonlinear Analysis, Series B: Real World Applications, 12 (2011) 1429–1436, (IF 2.241)
4. T. Melton, A. Slavova: Travelling Wave Solutions of FitzHugh-Nagumo CNN Model with Hysteresis, C.R.Bulg.Acad.Sci., t.64, No 5, 2011, pp.653-658 (IF 0.219)
5. V. Rashkova, A. Slavova: Convection diffusion model for image processing, C.R.Bulg.Acad.Sci., t.64, No 3, 2011, pp. 339- (IF 0.219), ISSN 1310-1331
6. G.Indiveri, B.Linares-Barranco, T.J.Hamilton, A.van Schaik, R.Etienne-Cummings, T.Delbruck, S.C.Liu, P.Dudek, P.Häfliger, S.Renaud, J.Schemmel, G.Cauwenberghs, J.Arthur, K.Hynna, F.Folowosele, S.Saighi, T.Serrano-Gotarredona, J.Wijekoon, Y.Wang and K.Boahen, "Neuromorphic Silicon Circuits", Frontiers in Neuroscience, 5:73. pp 1-23, 2011.
7. L Nicolosi, F Abt, A Blug, A Heider, R Tetzlaff and H Höfler, "A novel spatter detection algorithm based on typical cellular neural network operations for laser beam welding

processes“ in Meas. Sci. Technol. (Measurement Science and Technology) 23 (2012) 015401 (8pp).
8. D. Coppersmith, T. Nowicki, G. Paleologo, C. Tresser and C.W. Wu, ``The optimality of the online greedy algorithm in carpool and chairman assignment problems," ACM Transactions on Algorithms, vol. 7, no. 3, 2011.
9. Zarandy, Cs. Rekeczky, „2D operators on topographic and non-topographicarchitectures—implementation, efficiency analysis, and architecture selection methodology”, Int. J. Circuit Theory and Applications (CTA), Volume 39, Issue 10, pages 983–1005, October 2011
10. Róka, Á. Zarándy, “A Computational Framework for a Bio-inspired Mechanism of Vernier Hyperacuity”, Acta Polytechnica Hungarica, Volume 8, Issue Number 5, pp 5-20, 2011.
11. M. V. Serra, X. Vilasis, “CLASSIFYING WITH A TWO NEURON CNN”, 909542 - International Journal of Bifurcation and Chaos, 22 /2, pages 1-28, 2012.
12. E. Picatoste, D. Gascon, C. Abellan, J. Lefrancois, F. Machefert, O. Duarte, E. Grauges, L. Garrido, X. Vilasis, “Low noise front end ICECAL ASIC for the upgrade of the LHCb calorimeter” 201374 - Journal of Instrumentation (JINST) [online]: 7 /C01080, pages 1-8, 2012.
13. The LHCb Collaboration, „First observation of B0s → J/ψ f0(980) decays” 903246 - Physics Letters B/698 , pages 122-155, 2011
14. The LHCb Collaboration, „Search for the rare decays B^0_s -> \mu^+\mu^- and B^0 -> \mu^+\mu^-„ 903246 - Physics Letters B/699, pages 330 -340, 2011.
15. The LHCb Collaboration „Measurement of J/psi production in pp collisions at sqrt(s) = 7 TeV”, 909884 - European Physical Journal C/71, pages 1645-1662, 2011.
16. The LHCb collaboration, „Measurement of V 0 production ratios in pp collisions at √s = 0.9 and 7 TeV” 910668 - Journal of High Energy Physics JHEP08(2011)034, 8/34, pages 1-22,2011. 17. The LHCb Collaboration,”Measurement of the inclusive phi cross-section in pp collisions at sqrt(s) = 7 TeV”, 903246 - Physics Letters B, 703, pages:267-273, 2011.
17. The LHCb Collaboration, „First observation of the decay Bbar0s->D0K*0 and a measurement of the ratio of branching fractions Br(Bbar0s->D0K*0) / Br(Bbar0s->D0 rho0)”,903246 - Physics Letters B, 706 , pages 32 -39, 2011.
18. The LHCb Collaboration, „Determination of f_s/f_d for 7 TeV pp Collisions and Measurement of the $B^0 \to D^- K^+$ Branching Fraction” 903244 - Physical Review Letters,107/211801, pages 1-8, 2011.
19. The LHCb Collaboration, „Measurements of the branching fractions for $B_{(s)} \to D_{(s)}\pi\pi\pi$ and $\Lambda_b^0 \to \Lambda_c^+\pi\pi\pi$”, 903394 - Physical Review D, 84/092001, pages 1-19, 2011.
20. The LHCb Collaboration, „Observation of J/ψ-pair production in pp collisions”, 903246 - Physics Letters B, 707 , pages 52-59, 2012.
21. The LHCb Collaboration, „Observation of $B_s \to J/\psi f'_2(1525)$ in $J/\psi K^+K^-$ final states”, 903244 - Physical Review Letters, 108/151801, pages 1-7, 2012.
22. The LHCb Collaboration, „Measurement of the B^0_s - \bar{B}^0_s oscillation frequency Delta m_s in B^0_s -> D_s^-(3) pi decays”, 903246 - Physics Letters B, 709, pages 177-184, 2012.
23. The LHCb Collaboration, „Measurement of the CP-violating phase phi_s in the decay Bs->J/psi phi.”, 903244 - Physical Review Letters, 108/101803, pages 1-8, 2012.
24. The LHCb Collaboration, „Measurement of the CP violating phase □s in

B¯0s−>J/ψf0(980).", 903246 - Physics Letters B, 707, pages 497-505, 2012.
25. The LHCb Collaboration, „Search for the rare decays Bs -> mu+ mu- and B0 -> mu+ mu-.", 903246 - Physics Letters B, 708, pages 55-67, 2012.
26. The LHCb Collaboration, „Evidence for CP violation in time-integrated D0 -> h-h+ decay rates.", 903244 - Physical Review Letters, 108/111602, pages 1-8, 2012.
27. The LHCb Collaboration, „First observation of the decay B^0_s \rightarrow K^{*0} \bar{K}^{*0}.", 903246 - Physics Letters B, 709, pages 50-58, 2012.
28. The LHCb Collaboration, „Measurements of the branching fracMeasurement of b hadron production fractions in 7 TeV pp collisions.", 903394 - Physical Review D, 85/032008, pages 1-28, 2012.
29. The LHCb Collaboration, „Measurement of the effective B0s→K+K− lifetime.", 903246 - Physics Letters B, 707, pages 349-356, 2012.
30. The LHCb Collaboration, „Search for CP violation in D+→K−K+π+ decays.", 903394 - Physical Review D, 84/112008 , pages 1-13, 2012.
31. The LHCb Collaboration, „Search for the lepton number violating decays B+→π−μ+μ+ and B+→K−μ+μ+.", 903244 - Physical Review Letters, 108/101601, pages 1-8, 2012.
32. The LHCb Collaboration, „Absolute luminosity measurements with the LHCb detector at the LHC.", 201374 - Journal of Instrumentation (JINST) [online], 7/P01010, 1-47, 2012.
33. The LHCb Collaboration, „First Observation of the Decays B□ ^0 →D^+ K^- π^+ π^- and B^- →D^0 K^- π^+ π^-„, 903244 - Physical Review Letters, 108/161801, pages 1-8, 2012.
34. The LHCb Collaboration: „Measurement of b-hadron masses", 903246 - Physics Letters B, 708, pages 241-248, 2012.

Peer Reviewed Conference Papers:

1. Corinto F., Ascoli A., Gilli M., Class of all i-v dynamics for memristive elements in Pattern Recognition Systems. In: IJCNN 2011, San Jose (California), July-Aug. 2011. pp. 2289-2296
2. Corinto F., Ascoli A., Gilli M., Heteroclinic bifurcation in memristor oscillators. In: ECCTD 2011, Linköping, Sweden, 29-31 August. pp. 237-240
3. Corinto F., Ascoli A., Lanza V., Gilli M., Memristor synaptic dynamics influence on synchronous behavior of two Hindmarsh-Rose neurons. In: IJCNN 2011, San Jose (California), July- Aug. 2011. pp. 2403-2408
4. Corinto F., Ascoli A., Gilli, Symmetric charge-flux nonlinearity with combined inherently-asymmetric memristors. In: ECCTD 2011, Linköping, Sweden, 29-31 August. pp. 653-656
5. Corinto F., Lanza V., Ascoli A., Gilli, Synchronization in networks of FitzHugh-Nagumo neurons with memristor synapses. In: ECCTD 2011, Linköping, Sweden, 29-31 August. pp. 629-632
6. Cs.Nemes. Nagy, P. Szolgay „Efficinet mapping of mathematical expressions to FPGAs: exproing different design methodologies" Proceedings of the ECCTD2011, pp. 750-753, Sweden, 2011
7. V. Rashkova, A. Slavova: A Novel CNN Based Image Denoising Model, Proc. ECCTD 2011, Linkőping, Sweden, 2011, pp.225-228

8. M. Markova, A. Slavova, R. Tetzlaff: CNN computing of the interaction of fluxons, Proceedings of the General Assembly of URSI, Istanbul, 2011.
9. A.Lopich and P.Dudek, "Architecture and Design of a Programmable 3D-Integrated Cellular Processor Array for Image Processing", IFIP/IEEE International Conference on Very Large Scale Integration, VLSI-Soc 2011, Hong Kong, pp. 349-353, October 2011
10. Müller, J.; Müller, J.; Tetzlaff, R.: "A new Cellular Nonlinear Network emulation on FPGA for EEG signal processing in epilepsy." In Proceedings of SPIE 8068 (2011), S. 80680M
11. Senger, V.; Müller, J.; Tetzlaff, R.: Spatio-temporal coupling of EEG signals in epilepsy. In: Proceedings of SPIE 8068 (2011), S. 80680L
12. F. Abt, A. Heider, R. Weber, T. Graf, A. Blug, D. Carl, H. Höfler, L. Nicolosi, R. Tetzlaff, "Camera based closed loop control for partial penetration welding of overlap joints", International WLT-Conference on Laser in Manufacturing, LIM, May 2011, Munich, Germany
13. A. Blug, D. Carl, H. Höfler, F. Abt, A. Heider, R. Weber, L. Nicolosi, R. Tetzlaff, "Closed-loop control of laser power using the full penetration hole image feature in aluminum welding processes", International WLT-Conference on Laser in Manufacturing, LIM, May 2011, Munich, Germany
14. T. Schmidt, U. Feldmann, W. Neudeck and R. Tetzlaff, "Analytical Approach to Single Memristor Circuits", in Proc. of the European Conference of Circuits Theory and Design (ECCTD 2011), Linköping, Sweden, pp. 93-96, 2011
15. Nicolosi, L.; Tetzlaff, R.; Blug, A.; Höfler, H.; Carl, D.; Abt, F.; Heider, A.; "A monitoring system for laser beam welding based on an algorithm for spatter detection", Proc. of the 20th European Conference on Circuit Theory and Design (ECCTD), 2011, pp.25-28, 29-31 Aug. 2011, doi: 10.1109/ECCTD.2011.6043301
16. Tang, T.; Tetzlaff, R.; "Feasibility Study of Codebook Generation Applying Comlex Systems", Proc. of the 20th European Conference on Circuit Theory and Design (ECCDT) 2011, 29-31 Aug. 2011, Linkoeping, Sweden
17. C.W. Wu, ``Locally connected processor arrays for matrix multiplication and linear transforms," Proceedings of IEEE International Symposium on Circuits and Systems (ISCAS), pp. 2169-2172, 2011.
18. H. Zhao, D. Smilkov, P. Dettori, J. Nogima, F.A. Schaffa, P. Westerink, C.W. Wu, ``A Feasibility Study of Collaborative Stream Routing in Peer-to-Peer Multiparty Video Conferencing," Proceedings of IEEE International Symposium on Multimedia (ISM), 2011.
19. B. Trager, C.W. Wu, M. Stanich, K. Chandu, ``GPU-enabled parallel processing for image halftoning applications," Proceedings of IEEE International Symposium on Circuits and Systems (ISCAS), pp. 1528-1531, 2011.
20. C.W. Wu, ``Can stubbornness or gullibility lead to faster consensus? A study of various strategies for reaching consensus in a model of the naming game," Proceedings of IEEE International Symposium on Circuits and Systems (ISCAS), pp. 2111-2114, 2011.

Other publications:

1. P.Abshire, A.Bermak, R.Berner, G.Cauwenberghs, S.Chen, J.B.Christen, T.Constandinou, E.Curulciello, M.Dandin, T.Datta, T.Delbruck, P.Dudek, A.Eftekhar, R.Etienne-Cummings, G.Indiveri, M.K.Law, B.Linares-Barranco, J.Tapson, W.Tang Y.Zhai, "Confession Session: Learning from Others Mistakes", IEEE International Symposium on Circuits and Systems, ISCAS 2011, Rio de Janeiro, pp 1149-1162, May 2011

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