

Neural Systems and Applications Technical Committee Annual Report

IEEE Circuits and Systems Society Activities for May 2007 through April 2008

Chair : Giacomo Indiveri, Institut für Neuroinformatik, Switzerland, giacomo@ini.phys.ethz.ch

Chair-Elect: Wei Xing Zheng, University of Western Sydney, Australia, W.Zheng@uws.edu.au

Secretary: Shih-Chii Liu, Institut für Neuroinformatik, Switzerland, shih@ini.phys.ethz.ch

Secretary Elect: Pamela Abshire, University of Maryland, USA pamela@umd.edu

Past Chair: Derong Liu, University of Illinois, USA dliu@ece.uic.edu

Summary of Activities

The following details the CASS-related Neural Systems and Applications activity by the committee and its members.

1. Participation in ISCAS track paper reviews: We had a total of 48 papers originally submitted to the track. At least three reviews were arranged for each paper. The acceptance rate was 50% with 14 papers accepted for oral presentation and 10 papers accepted for poster presentation.

2. Best Paper Award:

We established for the first time an NSA *best paper award*, awarded to the best paper submitted to one of the NSA tracks. This year the Review Committee members decided among the 5 papers that received the highest reviewer scores, and made a unanimous decision. The winners of the award will be announced at the annual NSA-TC meeting.

3. Future Plans: Extend visibility of TC via special issues, books, workshops etc.

4. Committee member activities:

The activities by the various committee members are listed in appendix B. .

Appendix B

Giacomo Indiveri

Program Committee Member of the:

2008 Computational Intelligence in Security for Information Systems CISIS'08

2008 Bio-Sensing (OP207) Part of the SPIE International Symposium on NanoScience + Engineering

2007 International Symposium on Neural Networks

2007 and 2005 SPIE Microtechnologies for the new Millennium conference.

Review committee member of the:

2008 IEEE International Symposium on Circuits and Systems (ISCAS)

2008 Neural Information Processing Systems (NIPS) conference

2008 International Federation of Automatic Control (IFAC) World Congress

2008 IEEE World Congress on Computational Intelligence (WCCI 2008)

Chair of the:

2007 Neural Information Processing Systems (NIPS) demo session

2007 IEEE Neural systems and applications technical committee

Editorial Services:

2007-2008 Associate Editor of IEEE TNN

Publications:

(Book Chapters)

[1] G. Indiveri, S.-C. Liu, T. Delbrück, and R. Douglas. New Encyclopedia of Neuroscience, chapter Neuromorphic Systems. Elsevier, 2007.

[2] G. Indiveri and R. Douglas. “Handbook on Nano- and Molecular Electronics”, chapter Neuromorphic Networks of Spiking Neurons, pages 10–1–10–9. CRC Press, 2007.

Journals:

[3] G. Indiveri. “Synaptic plasticity and spike-based computation in VLSI networks of integrate-and-fire neurons”. Neural Information Processing - Letters and Reviews, 11(4–61):135–146, 2007.

[4] C. Bartolozzi and G. Indiveri. “Synaptic dynamics in analog VLSI. Neural Computation”, 19(10):2581–2603, Oct 2007.

[5] E. Chicca, A. M. Whatley, V. Dante, P. Lichtsteiner, T. Delbrück, P. Del Giudice, R. J. Douglas, and G. Indiveri. “A multi-chip pulse-based neuromorphic infrastructure and its application to a model of orientation selectivity”. IEEE Transactions on Circuits and Systems I, Regular Papers, 5(54):981–993, 2007.

Conferences:

- [6] D.B. Fasnacht, A. Whatley, and G Indiveri. “A serial communication infrastructure for multi-chip address event system”. In IEEE International Symposium on Circuits and Systems, ISCAS 2008. IEEE, 2008. (In Press).
- [7] E. Neftci, E. Chicca, G. Indiveri, J.-J. Slotine, and R. J. Douglas. “Contraction properties of VLSI cooperative competitive neural networks of spiking neurons”. In B. Schölkopf, J. Platt, and T. Hoffman, editors, Advances in Neural Information Processing Systems, Cambridge (MA), 2008. MIT Press.
- [8] S. Mitra, G. Indiveri, and S. Fusi. “Learning to classify complex patterns using a VLSI network of spiking neurons”. In B. Schölkopf, J. Platt, and T. Hoffman, editors, Advances in Neural Information Processing Systems, Cambridge (MA), 2007. MIT Press.
- [9] S. Mitra, G. Indiveri, and S. Fusi. “Robust classification of correlated patterns with a neuromorphic VLSI network of spiking neurons”. In IEEE, editor, IEEE Proceedings on Biomedical Circuits and Systems (Bio-CAS07), pages 87–90, 2007.
- [10] H-P Wang, E. Chicca, G. Indiveri, and T.J. Sejnowski. “Reliable computation in noisy backgrounds using real-time neuromorphic hardware”. In IEEE, editor, IEEE Proceedings on Biomedical Circuits and Systems (BioCAS07), pages 71–74, 2007.
- [11] P. Camilleri, M. Giulioni, V. Dante, D. Badoni, G. Indiveri, B. Michaelis, J. Braun, and P. Del Giudice. “A neuromorphic aVLSI network chip with configurable plastic synapses”. In Proceedings of the 7th International Conference on Hybrid Intelligent Systems (HIS’07), pages 296–301, Los Alamitos, CA, USA, 2007. IEEE Computer Society. (Best paper award).
- [12] G. Indiveri and S. Fusi. “Spike-based learning in VLSI networks of integrate-and-fire neurons”. In Proc. IEEE International Symposium on Circuits and Systems, ISCAS 2007, pages 3371–3374, 2007.

Wei Xing Zheng

IEEE Service/Activities:

Review Committee Member, Technical Session Chair of "Neural Systems and Applications" and "Digital Signal Processing for Communications" of the 2007 IEEE International Symposium on Circuits and Systems (ISCAS'2007), New Orleans, Louisiana, USA, May 2007.

Technical Program Committee Member of the 9th International Symposium on Signal Processing and Its Applications (ISSPA'2007), Sharjah, United Arab Emirates (U.A.E.), February 2007.

International Program Committee Member of the 2007 IEEE International Conference on Networking, Sensing and Control (ICNSC'2007), London, UK, April 2007.

Publicity Co-Chair of the 4th International Symposium on Neural Networks (ISNN'2007), Nanjing, China, June 2007.

Technical Program Committee Member of the 2007 IEEE International Conference on Signal Processing and Communication (ICSPC'2007), Dubai, United Arab Emirates (U.A.E.), November 2007.

Program Committee Member of the 46th IEEE Conference on Decision and Control (CDC'2007), New Orleans, Louisiana, USA, December 2007.

Ongoing Conferences or Workshops:

Review Committee Member and Technical Session Chair of "Neural Network Circuits & Systems" of the 2008 IEEE International Symposium on Circuits and Systems (ISCAS'2008), Seattle, Washington, USA, May 2008.

Organizer and Chair of Special Session on "Blind Signal Processing for MIMO Systems" at the 2008 IEEE International Symposium on Circuits and Systems (ISCAS'2008), Seattle, Washington, USA, May 2008.

Technical Program Committee Member of the 5th International Workshop on Signal Processing and its Applications (WoSPA'2008), Sharjah, United Arab Emirates (U.A.E.), March 2008.

International Program Committee Member of the 2008 IEEE International Conference on Networking, Sensing and Control (ICNSC'2008), Sanya, Hainan, China, April 2008.

Technical Committee Member of the 2008 IEEE World Congress on Computational Intelligence (WCCI'2008), Hong Kong, June 2008.

International Program Committee Member of the 7th World Congress on Intelligent Control and Automation (WCICA'2008), Chongqing, China, June 2008.

Technical Program Committee of the 2008 Chinese Control and Decision Conference (CCDC'2008), Yantai, Shandong, China, July 2008.

International Program Committee Member of the 2008 IEEE International Conference on Automation and Logistics (ICAL'2008), Qingdao, Shandong, China, September 2008.

International Program Committee Member of the 23rd IEEE International Symposium on Intelligent Control (ISIC'2008), San Antonio, Texas, USA, September 2008.

Editorial Services:

Associate Editor, IEEE Transactions on Automatic Control.

Associate Editor, IEEE Signal Processing Letters.

Associate Editor, IEEE Transactions on Circuits and Systems-II.

Other IEEE Services:

Chair-Elect (2007-2008) of Technical Committee on Neural Systems and Applications, IEEE Circuits and Systems Society.

Secretary (2006-2008) of Technical Committee on Blind Signal Processing, IEEE Circuits and Systems Society.

International Steering Committee of the IEEE Asia Pacific Conference on Circuits and Systems (APCCAS).

Shih-Chii Liu

IEEE Service/Activities:

Chairman of IEEE Sensory Systems Technical Committee

Co-chair of ISCAS Sensory Systems Track 2007

Co-chair of IEEE Biomedical Circuits and Systems Conference Technical Program 2008

Secretary of IEEE Neural Systems and Applications Technical Committee

Editorial Board member of Neuromorphic Engineering newsletter

Publications:

Journal Papers:

1. Chan, V., Liu, S-C., and van Schaik, A. (2007), "AER EAR: A matched silicon cochlea pair with address event representation interface," *IEEE Transactions on Circuits and Systems I-Special Issue on Smart Sensors*, vol. 54, no. 1, pp 48-59, 2007.

Conference Papers:

2. Gomez-Rodriguez, F., Linares-Barranco, A., Miro, L., Liu, S-C., van Schaik, A., Etienne-Cummings, R., and Lewis, M. A. (2007), "AER audition filtering and CPG for robot control," *2007 IEEE International Symposium on Circuits and Systems*, pp.1201--1204, May 27--30, New Orleans, USA.
3. Oster, M., Douglas, R., and Liu, S-C. (2007), "Quantifying input and output statistics of a winner-take-all network in a vision system," *2007 IEEE International Symposium on Circuits and Systems, Special Session on Spiking Processing Based Hardware Vision Systems*, pp.853--856, May 27--30, New Orleans, USA.
4. Moeckel, R. and Liu, S-C. (2007), "Motion detection circuits for a time-to-travel algorithm," *2007 IEEE International Symposium on Circuits and Systems*, pp.3079--3082, May 27--30, New Orleans, USA.
5. Oster, M., Lichtsteiner, P., Delbrück, T., and Liu, S-C. (2007), "A spike-based saccadic recognition system," *2007 IEEE International Symposium on Circuits and Systems*, pp.3083--3086, May 27--30, New Orleans, USA.
6. Wang, X., Douglas, R., and Liu, S-C. (2007), "Attentional processing in a spike-based VLSI neural network," *Advances in Neural Information Processing Systems*, Volume 19, Vancouver, Canada, MIT Press, 2007.

André van Schaik

IEEE Service/Activities:

Past Chair IEEE CAS Sensory Systems TC

Member, IEEE CAS Technical Committees: Analogue Signal Processing, Biomedical Circuits and Systems, Neural Systems and Applications Co-chair, Sensory Systems Track IEEE ISCAS08 AE IEEE TCAS I Board Member, Institute of Neuromorphic Engineering Organizer, Telluride Neuromorphic Engineering Workshop Member EPSRC peer review college

Publications:

Journal papers:

1. R. Reeve, A. van Schaik, C. Jin, T. Hamilton, B. Torben-Nielsen and B. Webb, "Directional hearing in a silicon cricket," *Biosystems*, Volume 87, Issues 2-3, 2007, pp 307-313.
2. V. Chan, S. Liu, and A. van Schaik, "AER EAR: A Matched Silicon Cochlea Pair with Address Event Representation Interface," *IEEE Transactions on Circuits and Systems I*, Vol 54, No 1, pp 48-59, 2007
3. V. Chan, C. Jin, and A. van Schaik, "An Address-Event Vision Sensor for Multiple Transient Object Detection," *IEEE Transactions on Biomedical Circuits and Systems*, Vol 1, No 4, pp 278-288, 2007.

Conference papers:

4. T. Hamilton, J. Tapson, C. Jin, and A. van Schaik, "A basilar membrane resonator for an active 2-D cochlea," Proceedings of the IEEE International Symposium on Circuits and Systems (ISCAS 2007), May 2007, New Orleans, USA, pp 2387-2390.
5. F. Gomez-Rodriguez, A. Linares-Barranco, L. Miro, S.-C. Liu, A. van Schaik, R. Etienne-Cummings, and M. A. Lewis, "AER auditory filtering and CPG for robot control," Proceedings of the IEEE International Symposium on Circuits and Systems (ISCAS 2007), May 2007, New Orleans, USA, pp 1201-1204.
6. T. Hamilton, C. Jin, J. Tapson, and A. van Schaik, "A 2-D Cochlea with Hopf Oscillators," Proceedings of the IEEE Biomedical Circuits and Systems Conference, November 2007, Montreal, Canada, pp 91-94.
7. J. Tapson, C. Jin, and A. van Schaik, "A Scalable Architecture for Event-Based Cross-Correlation," Proceedings of the IEEE Biomedical Circuits and Systems Conference, November 2007, Montreal, Canada, pp 83-86.
8. A. McEwan, J. Tapson, A. van Schaik and D.S. Holder, "Electrode Circuits for Frequency- and Code-Division Multiplexed Impedance Tomography, Proceedings of the IEEE Biomedical Circuits and Systems Conference, November 2007, Montreal, Canada, pp 130-133.

9. A. McEwan, J. Tapson, A. van Schaik and D.S. Holder, "Wide-Bandwidth, High Frame Rate Electrical Impedance Tomography / Spectroscopy: A Code Division Multiplexing (CDM) Approach," International Conference on Biomedical Electronics and Devices (BioDevices), January 2008, Funchal, Portugal.

Patents:

5. S. Carlile, C. Jin, J. Leung, and A. van Schaik, "Sound enhancement for hearing-impaired listeners," United States Patent US2007127748, June 7, 2007
6. C. Jin, P. Leong, J. Leung, S. Carlile, and A. van Schaik, "Generation Of Customised Three Dimensional Sound Effects For Individuals," United States Patent US2007183603, August 9, 2007

H. K. Kwan

IEEE Service/Activities:

- 1 Conferences or Workshops where the DSP TC or Members of the TC was/were actively involved in 2006-2007 include the followings:
 - 1.1 2007 IEEE International Symposium on Circuits and Systems (ISCAS 2007), KOS International Conference Center, Greece, May 21-24, 2007.
 - DSP Track Co-Chair: Prof. H. K. Kwan.
 - Review Committee Members of DSP Track: H. K. Kwan
 - Technical Session Chairs (without her/his title):
 - IIR Digital Filters : Takao Hinamoto, H. K. Kwan
 - FIR and Fractional Delay Filters: H. K. Kwan, Tapio Saramaki
 - Bio-inspired Neural Networks: Ralph Etienne-Cummings, H. K. Kwan
 - 1.2 The 4th International Symposium on Neural Networks (ISNN'2007), Nanjing, China, June 2007. Publicity Co-Chair: Prof. Wei Xing Zheng, International Program Committee Member: Prof. H. K. Kwan.
 - 1.3 2007 IASTED International Conference on Circuits, Signals and Systems (ICCSS 2007), Banff, Canada, July 2-4, 2007. International Program Committee Member: Prof. H. K. Kwan.
 - 1.4 The 11th European Conference on Speech Communication and Technology (Interspeech 2007), Antwerp, Belgium, August 27-31, 2007. Scientific Review Committee Member of Speech Enhancement Track: Prof. H. K. Kwan.
 - 1.5 IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP 2007), Honolulu, Hawaii, U.S.A., April 15-20, 2007. Technical Program Committee Member: Prof. H. K. Kwan.
- 2 On going Conferences or Workshops where the DSP TC or Members of the TC is/are actively involved include the followings:
 - 2.1 2008 IEEE International Symposium on Circuits and Systems (ISCAS 2008), Seattle, Washington, USA, May 2008.
 - Review Committee Members of DSP Track: H. K. Kwan
 - Technical Session Chairs (without her/his title):
 - Digital Filters and Applications: Tian-Bo Deng, H. K. Kwan
 - 2.2 International Conference on Communications, Circuits and Systems (ICCCAS 2008), Xiamen, China, May 25-27, 2008. Technical Program Committee Member: Prof. H. K. Kwan.
 - 2.3 World Congress on Computational Intelligence (WCCI 2008), Hong Kong, China, June 1-6, 2008, International Program Committee Member: Prof. H. K. Kwan.
 - 2.4 IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP 2008), Las Vegas, Nevada, U.S.A., March 30-April 4, 2008. Technical Program Committee Member: Prof. H. K. Kwan.
 - 2.5 The 4th International Symposium on Neural Networks (ISNN'2008), Beijing, China, Sept. 24-28, 2008. Program Committee Member: Prof. H. K. Kwan.
- 3 Editorial Services:

3.1 Prof. H. K. Kwan serves as an Overseas Member, Editorial Committee, Chinese Journal of Scientific Instrument.

4 IEEE Services:

4.1 Prof. H. K. Kwan served as International Steering Committee Member, International Symposium on Intelligent Signal Processing and Communication Systems, Xiamen, China, November 28-December 1, 2007.

4.2 Prof. H. K. Kwan served as the Past Chair (2007-2008) of Digital Signal Processing Technical Committee, IEEE CAS Society.

Bernabe Linares-Barranco

IEEE Services/Activities:

Associate Editor for IEEE TNN, Secretary Sensory Systems Technical Committee

Publications:

1. J. A. Leñero-Bardallo, T. Serrano-Gotarredona, and B. Linares-Barranco, "A Calibration Technique for Very Low Current and Compact Tunable Neuromorphic Cells. Application to 5-bit 20nA DACs," IEEE Trans. Circuits and Systems, Part-II: Brief Papers, in Press. 2008.
2. R. Serrano-Gotarredona, T. Serrano-Gotarredona, A. Acosta-Jimenez, C. Serrano-Gotarredona, J. A. Perez-Carrasco, A. Linares-Barranco, G. Jimenez-Moreno, A. Civit-Ballcells, and B. Linares-Barranco, "On Real-Time AER 2D Convolutions Hardware for Neuromorphic Spike Based Cortical Processing," IEEE Trans. on Neural Networks, in Press. June 2008.
3. R. Serrano-Gotarredona, L. Camuñas-Mesa, T. Serrano-Gotarredona, J. A. Leñero-Bardallo, and B. Linares-Barranco, "The Stochastic I-Pot: A Circuit Block for Programming Bias Currents," IEEE Trans. Circuits and Systems, Part-II: Brief Papers, vol. 54, No. 9, pp. 760-764, September 2007.
4. Bernabe Linares-Barranco and Teresa Serrano-Gotarredona , "On an Efficient CAD Implementation of the Distance Term in Pelgrom's Mismatch Model," IEEE Trans. on CAD, vol. 26, No. 8, pp. 1534-1538, August 2007.
5. J. Costas-Santos, T. Serrano-Gotarredona, R. Serrano-Gotarredona and B. Linares-Barranco, "A Spatial Contrast Retina with On-chip Calibration for Neuromorphic Spike-Based AER Vision Systems," IEEE Trans. Circuits and Systems, Part-I: Regular Papers, vol. 54, No. 7, pp. 1444-1458, July 2007.
6. Alejandro Linares-Barranco, Matthias Oster, Daniel Cascado, Jimenez, Anton Civit, Bernabe Linares-Barranco, "Inter-Spike-Intervals Analysis of AER Poisson like Generator Hardware," Neurocomputing, 70, pp. 2692-2700, May 2007.

Orly Yadid-Pecht

1. IEEE Services

1.1 Invited Lectures

- “CMOS Imagers – Smart Sensors”, University of Rochester, May 2007
- “CMOS Image Sensors characterization – revisited”, Kodak, Rochester, June 2007
- “CMOS Imaging Circuits” - for the CMOS Emerging Technologies Workshop, Whistler, BC, July 2007
- “Wide Dynamic Range Sensors” - for the Johns Hopkins University, Baltimore, US, Aug 2007

1.2 Other professional activities

- Member of the IEEE CAS Analog Signal Processing, Neural Networks, Biocas and Sensors Technical Committees (1996-present).
- Member of the SPIE Solid State Sensor Arrays international conference program committee (1997-present).
- IEEE CAS Nominations Committee (2006 and 2007)
- Member of the Technical Committee for the IEEE BioCAS conference (2004-present).
- Member of the Steering Committee for the IEEE ICECS (2003-present).
- Special Session co-organizer, “Low Power Image Sensors”, IEEE Circuits and Systems Conf, Seattle, Washington, US, May 2008.
- Special Session co-organizer, “Smart Image Sensors”, IEEE Sensors Conference, Atlanta, Georgia, Oct 2007.
- Member of the IEEE CAS Women in Engineering committee
- Member of the IEEE CAS logo selection committee

Board memberships:

- 2007 - 2008 **IEEE Trans. on BioMedical Circuits and Systems** Associate Editor
- 2007-2008 **IEEE Sensors Council**, Circuits and Systems (CAS) Society representative (2007-2008).

2. Awards and honors

2007 **IEEE Fellow** for the design and modeling of CMOS Image Sensors

3. Publications

3.1 Peer Reviewed Papers:

- Belenky, A. Fish, and O. Yadid-Pecht, "Global Shutter CMOS Image Sensor with Wide Dynamic Range", accepted to IEEE Transactions on Circuits and Systems II, July 2007.
- V. Milirud, G. Jullien, O. Yadid-Pecht, "A Wide Dynamic Range Sensor with Motion detection", accepted to IEEE Sensors journal, May 2007.
- M. Biderman, T. Tam, G. Jullien, O. Yadid-Pecht, "A low light level image sensor for bio medical applications", invited to Transactions on Biomedical Circuits and Systems", August 2007.
- Y. Shoshan, A. Fish, X. Li, G. Jullien, O. Yadid-Pecht, "VLSI Watermark implementations and applications", to appear in the International Journal on Information Theory and Applications, Vol. 2, 2008.

3.2 Peer reviewed conference papers:

- T. Tam, G. A. Jullien, O. Yadid-Pecht, "A CMOS Contact Imager for Cell Detection in Bio-Sensing Applications", Proc. IEEE ISCAS, CD ROM, New Orleans, May, 2007
- A. Fish, T. Rothschild, A. Hodes, Y. Shoshan and Orly Yadid-Pecht, "Low Power CMOS Image Sensors Employing Adaptive Bulk Biasing Control (AB²C) Approach", Proc. IEEE ISCAS, CD ROM, New Orleans, May, 2007
- A. Fish, O. Yadid-Pecht and E. Culurciello, "Responsivity of Gated Photodiode in Silicon-on-Sapphire Technology", accepted to special session on Smart Image Sensors, IEEE Sensors conference, Atlanta, USA, October, 2007.
- M. Beiderman, T. Tam, A. Fish, G. A. Jullien and O. Yadid-Pecht, "Low Light CMOS Image Sensor with Emission Filter for Fluorescence Applications", accepted to IEEE International Symposium on Circuits and Systems, ISCAS'08, Seattle, USA, May 2008.
- A. Fish and O. Yadid-Pecht, "Power Reduction in "Smart" CMOS Image Sensors", accepted to IEEE International Symposium on Circuits and Systems, ISCAS'08, Seattle, USA, May 2008.

Book Chapters

A. Fish and O. Yadid-Pecht, "Low Power Smart Image Sensors", in "CMOS Emerging Technologies", edited by Kris Iniewski, CRC Press, planned for 2008.

Ralph Etienne-Cummings

Professional Activities and Service

- Board of Governors, *IEEE CAS Society*, 2003-2005, 2006 – Present (Re-elected)
- Assoc. Director for Education and Outreach, *ERC on CISST at Johns Hopkins University*, 2004-Present
- Organizing Committee of the NSF Telluride Neuromorphic Engineering Workshop, 2003-Present
- Director of the Institute of Neuromorphic Engineering, 2002-Present (an Institute “with-out walls”)
- Journal Formation Committee Member: IEEE CASS, *Trans. Biomedical Circuits and Systems*, 2005 – 2006
- Associated Editor, *IEEE Sensors Journal*, 2002 – Present
- Associated Editor, *IEEE Trans. Biomedical Circuits and Systems*, 2006 – Present
- Strategic Committee: IEEE CASS Board of Governors, 2003 – present
- Regional Activities Committee: IEEE CASS Board of Governors, 2003 – present
- Member of the Editorial Board: *INE The Neuromorphic Engineer*, 2002 – present
- Member of Program Committee: ISSCC, SPIE, BIS, ISCAS, NIPS, COSI, BioCAS
- Reviewer: IEEE SJ, IEEE TCAS II, IEEE TNN, IEEE TR, IEEE TBME, IEEE IJSSC, IJCV, NIPS, EWNS, ISCAS, Wiley, NSF, NIH

Honors

- Science Spectrum Trailblazer Award for Top Minorities in Science, 2006
- Fulbright Fellowship Award to South Africa, 2006/2007
- Visiting African Fellowship Award, *University of Cape Town*, 2006/2007
- Diversity Leadership Council Diversity Award, *JHU* 2006

Journal Publications:

- J. Vogelstein, F. Tenore, R. Etienne-Cummings, M. A. Lewis, N. Thakor and A. Cohen, “Control of Locomotion After Injury or Amputation,” *Biological Cybernetics*, Vol. 95, No. 6, pp. 555 – 566, December 2006. (IF 2.14)
- J. Vogelstein, U. Mallick, G. Cauwenberghs and R. Etienne-Cummings, “Real-Time Image Processing using a Spiking Imager and an Integrate-and-Fire Array Transceiver System,” accepted to *Neural Computation*, Fall 2006. (IF 2.36)
- J. Vogelstein, R. Etienne-Cummings, N. Thakor and A. Cohen, “Phase-Dependent Effects of Stimulation of the Spinal Central Pattern Generator for Locomotion,” *IEEE Trans. Neural Systems and Rehabilitation Engineering*, Vol. 14, No. 3, pp. 257 – 265, September 2006. (IF 1.27)
- N. Ekeke and R. Etienne-Cummings, “Power Dissipation Sources and Possible Control Techniques in Ultra Deep Submicron CMOS Technologies,” *Elsevier Journal of Microelectronics*, Vol. 37, No. 9, pp. 851-860 September 2006 (IF 0.48)
- M. Clapp and R. Etienne-Cummings, “Bearing Angle Estimation for Sonar Micro-Array Using Analog VLSI Spatiotemporal Processing,” *IEEE Trans. Circuits and Systems-I*, Vol. 53, No. 4, pp. 769 – 783, 2006. (IF 0.93)
- S. Mehta and R. Etienne-Cummings, “A Simplified Normal Optical Flow CMOS Camera,” *IEEE Trans. Circuits and Systems-I*, Vol. 53, No. 6, pp. 1223 – 1234, June 2006 (IF 0.93)

Conference Publications:

- Y. Chi, T. Tran and R. Etienne-Cummings, “Optical Flow Approximation of Sub-Pixel Accurate Block Matching for Video Coding” accepted to *IEEE ICASSP 2007*, Honolulu, HI, April 2007.
- R. Philipp and R. Etienne-Cummings, “A Single Chip Stereo Imager” *ISSCC’06 Digest of Technical Papers*, Vol. 49, Feb 2006.
- S. Acharya, V. Aggarwal, F. Tenore, H.C. Shin, R. Etienne-Cummings, M.H. Schieber, N.V. Thakor, “Towards a Brain-Computer Interface for Dexterous Control of a Multi-Fingered Prosthetic Hand,” Submitted to *IEEE EMBS NeuroEngineering*, Honolulu, HI, USA, Summer 2007.

- J. Tapson and R. Etienne-Cummings, "A Simple Neural Cross-Correlator Engine," accepted to *IEEE ISCAS 2007*, New Orleans, LA, May 2007.
- N. Ekekwe, P. Kazanzides and R. Etienne-Cummings, "Incremental Encoder Based Position and Velocity Measurements VLSI Chip with Serial Peripheral Interface," accepted to *IEEE ISCAS 2007*, New Orleans, LA, May 2007.
- C. Clark, C. White and R. Etienne-Cummings, "Design and Optimization a Capacitive Micromachined Ultrasonic Transducer Micro-Array for Near Field Sensing," accepted to *IEEE ISCAS 2007*, New Orleans, LA, May 2007.
- V. Gruev, Z. Yang, J. van der Spiegel and R. Etienne-Cummings, "2 Transistor, Current-Mode Active Pixel Sensor," accepted to *IEEE ISCAS 2007*, New Orleans, LA, May 2007.
- A. Russell, G. Orchard and R. Etienne-Cummings, "Configuring Spiking Central Pattern Generator Networks with Genetic Algorithms," accepted to *IEEE ISCAS 2007*, New Orleans, LA, May 2007.
- R. Etienne-Cummings, V. Gruev, S. Mehta and R. Philipp, "Neuromorphic Vision Systems for Mobile Applications," *IEEE CICC 2006*, San Jose, CA, September 2006 (Invited)
- R. Philipp and R. Etienne-Cummings, "Second Generation Single-Chip Imager," *IEEE ISCAS 2006*, Kos, Greece, May 2006.
- N. Ekekwe, R. Etienne-Cummings and Peter Kazanzides, "Modeling and simulation of a VLSI chip for adaptive speed control of brushed DC motors", *IASTED International Conference on Control and Applications*, Montreal, Canada, May 2006.
- F. Tenore, J. Vogelstein, R. Etienne-Cummings, G. Cauwenberghs and P. Hasler, "A Floating-Gate Programmable Array of Silicon Neurons for Central Pattern Generating Networks," *IEEE ISCAS 2006*, Kos, Greece, May 2006.
- M. Chi, U. Mallik, E. Choi, M. Clapp, G. Cauwenberghs and R. Etienne-Cummings, "CMOS Pixel-Level ADC with Change Detection," *IEEE ISCAS 2006*, Kos, Greece, May 2006.
- N. Ekekwe, R. Etienne-Cummings and P. Kazanzides, "A Configurable VLSI Chip for DC Motor Control for Compact, Low-Current Robotic Systems," *IEEE ISCAS 2006*, Kos, Greece, May 2006.
- J. Vogelstein, R. Etienne-Cummings and A. Cohen, "Dynamic Control of Spinal Locomotion Circuits," *IEEE ISCAS 2006*, Kos, Greece, May 2006.
- S. Mehta and R. Etienne-Cummings, "Normal Flow Measurement Visual Motion Sensor" *IEEE ISCAS 2006*, Kos, Greece, May 2006.
- V. Gruev, R. Philipp and R. Etienne-Cummings, "General Image Processing Chip in 3D Integration," *IEEE ISCAS 2006*, Kos, Greece, May 2006.
- R. Etienne-Cummings, Swati Mehta, R. Philipp and V. Gruev, "Neuromorphic Vision Systems for Mobile Applications," *IEEE CICC '06*, San Jose, CA, September 2006.
- R. Etienne-Cummings and J. Tapson, "Wireless Address Event Representation System For Biological Sensor Network," accepted to *Proc. SPIE (Bioengineered and Bioinspired Systems)*, May 2007
- C. Clark, J. Whitney and R. Etienne-Cummings, "Design of an Ultrasonic Micro-Array for Near Field Sensing during Retinal Microsurgery," *Proc. EMBS*, New York, NY, August 2006.

Patents:

- R. Etienne-Cummings and M. A. Lewis, "A Biomorphic Rhythmic Movement Controller," Patent #7164967, September 2006.

Workshops/Conferences/Panels/Invited Talks:

- Session Chairman: International Symposium on Circuits and Systems, 2001-2006
- Program Co-Chair: IEEE BioCAS Conference, Montreal, Fall 2007
- Invited Speaker: Yale University, CT, 2006.
- Invited Speaker: University of Alberta, Canada, 2006.
- Invited Speaker: IEEE CICC '06, Signal and Data Processing, San Jose, CA, 2006.
- Invited Speaker: University of Cape Town, IEEE Chapter, 2006.
- Organizer: NSF Telluride Neuromorphic Engineering Workshop, Telluride, CO, 2003-2006.
- Organizer: ISCAS 2006, Special Sessions on Sensory Systems for Biological Applications, Kos, Greece, May 2006.

- Organizer: ISCAS 2006, Demonstration Sessions on Sensory Systems, Kos, Greece, May 2006.

Tobi Delbruck

Professional Activities

1. IEEE CAS DLP: Taught at the EAMTA course on Microelectronics in Cordoba Argentina. Lectured in Australia in Sydney, Brisbane, Perth, and Adelaide.
2. Coorganizer (with Philipp Hafliger) of the ISCAS 2007 and 2008 Special Session on Live Demonstrations of Circuits and Systems
3. Coorganizer of 2008 Telluride Neuromorphic Engineering Workshop
4. Associate Editor of IEEE TBioCAS
5. Journal Reviews for Nature, IEEE Journals TCAS, JSSC, TNN.
6. Conference Reviews for NIPS, ISCAS, and EAMTA.

Awards

1. [A Spike-Based Saccadic Recognition System](#), (2007); Oster, M.; Lichtsteiner, P.; Delbruck, T.; Shih-Chii Liu ISCAS 2007. 27-30 May 2007 Page(s):3083 - 3086.
Runner up best paper, Sensory Systems TC.

Journal Publications

1. [A 128×128 120dB 15us Latency Asynchronous Temporal Contrast Vision Sensor](#). (2007) Lichtsteiner, P., C. Posch and T. Delbruck . *IEEE Journal of Solid State Circuits*, Feb. 2008, 43(2) 566-576.
2. [A Tactile Luminous Floor for an Interactive Autonomous Space](#) (2007).Delbruck, T., A. M. Whatley, R. Douglas, K. Eng, K. Hepp and P. F. M. J. V. Verschure *Robotics and Autonomous Systems* 55(6):433-443. [See Floor pages](#)
3. [A Multi-chip Pulse-based Neuromorphic Infrastructure and its Application to a Model of Orientation Selectivity](#), (2007) Chicca, E., Whatley, A. M. , Lichtsteiner, P., Dante, V., Delbruck, T., Del Giudice, P., Douglas, R. J., Indiveri, G. *IEEE Transactions on Circuits and Systems I, Regular Papers*, 54:(5) 981-993

Conferences Publications (peer reviewed)

1. [Self-timed vertacolor dichromatic vision sensor for low power face detection](#), R. Berner, P. Lichtsteiner, T. Delbruck, ISCAS 2008, accepted. In *Special Session on Live Demonstrations of Circuits and Systems*.
2. [Using FPGA for visuo-motor control with a silicon retina and a humanoid robot](#) (2007) Linares-Barranco, A.; Gomez-Rodriguez, F.; Jimenez-Fernandez, A.; Delbruck, T.; Lichtsteiner, P.; , ISCAS 2007, 27-30 May 2007 Page(s):1192 - 1195.
3. [A Spike-Based Saccadic Recognition System](#), (2007); Oster, M.; Lichtsteiner, P.; Delbruck, T.; Shih-Chii Liu ISCAS 2007. 27-30 May 2007 Page(s):3083 - 3086.
Runner up best paper, Sensory Systems TC.
4. [A 5 Meps \\$100 USB2.0 Address-Event Monitor-Sequencer Interface](#). (2007) Berner, R., T. Delbruck, A. Civit-Balcells and A. Linares-Barranco. ISCAS 2007, New Orleans, 27-30 May 2007 Page(s):2451 - 2454.

5. [Fast sensory motor control based on event-based hybrid neuromorphic-procedural system.](#) (2007) T. Delbruck, T. and P. Lichtsteiner, ISCAS 2007, New Orleans, 27-30 May 2007 Page(s):845 - 848.
6. [Dichromatic spectral measurement circuit in vanilla CMOS.](#) (2007) Fasnacht, D. and T. Delbruck. IEEE International Symposium on Circuits and Systems (ISCAS 2007), New Orleans, 27-30 May 2007 Page(s):3091 - 3094.
7. [Dichromatic self-timed spectral measurement circuit with digital output in vanilla CMOS.](#) D. Fasnacht, T. Delbruck, in 2007 IEEE International Image Sensors Workshop (IISW), Ogunquit, Maine.

Invited papers

1. [Frame-free dynamic digital vision](#) , T. Delbruck, Proceedings of Intl. Symposium on Secure-Life Electronics, Advanced Electronics for Quality Life and Society, University of Tokyo, Tokyo, Japan, Mar. 6-7, 2008, pp. 21-26.

Philipp Häfliger

IEEE Services/Activities:

Co-organizer 'Invited session on live demonstrations of circuits and systems' ISCAS 2007 and 2008
Technical Program Committee BioCAS 2007
Secretary BioCAS Technical Committee of the CAS

Publications:

Conference Proceedings:

1. Two Color Asynchronous Event Photo Pixel, J. M. A. Olsson and P. Häfliger, ISCAS 2008, Seattle, USA accepted for publication
2. High-Speed Serial AER on FPGA, H. K. O. Berge and P. Häfliger, ISCAS 2007, New Orleans, USA

Journals:

3. A gate leakage feedback element in an adaptive amplifier application, H. K. O. Berge and P. Häfliger, IEEE Transactions on Circuits and Systems II, 2008, vol. 55 (2), p 101-105
4. Adaptive WTA with an analog VLSI neuromorphic learning chip, P. Häfliger, IEEE Transactions on Neural Networks, 2007, vol. 18 (2), p 551-572
5. Exploiting Gate Leakage in Sub-Micrometer CMOS for Input Offset Adaptation, P. Häfliger and H. K. O. Berge, IEEE Transactions on Circuits and Systems II, 2007, vol. 54 (2), p 127-130, IEEE Xplore pdf.

Eugenio Culurciello

Publications:

Journals:

1. An Integrated Patch-Clamp Potentiostat with Electrode Compensation, P. Weerakoon, K. Klemic, F.J. Sigworth, E. Culurciello, *IEEE Transactions on Biomedical Circuits and Systems TBCAS*, 2008, invited paper.
2. Integrated patch-clamp biosensor for high-density screening of cell conductance, P. Weerakoon, K. Klemic, F.J. Sigworth, E. Culurciello, *IET Electronics Letters*, January 17th 2008, Vol. 44, Issue 2, pp. 81-82
3. Three-Dimensional Phototransistors in 3D Silicon-on-insulator technology, Eugenio Culurciello, *IET Electronics Letters*, March 29th 2007, Vol. 43, Issue 7, 29
4. A Digital Isolation Amplifier in Silicon-on-Sapphire CMOS, E. Culurciello, P.O. Pouliquen, A.G. Andreou, *IET Electronics Letters*, Volume 43, Issue 8, April 12th 2007, pp. 451-452.
5. Three-Dimensional Photodetectors in 3D Silicon-on-insulator technology, Eugenio Culurciello and Pujitha Weerakoon, *IEEE Electron Device Letters*, Vol. 28, Issue 2, February 2007, pp 117 - 119.
6. A Multi-Chip Neuromorphic System for Spike-Based Visual Information Processing, R. Jacob Vogelstein, Udayan Mallik, Eugenio Culurciello, Gert Cauwengberghs, Ralph Etienne-Cummings, (NECO-03-06-179R2) *Neural Computation*, Vol. 19, Number 9, September 1 2007

Conference proceedings:

1. An Integrated Patch-Clamp Amplifier for High-Throughput Planar Patch-Clamp Systems, P. Weerakoon, Kate Klemic, F.J. Sigworth, E. Culurciello, *IEEE International Symposium on Circuits and Systems*, 2008. ISCAS 2008, 18-21 May 2008, Seattle USA., pp. -.
2. A Low-Power Silicon-on-Sapphire Tunable Ultra-Wideband Transmitter, W. Tang, A.G. Andreou, E. Culurciello, *IEEE International Symposium on Circuits and Systems*, 2008. ISCAS 2008, 18-21 May 2008, Seattle USA., pp. -.
3. Phototransistor Image Sensor in Silicon on Sapphire, J.H. Park, E. Culurciello, *IEEE International Symposium on Circuits and Systems*, 2008. ISCAS 2008, 18-21 May 2008, Seattle USA., pp. -.

4. High-Speed Back-Illuminated Image Sensor in Silicon-on-Sapphire, J.H Park, E. Culurciello, *IEEE International Symposium on Circuits and Systems, 2008. ISCAS 2008*, 18-21 May 2008, Seattle USA., pp. -.
5. A 1.2mW CMOS Temporal-Difference Image Sensor for Sensor Networks, Z.M. Fu, E. Culurciello, *IEEE International Symposium on Circuits and Systems, 2008. ISCAS 2008*, 18-21 May 2008, Seattle USA., pp. -.
6. Fall Detection Using an Address-Event Temporal Contrast Vision Sensor, Z.M. Fu, E. Culurciello, *IEEE International Symposium on Circuits and Systems, 2008. ISCAS 2008*, 18-21 May 2008, Seattle USA., pp. -.
7. Electrical Noise Analysis of an Integrated Patch-Clamp Amplifier, P. Weerakoon, Kate Klemic, F.J. Sigworth, E. Culurciello, *IEEE BioCAS 2007 conference proceedings*, Montreal November 28th
8. A Low-Noise Miniaturized Patch-Clamp amplifier, P. Weerakoon, Kate Klemic, F.J. Sigworth, E. Culurciello, *IEEE LISA 2007 conference proceedings*, NIH November 8th 2007.
9. Responsivity of Gated Photodiode in SOS Technology, A. Fish, O. Yadid-Pecht, E. Culurciello, *IEEE Conference on Sensors 2007*, Atlanta, Georgia from Oct 28-31, 2007.

Books:

1. Silicon on Sapphire Circuit and Systems, in progress, due in September 2008

Gert Cauwenberghs

IEEE Services/Activities:

Program Co-Chair, 20th IEEE Symp. Integrated Circuits and Systems Design (SBCCI'2007, Chip in Rio), Rio de Janeiro, Brazil, Sept. 3-6, 2007.

Senior Associate Editor, IEEE Sensors Journal.

Associate Editor, IEEE Trans. Neural Systems and Rehabilitation Engineering.

Associate Editor, IEEE Transactions on Biomedical Circuits and Systems (as of April 2008).

Invited Talks:

"Micropower Adaptive Vector Processing in Analog VLSI," DARPA Chip-Scale Avionics Workshop, Orlando FL, Feb. 20, 2007.

"Analog VLSI Auditory Separation and Localization," Computation and Neural Systems Seminar, California Institute of Technology, March 19, 2007.

"Adaptive Electronics: A Neuromorphic Perspective," Adaptive Electronics DSRC Workshop, Santa Cruz CA, July 18, 2007.

"Scalability and Efficiency in Neuromorphic Microsystems," DARPA Electronic Cortex Workshop, Arlington VA, July 31, 2007.

"Silicon Learning Machines," IEEE Computational Intelligence Society, San Diego Chapter, Dec. 12, 2007.

"Reconfigurable and Adaptive Mixed-Signal Microsystems," eStemCells DSRC Workshop, Stanford University, Palo Alto CA, March 28, 2008.

Publications:

2. "480-GMACS/mW Resonant Adiabatic Mixed-Signal Processor Array for Charge-Based Pattern Recognition," R. Karakiewicz, R. Genov, and G. Cauwenberghs, IEEE J. Solid-State Circuits, vol. 42 (11), pp. 2573-2584, 2007.
3. "CMOS Camera with In-Pixel Temporal Change Detection and ADC," Y. Chi, U. Mallik, M. Clapp, E. Choi, G. Cauwenberghs and R. Etienne-Cummings, IEEE J. Solid-State Circuits, vol.

42 (10), pp. 2187-2196, 2007.

4. "Robust Speech Feature Extraction by Growth Transformation in Reproducing Kernel Hilbert Space," S. Chakrabartty, Y. Deng and G. Cauwenberghs, IEEE Trans. Audio, Speech, and Language Processing, vol. 15 (6), pp. 1842-1849, 2007.
5. "A Multi-Chip Neuromorphic System for Spike-Based Visual Information Processing," R.J. Vogelstein, U. Mallik, E. Culurciello, G. Cauwenberghs and R. Etienne-Cummings, Neural Computation, vol. 19 (9), pp. 2281-2300, 2007.
6. "Gini-Support Vector Machine: Quadratic Entropy Based Multi-class Probability Regression," S. Chakrabartty and G. Cauwenberghs, J. Machine Learning Research, vol. 8 (4), pp. 813-839, 2007.
7. "Sub-Microwatt Analog VLSI Trainable Pattern Classifier," S. Chakrabartty and G. Cauwenberghs, IEEE J. Solid-State Circuits, vol. 42 (5), pp. 1169-1179, 2007.
8. "VLSI Potentiostat Array With Oversampling Gain Modulation for Wide-Range Neurotransmitter Sensing," M. Stanacevic, K. Murari, A. Rege, G. Cauwenberghs and N.V. Thakor, IEEE Trans. Biomedical Circuits and Systems, vol. 1 (1), pp. 63-72, 2007.
9. "Dynamically Reconfigurable Silicon Array of Spiking Neurons With Conductance-Based Synapses," R.J. Vogelstein, U. Mallik, J.T. Vogelstein and G. Cauwenberghs, IEEE Trans. Neural Networks, vol. 18 (1), pp. 253-265, 2007.

Elisabetta Chicca

IEEE Services/Activities:

reviewer (IEEE Transactions on Neural Networks)

Invited talks:

Telluride Neuromorphic Workshop 07: VLSI cooperative-competitive networks of spiking neurons

The Computational Sensorimotor Systems Laboratory: Building blocks for VLSI networks of Integrate-and-Fire neurons with plastic synapses

Sardinia Cognitive Neuromorphic Engineering: Hardware simulations on neuromorphic architectures

Publications:

Conference Publications:

1. Neftci, E. and Chicca, E. and Indiveri, G. and Slotine, J.-J. and Douglas, R. J. Contraction Properties of VLSI Cooperative Competitive Neural Networks of Spiking Neurons , Advances in Neural Information Processing Systems, Cambridge (MA):, B. Schölkopf and J. Platt and T. Hoffman (Eds.), MIT Press, 2008, (In Press)
2. Chicca, E. and Indiveri, G. and Douglas, R. J. Context dependent amplification of both rate and event-correlation in a VLSI network of spiking neurons , Advances in Neural Information Processing Systems, 19:, B. Schölkopf and J. Platt and T. Hoffman (Eds.), MIT Press, 2007,
3. Wang, H.-P. and Chicca, E. and Indiveri, G. and Sejnowski, T.J. Reliability of Spike-Time Based Computation in Noisy Backgrounds Using Real-Time Neuromorphic Hardware , Biomedical Circuits and Systems Conference Proceedings 71--74, IEEE (Eds.), 2007

Journal Publications:

1. Chicca, E. and Whatley, A. M. and Lichtsteiner, P. and Dante, V. and Delbruck, T. and Del Giudice, P. and Douglas, R. J. and Indiveri, G. A multi-chip pulse-based neuromorphic infrastructure and its application to a model of orientation selectivity , IEEE Transactions on Circuits and Systems I, Regular Papers, 54:(5) 981-993, May, 2007

R. Jacob Vogelstein

IEEE Services/Activities:

NSA TC Member; Poster session Chair at ISCAS 2008

Publications:

Conference Proceedings:

1. F. O. Folorosele, R. J. Vogelstein, and R. Etienne-Cummings, "Spike-based MAX networks for nonlinear pooling in hierarchical vision processing," Proceedings of the IEEE Biomedical Circuits and Systems Conference (Montreal, Canada), 2007.
2. F. Tenore, R. J. Vogelstein, and R. Etienne-Cummings, "Sensor-based dynamic control of the central pattern generator for locomotion," Proceedings of the IEEE International Symposium on Circuits and Systems (New Orleans, LA), 2007.

Journal Publications:

3. R. J. Vogelstein, U. Mallik, E. Culurciello, G. Cauwenberghs, and R. Etienne-Cummings, "A multi-chip neuromorphic sensory information processing system," *Neural Computation*, vol. 19, no. 9, pp. 2281–2300, 2007.
4. R. J. Vogelstein, U. Mallik, J. T. Vogelstein, and G. Cauwenberghs, "Dynamically reconfigurable silicon array of spiking neurons with conductance-based synapses," *IEEE Transactions on Neural Networks*, vol. 18, no. 1, pp. 253–265, 2007.

Alessandro Rizzo

IEEE Service/Activities:

Nuclear and Plasma Science Italy Chapter Chair
Member of the Italy Section ExCom

Conference Publications: none in the field of interest

Journal Publications: none in the field of interest

Bin-Da Liu

IEEE Services/Activities:

May 2007 – May 2008

- Member of International Program Committee, the 5th International Conference on Computer, Communications, Circuits and Systems. (July 10-13, 2007, Kokura, Japan)
- Member of Technical Program Committee, the 2007 IEEE International Conference on Systems, Man, and Cybernetics.(October 7-10, 2007, Montreal, Canada)
- Member of International Steering Committee, the 2007 IEEE TENCON. (October 30 - November 2, 2007, Taipei, Taiwan)
- Review Committee Member for Neural Systems and Applications Track, the 2008 IEEE International Symposium on Circuits and Systems. (May 18-21, 2008, Seattle, Washington, U.S.A.)
- Member of Technical Program Committee, the 2008 International Symposium on VLSI Design, Automation and Test. (April 23-25, 2007, Hsinchu, Taiwan)

May 2008 – May 2009

- Co-Chair of Technical Program Committee, the 7th International Conference on Computer, Communications, Circuits and Systems. (May 25-27, 2008, Xiamen, China)
- Special and Invited Session Chair, 2008 IEEE International Conference on Neural Networks and Signal Processing. (June 7-11, 2008, Nanjing, China)
- Member of Technical Program Committee, the 2008 IEEE International Conference on Systems, Man, and Cybernetics.(October 12-15, 2008, Singapore)
- Technical Program Co-Chair, the IEEE International Conference on Testing and Diagnosis. (October 25-26, 2008, Chengdu, China)
- Co-Chair of Advisory Committee, the 2008 IEEE Asia-Pacific Conference on Circuits and Systems. (November 30-December 3, Macao, China)

Editorial Services

- Associate Editor, IEEE Circuits & Systems Magazine
- Associate Editor, IEEE Transactions on Fuzzy Systems
- Associate Editor, IEEE Transactions on Biomedical Circuits and Systems

Maysam Ghovanloo

IEEE Services/Activities:

Technical Review Committee, IEEE Intl. Symp. on Circuits and Systems, New Orleans, LA, May 2007.

Special Session Co-Organizer, Neuroengineering Circuits and Microsystems, IEEE Intl. Symp. on Circuits and Systems, New Orleans, LA, May 2007.

Session Co-Chair: BioMEMS, IEEE Intl. Symp. on Circuits and Systems, New Orleans, LA, May 2007.

Technical Program Committee, Bioengineering, IEEE Midwest Symp. on Circuits and Systems, Montreal, Canada, August 2007.

Technical Program Committee, IEEE Biomedical Circuits and Systems conference, Montreal, Canada, November 2007.

Special Session Organizer, Modern Assistive Technologies, IEEE Engineering in Medicine and Biology Conference, Lyon, France, August 2007.

Alex Fish

IEEE Services/Activities:

- Co-organizer of Special Session “Low Power Smart CMOS Image Sensors and Beyond”, IEEE International Symposium on Circuits and Systems, Seattle, USA, May, 2008
- Co-organizer of a Special Session on “Smart” CMOS Image Sensors, IEEE Sensors Conference, Atlanta, USA, October, 2007

Other professional activities

- Reviewer for the IEEE Sensors Journal
- Reviewer for the IEEE Transactions on Circuits and Systems I Journal
- Reviewer for the IEEE Transactions on Electron Devices Journal
- Reviewer for the IEEE Transactions on VLSI Journal
- Reviewer for the IEEE International Symposium on Circuits and Systems (ISCAS)
- Reviewer for the IEEE International Conference on Electronics, Circuits and Systems (ICECS)
- Reviewer for IEEE International Midwest Symposium on Circuits and Systems
- Reviewer for the IEEE Sensors Conference

Publications:

Journals:

1. A. Belenky, A. Fish and O. Yadid-Pecht, “Global Shutter CMOS Image Sensor with Wide Dynamic Range”, IEEE Transactions on Circuits and Systems II: Express briefs, vol 54, no.12, December 2007.
2. Y. Shoshan, A. Fish, X. Li, G. A. Jullien and O. Yadid-Pecht, "VLSI Watermark Implementations and Applications", to be appear in International Journal on Information Technologies and Knowledge, vol. 2, 2008.

Conference proceedings:

1. A. Fish, T. Rothschild, A. Hodes, Y. Shoshan and O. Yadid-Pecht, "Low Power CMOS Image Sensors Employing Adaptive Bulk Biasing Control (AB2C) Approach", Proc. IEEE International Symposium on Circuits and Systems, pp. 2834-2837, New-Orleans, USA, May 2007.
2. A. Fish, O. Yadid-Pecht and E. Culurciello, "Responsivity of Gated Photodiode in Silicon-on-Sapphire Technology", Proc. IEEE Sensors conference, Atlanta, USA, October, 2007.
3. A. Teman, S. Fisher, L. Sudakov, A. Fish and O. Yadid-Pecht, "Autonomous CMOS Image Sensor for Real Time Targets Detection and Tracking", Proc. IEEE International Symposium on Circuits and Systems, Seattle, USA, May 2008.
4. M. Beiderman, T. Tam, A. Fish, G. A. Jullien and O. Yadid-Pecht, "A Low Noise CMOS Image Sensor with an Emission Filter for Fluorescence Applications", Proc. IEEE International Symposium on Circuits and Systems, Seattle, USA, May 2008.
5. A. Fish and O. Yadid-Pecht, "Low Power "Smart" CMOS Image Sensors", Proc. IEEE International Symposium on Circuits and Systems, Seattle, USA, May 2008.

Shantanu Chakrabartty

IEEE Services/Activities:

Reviewer for IEEE transactions on Circuits and Systems, IEEE Int. Symp. On Circuits and Systems, IEEE sensors journal, IEEE transactions on signal processing, IEEE transactions on Neural Networks, IEEE transactions on Biomedical engineering.

Technical committee member for IEEE Neural Network Society and Biomedical Circuits and Systems (BioCAS) Society.

Other professional services:

Technical Program Committee: Symposium on Integrated Circuits and Systems Design, 2007 and 2008.

Associate Editor: Advances in Artificial Neural Systems, Hindawi Publications.

Publications:

Journal Proceedings:

Y. Liu, S. Chakrabartty, and E. C.Alocilja, "Fundamental Building Blocks for Molecular Bio-wire based Forward-error Correcting Biosensors", Nanotechnology, 18, (2007), 4240172.

Yang Liu, Amit Gore, Shantanu Chakrabartty, and Evangelyn C.Alocilja, "Characterization of Sub-systems of a Molecular Bio-wire based Biosensor Device," Microchimica Acta, 2008, DOI: 10.1007/s00604-008-0950-0.

V. Venkataramani, S. Chakrabartty, and W. Byrne, Gini-Support Vector Machines for Segmental Minimum Bayes Risk Decoding of Continuous Speech, Computer Speech and Language, Volume 21, Issue 3, July 2007, pp. 423-442.

S. Chakrabartty, Y. Deng and G. Cauwenberghs, Robust Speech Feature Extraction by Growth Transformation in Reproducing Kernel Hilbert Space, IEEE Transactions on Speech, Language and Acoustics, pp. 1842-1849, Vol. 15 Issue: 6, Aug. 2007.

C.Kong and S.Chakrabartty, Analog Iterative Decoders based on Margin Propagation, IEEE Transactions on Circuits and Systems II, pp. 1140-1144, Vol. 54, no. 12, Dec. 2007.

Conference Proceedings:

A. Fazel , S. Chakrabartty, ``Sigma-Delta Learning for Super-Resolution Independent Component Analysis", IEEE International Symposium on Circuits and Systems (ISCAS), Seattle, WA, 2008.

Y. Liu, S. Chakrabartty, E. C.Alocilja, "A Multiplexed Biosensor based on Biomolecular Nanowires," IEEE International Symposium on Circuits and Systems, Seattle, USA, 2008.

Y. Liu, S. Chakrabartty, "Computer Aided Simulation and Verification of Forward Error-Correcting Biosensors," IEEE International Symposium on Circuits and Systems, Seattle, USA, 2008.

N. Lajnef, S. Chakrabartty and N. Elvin, "Calibration and Characterization of Self-powered Floating-gate Sensor Arrays for Long-term Fatigue Monitoring", IEEE Symposium on Circuits and Systems (ISCAS), Seattle WA, May 2008.

A. Fazel , S. Chakrabartty, Sigma-Delta Resolution Enhancement for Far-field Acoustic Source Separation, IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), Las Vegas, NV, 2008.

Y. Liu, A. Gore, S. Chakrabartty, E. C.Alocilja, "A Molecular Bio-wire based Multi-array Biosensor with Integrated Potentiostats," IEEE Biomedical Circuits and Systems Conference, pp. 29-32, Montreal, Canada, Nov.2007.

Y. Liu, S. Chakrabartty, D. S. Gkinosatis, A. K.Mohanty, and N. Lajnef, "Multi-walled Carbon Nanotubes/Poly(L-lactide) Nanocomposite Strain Sensor for Biomechanical Implants," IEEE Biomedical Circuits and Systems Conference, pp. 119-122, Montreal, Canada, Nov.2007.

Y. Liu, A. Gore, S. Chakrabartty, E. C.Alocilja, "A Molecular Bio-wire based Multi-array Biosensor with Integrated Potentiostats," IEEE Biomedical Circuits and Systems Conference, pp. 29-32, Montreal, Canada, Nov.2007. (Invited)