

Sensory Systems Technical Committee Annual Report

IEEE Circuits and Systems Society
Activities for May 2011 through April 2012

Chair : Tobi Delbruck, Institut für Neuroinformatik, Switzerland, tobi@ini.phys.ethz.ch

Secretary Elect: Piotr Dudek, University of Manchester, UK, p.dudek@manchester.ac.uk

Chair-Elect: Teresa Serrano-Gotarredona, National Microelectronics Center, Spain, terese@imse-cnm.csic.es

Secretary Elect: Timothy Constandinou, Imperial College London, t.constandinou@imperial.ac.uk

Past Chairs: Bernabe Linares-Barranco, National Microelectronics Center, Spain, bernabe@imse-cnm.csic.es

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

Annual Meeting: At ISCAS 2012, Seoul, South Korea, COEX Convention Center, Room 317C, Monday, May 21th 2011 from **17:30 to 18:30**.

Summary of Activities

The goal of the Sensory Systems (SS) Technical Committee is to foster research, development, education and industrial dissemination of knowledge relating to the emerging field of sensors and associated processing systems. The activity is genuinely multidisciplinary, drawing upon knowledge and expertise from fields such as biology, physics, mechanics and chemistry, in addition to areas more traditionally associated with the IEEE such as electrical and computer engineering, computer science and information technology.

Committee members are renowned experts, who are both committed to, and active within, the field. The committee membership currently stands at . The bylaws that govern the status of active members was updated and voted during the annual meeting at ISCAS07. This bylaw has been altered to “A member is removed from the committee if he/she does not attend three consecutive annual committee meetings or does not participate in the reviewing activities for three consecutive years”.

Membership

The SSTC presently has 71 active members (see Appendix A). 31 people attended the annual meeting including 17 current members and 11 new members. The 2012 minutes provide more details on the meeting.

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

Participation in ISCAS track paper reviews:

The Sensory Systems Track received 59 submissions at ISCAS 2012, 8 more than in 2011. Three to six reviews were arranged for each paper. Review Committee Member (RCM) assignments were closely monitored to guarantee reviewers were fairly spread over several institutions and countries. We had a total of 17 RCMs each coordinating the review of 3 or 4 papers. 45% of the papers were accepted to form 4 lecture and 2 poster sessions.

The attempt to repeat the Confession Session of 2011 in Rio was a failure; only 7 submissions were obtained with 5 coming from SSTC. The idea may be revived in 2013 or 2014.

The demo track, which originated from SSTC, was again successful, with about half the demos originating from SSTC members.

Best Paper Award:

1. 2012 Best paper awards

59 papers were submitted (about the same as previous several years) and 45% were accepted, forming 4 lecture (20 papers) and 2 poster (12 papers) tracks. 17 volunteer RCMs handled reviews and at least 3 reviews were arranged for each paper. Many thanks to RCMs and reviewers!

The top 10 ranked papers in review (e.g. those with all or almost all “Accept” or “Marginal accept” reviews) were passed out to 15 volunteer rankers from SSTC (not including any standing officers) so that each ranker ranked 6 papers relative to the other 5 in their set. Self-ranking assignments were excluded. Each paper was ranked by at least 7 people.

Many thanks to these volunteers (Alejandro Linares Barranco, Alexander Fish, Andre van Schaik, Bernabe Linares-Barranco, Diego Barrettino, Jennifer Olson Hasler, Jonathan Tapson, Jonne Poikonen, Marc Cohen, Milutin Stanacevic, Shih-Chii Liu, Shoushun Chen, Teresa Serrano Gotarredona, Walter Daniel Leon-Salas, Zeljko Ignjatovic).

After this procedure, one paper clearly stood out (4 best rank and 3 2nd best ranking) and was selected as the best paper of 2012. Another 4 papers of the 10 were ranked almost equally (each receiving at least 3 1st or 2nd place rankings) and were selected as honourable mentions.

Several rankers mentioned that all the papers they had been given were quite good and that it was hard to make a decision. Altogether, the top 8% of all submitted papers received some form of honourable mention.

The best paper and honorary mentions are listed in the 2012 minutes.

4. Out Reach:

Members of our TC serve on program committees of various conferences such as SPIE, NIPS, ICECS, ESSCIRC, Sensors, bioCAS, EMBC, ISSNIP Biosignals and Biorobotics, SBCCI, APCCAS, IEEE Consumer Electronics Conference, ACM International Conference on Computing Frontiers, Asian Symposium on Quality Electronic Design, IEEE VLSI-SOC, International Symposium on Olfaction and Electronics Nose, IEEE Int. Mixed-Signal, Sensors, and Systems Test Workshop 2010, IEEE Int. Conf. Very Large Scale Integration 2011 and several members are active in organizing IEEE and other conferences and workshops.

Members participate in the Editorial Boards as Associate Editors of many prominent journals, such as Frontiers in Neuroscience, Advances in Artificial Neural Systems, TCASI, TCASII, IEEE Sensors Journal, JSSC, TVLSI, TBioCAS, PlosOne, JETCAS, TNSRE, Journal of Sensors, Journal of Low Power Electronics and Applications, the Neuromorphic Engineer, IEEE Technology News, BioNanoScience, Associate Editor, IEICE NOLTA and International Journal on Bifurcation and Chaos.

Several members of the SSTC have been involved in launching a new journal:

- Frontiers in Neuromorphic Engineering.

5. Technical Committee Membership.

We have recruited a group of TC members that cover all the thrusts of our TC. The committee has members from academia, national labs and industry. We have also attempted to diversify the membership to include senior and junior scientists, as well as women and minorities. In addition, our members serve on the editorial boards of various Journals, such as IEEE TVLSI, TSensors, TCAS and AICSP journal.

(Appendix A contains a full list of current TC members)

6. Future Plans:

Extend visibility of TC via special issues, books, workshops, etc.

7. Committee member activities:

The activities by the various committee members are listed in **Appendix B**. One member (John Harris) is currently a IEEE CAS Distinguished Lecturer. Amine Bermak was proposed as a new nominee for DLP at the annual meeting.

8. SSTC web site

The SSTC web pages are presently hosted by the IEEE at a new site address <http://ieeecas.org/community/technical-committees/sstc>, which as of August 2012 can be directly edited by the officers of SSTC. Contact Robyn Pearson (vampandora@gmail.com) for details.

The officer and member lists are on the site, as well as reports and minutes. After last year the site was updated by including member photographs and links to their respective home pages. Suggestions for more dynamic content are welcome!

11. Member updating procedure

The SSTC member agreed to continue with the current member updating procedure established and defined by the TC bylaws. At present, every year each member's activity in the Sensory System field is reviewed for the last three years, as well as his/her direct activities related to Sensory Systems Technical Committee.

Appendix A. Member activity reports

12 members submitted individual activity reports for period May 2011-May 2012

Shantanu Chakrabartty

Short Courses, Plenary Sessions, Keynote Speakers, Invited Lectures

Grand Challenge: Sensing-to-learn and Learning-to-sense – Exploiting biological symbiosis of sensing, computing, memory and adaptation for designing the next-generation of smart sensors (Invited), NSF sponsored US-Japan Joint Workshop on Bioinspired Sensing and Actuation, Berkeley, Nov 12-13, 2011.

Noise-exploitation and Adaptation in Neuromorphic Sensors (Invited Lecture), SPIE, San Diego, Mar. 2012.

Conferences

Tutorials Chair: IEEE Biomedical Circuits and Systems Conference, San Diego, 2011.

Program Committee Member :

- IEEE Statistical Signal Processing Workshop, Ann Arbor, 2012.
- IEEE Biomedical Circuits and Systems Conference, San Diego, 2011.

Editorial Boards

Associate Editor, IEEE Transactions of Biomedical Circuits and Systems (2010-present).
Associate Editor, Advances in artificial neural systems, Hindawi Publications (2007-present).
Review Editor, Frontiers in Neuromorphic Engineering (2011-present).

Other IEEE Service and Professional Activities

Technical Committee Member :

- IEEE Circuits and Systems: Sensory Systems (2005-present)
- IEEE Circuits and Systems: Biomedical circuits and systems (2005-present)
- IEEE Circuits and Systems: Neural systems and applications (2009-present).

Panelist :

- National Science Foundation, 2012.
- American Society of Engineering Education, SMART Scholarship, 2012.
- American Society of Engineering Education, NDSEG Scholarship, 2012.

Awards, Honors, Patents

Michigan State University's Innovation of the Year Award, 2012.

Patents

- S. Chakrabarty, N. Lajnef, N. Elvin, A.Gore, ``Self-powered Sensor'', US Patent: 8,056,420, Issued Nov. 15, 2011.
- S. Chakrabarty, ``Margin Decoding Communication System'', US patent: 8,060,810, Issued Nov. 15, 2011.

Publications

Journal Articles

- A. Fazel, S.Chakrabarty, ``Sparse Auditory Reproducing Kernel (SPARK) Features for Noise-Robust Speech Recognition'', *IEEE Transactions of Audio, Speech and Language Processing*, DOI:10.1109/TASL.2011.2179294, vol.4, no:2, 2012.
- C. Huang, S. Chakrabarty, ``An Asynchronous Analog Self-powered Sensor-Data-Logger with a 13.56MHz RF Programming Interface'', *IEEE Journal of Solid-State Circuits*, DOI:10.1109/JSSC.2011.2172159, Feb, 2012.
- M. Gu, S. Chakrabarty, ``Synthesis of Bias-Scalable Analog Computing Circuits based on Margin Propagation'', *IEEE Transactions of Circuits and Systems-I*, vol. 69, no:2, 2011. DOI:10.1109/TCSI.2011.2163968.
- C. Huang, P. Sarkar, S. Chakrabarty, ``Rail-to-Rail Hot-electron Injection Programming of Floating-gate Voltage Bias Generators at a Resolution of 13bits'', *IEEE Journal of Solid-State Circuits*, vol. 46, no:1, Nov. 2011.
- M. Gu, S. Chakrabarty, ``An Adaptive, 100pJ/bit, (32,8,4), ``Analog LDPC Decoder based on Margin Propagation'', *IEEE Journal of Solid-State Circuits*, vol. 46, no:6, pp.1433-1442, 2011.
- C. Huang, S. Chakrabarty, `` A current-input current-output CMOS logarithmic amplifier based on translinear Ohm's law'', *Electronics Letters*, vol. 47, no:7, pp.433-434, 2011.
- C. Huang, S. Chakrabarty, ``A Compact Self-powered CMOS Strain-rate Monitor for Piezoelectric Energy Scavengers'', *Electronics Letters*, vol. 47, no:4, pp. 277-278, 2011.
- A. Fazel, S. Chakrabarty, ``Statistical Pattern Recognition Techniques for Speaker Verification'', *IEEE Circuits and Systems Magazine*. vol: 11, no:2, pp. 62-81, 2011.

Peer Reviewed Conference Papers

- A. Fazel, S. Chakrabarty, ``Sparse Kernel Cepstral Coefficients (SKCC): Inner-Product Based Features for Noise-Robust Speech Recognition'', *Proc. of IEEE Symposium of Circuits and Systems (ISCAS 2011)*, Rio de Janiero, 2011.
- C. Huang, S. Chakrabarty, ``A Hybrid Energy Scavenging Sensor for Long-Term Mechanical Strain Monitoring'', *Proc. of IEEE Symposium of Circuits and Systems (ISCAS 2011)*, Rio de Janiero, 2011.
- M. Gu, S. Chakrabarty, `` An Adaptive Analog Low-Density Parity-Check Decoder Based on Margin Propagation'', *Proc. of IEEE Symposium of Circuits and Systems (ISCAS 2011)*, Rio de Janiero, 2011.
- T. Hindo, S. Chakrabarty, ``Noise-exploitation and Adaptation in Neuromorphic Sensors'', *Proceedings of the SPIE*, San Diego, Mar. 2012.

Shoushun Chen

Conference organization

Regional liaison Co-Chair and Technical Program Committee member of 19th IFIP/IEEE International Conference on Very Large Scale Integration (VLSI-SoC), Sep, 2011.

Panel Member of judges for "Chip Design Competition" and Review Committee Member (RCM) for the International Symposium on Integrated Circuits (ISIC) 2011; Review Committee Member (RCM) for the IEEE International Symposium on Circuits and Systems (ISCA) 2010/2011.

Editorial Board:

Jan 2010 – Present, Associate editor of Journal of Low Power Electronics & Applications

Reviewer

Journals: IEEE JSSC, IEEE Sensors, IEEE TCAS-I/II, IEEE TVLSI, IEEE TBioCAS,

Publications

Journal papers

Anh Tuan Do, Shoushun Chen, Kiat Seng Yeo and Zhi-hui Kong, "A Gated-power Technique to Reduce Transient and Average Power in Large Scale CAM Design," to appear on IEEE Transactions on Very Large Scale Integration Systems (TVLSI).

Bo Zhao, Xiangyu Zhang, Shoushun Chen, Kay Soon Low and Hualiang Zhuang, "A 64x64 CMOS Image Sensor with on-chip Moving Object Detection and Localization," to appear on IEEE Transactions on Circuits and Systems for Video Technology (TCSVT).

Shoushun Chen, Wei Tang, Xiangyu Zhang and Eugenio Culurciello, "A 64x64 Pixels UWB Wireless Temporal-Difference Digital Image Sensor," to appear on IEEE Transactions on Very Large Scale Integration Systems (TVLSI).

Shoushun Chen, Polina Akselrod, Bo Zhao, Jose Antonio Perez Carrasco, Bernabe Linares-Barranco and Eugenio Culurciello, "Efficient feedforward categorization of objects and human postures with address-event image sensors," IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI), Volume: 34, Issue: 2, pp. 302 - 314, 2011.

Conference papers

Bo Zhao and Shoushun Chen, "Live Demonstration: a Real-Time Moving Object Localization and Extraction System," accepted at the IEEE International Symposium on Circuits and Systems (ISCAS), Seoul, Korea, May 2012.

Wei Tang, Shoushun Chen and Eugenio Culurciello, "a FSK-OOK Ultra Wideband Impulse Radio Communication System with Spontaneous Clock and Data Recovery," accepted at the IEEE International Symposium on Circuits and Systems (ISCAS), Seoul, Korea, May 2012.

Hang Yu, Xinyuan Qian, Shoushun Chen and Kay Soon Low, "A Time-Delay-Integration CMOS Image Sensor with Pipelined Charge Transfer Architecture," accepted at the IEEE International Symposium on Circuits and Systems (ISCAS), Seoul, Korea, May 2012.

Xiangyu Zhang and Shoushun Chen, "A Hybrid-Readout and Dynamic-Resolution Motion Detection Image Sensor for Object Tracking," accepted at the IEEE International Symposium on Circuits and Systems (ISCAS), Seoul, Korea, May 2012.

Xinyuan Qian, Hang Yu, Bo Zhao, Shoushun Chen and Kay Soon Low, "Design of a Radiation Tolerant CMOS Image Sensor," accepted at the International Symposium on Integrated Circuits (ISIC), Singapore, Dec. 2011.

Junwu Zhang, Xiangyu Zhang, Zhuangliang Chen, Kye Yak See, Cher Ming Tan and Shoushun Chen, "On-Chip RF Energy Harvesting Circuit for Image Sensor," accepted at the International Symposium on Integrated Circuits (ISIC), Singapore, Dec. 2011.

Michael Barrow, Amine Bermak and Shoushun Chen, "1-bit heuristic adaptive quantizer (HAQ) for on chip image compression in CMOS image sensors," accepted at the International Symposium on Integrated Circuits (ISIC), Singapore, Dec. 2011.

Xiangyu Zhang, Shoushun Chen and Eugenio Culurciello, "A Second Generation 3D Integrated Feature-Extracting Image Sensor," accepted at the IEEE Sensors Conference, Limerick, Ireland, Oct. 2011.

Aung Myat Thu Linn, Anh Tuan Do, Shoushun Chen and Kiat Seng Yeo, "Adaptive Priority Toggle Asynchronous Tree Arbiter for AER-based Image Sensor," accepted at the IFIP/IEEE International Conference on Very Large Scale Integration (VLSI-SOC), Hong Kong, Oct. 2011.

Bo Zhao, Xiangyu Zhang and Shoushun Chen, "A CMOS Image Sensor with on-chip Motion Detection and Object Localization," accepted at IEEE Custom Integrated Circuits Conference (CICC), San Jose, USA, Sep. 2011.

Xiao-Liang Tan, Anh Tuan Do, Shoushun Chen, Zhi-Hui Kong and Kiat Seng Yeo, "A Two-Stage Self-Disabled CAM Match-Line Sense Amplifier for Low-Power Applications," accepted at the 26th International Technical Conference on Circuits/Systems, Computers and Communications (ITC-CSCC), Gyeongju, Korea, Jun. 2011.

Timothy Constandinou

Short Courses, Plenary Sessions, Keynote Speakers, Invited Lectures

TG Constandinou, "Neural Interfaces and Prostheses for Rehabilitation", UK Neuroinformatics: From Computational Models to Engineering and Cognition (Manchester, UK), 29th November 2011.

Conferences

TG Constandinou, Technical Program Co-chair – IEEE BioCAS Conference, 2011 (San Diego, USA).

Editorial Boards

TG Constandinou, Guest Editor, IEEE Transactions on Biomedical Circuits & Systems (TBioCAS), Special Issue on IEEE BioCAS 2011 (San Diego, USA), 2011.

Publications

Journal Articles

Y Liu, P Georgiou, T Prodromakis, TG Constandinou, C Toumazou, "An Extended CMOS ISFET Model Incorporating the Physical Design Geometry and the Effects on Performance and Offset Variation", IEEE Transactions on Electron Devices, Vol. 58, No. 12, pp. 4414-4422, 2011.

ZDC Goh, P Georgiou, TG Constandinou, T Prodromakis, C Toumazou, "A CMOS-based ISFET Chemical Imager with Auto-Calibration Capability", IEEE Sensors Journal, Vol. 11, No. 12, pp. 3253-3260, 2011.

Peer Reviewed Conference Papers

A Guilvard, A Eftekhar, S Luan, C Toumazou, TG Constandinou, "A Fully-Programmable Neural Interface for Multi-Polar, Multi-Channel Stimulation Strategies", Proc. IEEE International Symposium on Circuits and Systems (ISCAS – Seoul, Korea), 2012.

S Luan, TG Constandinou, "A Novel Charge-Metering Method for Voltage Mode Neural Stimulation", Proc. IEEE International Symposium on Circuits and Systems (ISCAS – Seoul, Korea), 2012.

B Haaheim, TG Constandinou, "A Sub 1 μ W, 16kHz Current-Mode SAR-ADC for Neural Spike Recording", Proc. IEEE International Symposium on Circuits and Systems (ISCAS – Seoul, Korea), 2012.

I Williams, TG Constandinou, "An Energy-Efficient, Dynamic Voltage Scaling Neural Stimulator for a Proprioceptive Prosthesis", Proc. IEEE International Symposium on Circuits and Systems (ISCAS – Seoul, Korea), 2012.

S Paraskevopoulou, TG Constandinou, "An Ultra-Low-Power Front-End Neural Interface with Automatic Gain for Uncalibrated Monitoring", Proc. IEEE International Symposium on Circuits and Systems (ISCAS – Seoul, Korea), 2012.

KB Mirza, S Luan, TG Constandinou, "Towards a Fully-Integrated Solution for Capacitor-Based Neural Stimulation", Proc. IEEE International Symposium on Circuits and Systems (ISCAS – Seoul, Korea), 2012.

SP Woods, TG Constandinou, "Towards a micropositioning system for targeted drug delivery in wireless capsule endoscopy", Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBS), pp. 7372-7375, 2011.

S Paraskevopoulou, TG Constandinou, "A sub-1 μ W Neural Spike-Peak Detection and Spike-Count Rate Encoding Circuit", IEEE Biomedical Circuits and Systems (BioCAS) conference, pp. 29-32, 2011.

A Serb, K Nikolic, TG Constandinou, "Feasibility of an Electro-Optic Link for Bondpad-less CMOS Lab-on-Chips", IEEE Biomedical Circuits and Systems (BioCAS) conference, pp. 353-356, 2011.

Eugenio Culurciello

Invited Talks

Purdue April 2012 Computer Vision/Graphic seminar. Title: Modeling the human visual system in hardware.

USC March 30th talk. Title: Bio-inspired hardware vision systems for robotics

ASU March 28-29, 2012; Title: Bio-inspired hardware vision systems for robotics

Drexel March 20, 2012; Title: Modeling the human visual system in hardware

Purdue Center Implantable Device symposium feb 24th 2012; "Biomedical instrumentation for optogenetic cortical recordings and high-throughput patch-clamp"

Purdue BME seminar Feb 15th 2012: "Scaling up neuroscience: optogenetic neural recording"

Machine Learning Purdue seminar, Feb 14th 2012: "Machine learning for synthetic vision systems"

SoC Conference, keynote talk, Nov 2nd 2011; title: Vision for robots, vehicles and consumer electronics: how close are we?

Purdue AVL laboratories seminar; "The Eye of the Terminator: Modeling the human visual system in hardware"

Samsung, Korea, April 27th 2011; "An hardware accelerated vision system for general-purpose vision algorithms"

Yonsei, Korea, April 22nd 2011; "An accelerated vision processor for general-purpose vision algorithms"

University of Illinois at Chicago, April 8th 2011; "The Eye of the Terminator: Modeling the human visual system in hardware"

NYU/Poly February 15th, 16th 2011; "Modeling the human visual system in hardware"

Yale Institute for Nanoscience and Quantum Engineering, January 28th 2011, Synthetic eyes, vision, and tools to reverse engineer the brain from the e-Lab team @ Yale

Organizers: Conferences, Workshops, Panels, Special Sessions,

IEEE Biomedical Circuits and Systems (BioCAS) Conference: conference committee

Editorial Services

Reviewer for: IEEE Journal of Solid State Circuits, IEEE Transactions on Biomedical Circuits and Systems, Frontiers in Neuromorphic Engineering, IEEE International Symposium on Circuits and Systems (ISCAS), IEEE Sensors Journal, IEEE Transactions on Neural Networks,

Publications

Journals

- Noise Analysis and Performance Comparison of Low Current Measurement Systems for Biomedical Applications, Dongsoo Kim, Brian Goldstein, Wei Tang, Eugenio Culurciello, IEEE Transactions on Biomedical Circuits and Systems, accepted awaiting publication, 2012, pp-.
- Comparison Between Frame-Constrained Fix-Pixel-Value and Frame-Free Spiking-Dynamic-Pixel ConvNets for Visual Processing, Clément Farabet, Rafael Paz, Jose Perez-Carrasco, Carlos Zamarreño, Alejandro Linares-Barranco, Yann LeCun, Eugenio Culurciello, Teresa Serrano-Gotarredona and Bernabe Linares-Barranco, Frontiers in Neuromorphic Engineering, www.frontiersin.org, 2012, pp-.
- Brian Goldstein, Dongsoo Kim, Jian Xu, T. Kyle Vanderlick, Eugenio Culurciello, "CMOS Low Current Measurement System for Biomedical Applications", IEEE Transactions on Biomedical Circuits and Systems, accepted, to be published, 2012, pp-.
- A 64×64 Pixels UWB Wireless Temporal-Difference Digital Image Sensor, Shoushun Chen, Wei Tang, Xiangyu Zhang, and Eugenio Culurciello, IEEE Transactions on Very Large Scale Integration Systems, accepted and to be published, 2011, pp. – .
- Head-mountable High Speed Camera for Optical Neural Recording, Joon Hyuk Park, Jelena Platasa, Justus V. Verhagen, Shree H. Gautam, Ahmad Osman, Dongsoo Kim, Vincent A. Pieribone, Eugenio Culurciello, Journal of Neuroscience Methods, Vol. 201, No. 2, October 2011, pp. 290-295.
- Efficient feedforward categorization of objects and human postures with address-event image sensors, Shoushun Chen, Polina Akselrod, Bo Zhao, Jose Antonio Perez Carrasco, Bernabe Linares-Barranco and Eugenio Culurciello, IEEE Transactions on Pattern Analysis and Machine Intelligence, February 2012, Vol. 34, N. 2, pp. 302-313.

Conference Proceedings

- Live Demonstration: a FSK-OOK Ultra Wideband Impulse Radio Communication System with Spontaneous Clock and Data Recovery, Wei Tang, Shoushun Chen, Eugenio Culurciello, IEEE International Symposium on Circuits and Systems, 2012. ISCAS 2012, Seoul, S. Korea, pp. – .
- A Second-Generation Imaging System for Freely Moving Animals, Joon Hyuk Park, Jelena Platasa, Vincent Pieribone, Eugenio Culurciello, IEEE International Symposium on Circuits and Systems, 2012. ISCAS 2012, Seoul, S. Korea, pp. – .
- A mobile imaging system to monitor the cortex in behaving rodents, Joon Hyuk Park, Ahmad Osman, Jelena Platasa, Eugenio Culurciello, Vincent Pieribone, Computational and Systems Neuroscience (Cosyne) 2012, Salt Lake City, February 23 – 26, 2012, pp.
- A Second Generation 3D Integrated Feature-Extracting Image Sensor Xiangyu Zhang, Shoushun Chen, and Eugenio Culurciello, IEEE Sensors 2011, 28-31 October 2011, Limerick, Ireland, pp. 1933 – 1936.
- CMOS Low Current Measurement System for Nanopore Sensing Applications Brian Goldstein, Dongsoo Kim, Malgorzata Magoch, Yann Astier, and Eugenio Culurciello, IEEE Biomedical Circuits and Systems Conference, BioCAS 2011, November 2011, San Diego, pp. 265 – 268.
- A Head-Mountable Microscope for High-Speed Fluorescence Brain Imaging Ahmad Osman, Joon Hyuk Park, David Dickensheets, Jelena Platasa, Eugenio Culurciello, Vincent A. Pieribone, IEEE Biomedical Circuits and Systems Conference, BioCAS 2011, November 2011, San Diego, pp. 114-116 .
- A Non-Coherent FSK-OOK UWB Impulse Radio Transmitter for Clock-Less Synchronization, W. Tang, E. Culurciello, IEEE International Symposium on Circuits and Systems, 2011. ISCAS 2011, Rio de Janeiro, Brazil, pp. – .
- CMOS Low Current Measurement System for Biomedical Applications, B. Goldstein, Dongsoo Kim, Angelo Rottigni, Jian Xu, T. Kyle Vanderlick, E. Culurciello, IEEE International Symposium on Circuits and Systems, 2011. ISCAS 2011, Rio de Janeiro, Brazil, pp. 1016-1020.
- An optogenetic neural recording system and its application to study the mouse visual cortex, Joon Hyuk Park, Yuka Okazaki, Tamas Fehervari, Yoshinori Shimada, Vincent Pieribone, Tetsuya Yagi, Eugenio Culurciello, IEEE CASFEST 2011, Topic: Brain Machine Interface (BMI).
- A 4-channels Integrated Voltage and Current Patch-Clamp Amplifier Brian Goldstein, Andrew Choe, Fred Sigworth and Eugenio Culurciello, IEEE Midwest Symposium on Circuits and Systems, MWSCAS 2011, Special Session: ASIC Sensors for Biomedical and Environmental Applications, Invited Paper.
- NeuFlow: A Runtime Reconfigurable Dataflow Architecture for Vision C. Farabet, Y. LeCun, E. Culurciello, Snowbird Learning Workshop, Fort Lauderdale FL, 2011.
- Hardware Accelerated Visual Attention Algorithm P. Akselrod, F. Zhao, I. Derekli, C. Farabet, B. Martini, Y. LeCun and Eugenio Culurciello, Proc. Conference on Information Sciences and Systems (CISS), IEEE, Baltimore, 2011.

Tobi Delbruck

Tried to organize second Confession Session at ISCAS 2012, but lack of contributions from other TCs aborted attempt.

Short Courses, Plenary Sessions, Keynote Speakers, Invited Lectures

Boston INCF short course on neuroscience neuromorphic engineering talk, , Sep 2, 2011

Swiss Society of Neuroscience talk on Silicon Retinas Feb 3, 2012

Kyoto Symposium on VLSI short course on Bio-inspired computing talk on Bioinspired Vision Sensors, June 1, 2011

Taiwan International Workshop on Bio-inspired Systems and Prosthetic Devices (BioPro), Sep 2011

Capo Caccia Cognitive Neuromorphic Engineering Workshop, Apr-May 2011 and 2012

Neuchatel, EU Future and Emerging Technologies forum, "Lessons learned from past FET projects we will apply to our new SEEBETTER project", Sep 16, 2011

Conferences

Co-organizer of [Telluride Neuromorphic Cognition Engineering Workshop](#) 2008-present, with R. Etienne-Cummings and T. Horiuchi

Co-organizer [IEEE Swiss Image and Vision Sensors Workshop](#), Sep. 8, 2011

Editorial Boards

Associate Editor of IEEE Transactions on Biomedical Circuits and Systems (2010 – present). 4 articles handled.

Associate Editor of Frontiers in Neuromorphic Engineering (2010-present). One article handled.

Other IEEE Service and Professional Activities

IEEE CAS Sensory Systems Technical Committee Chair (2011-2013)

Co-organized first-ever special session "[Confession Session: Learning from Others Mistakes](#)" at ISCAS 2011 with B. Linares-Barranco

Co-organized Live Demo session at ISCAS 2009-2012.

Awards, Honors, Patents

No honors. SEEBETTER project funded. One patent filed.

Publications

Journal Articles

Toward real-time particle tracking using an event-based dynamic vision sensor, (2011) D. Drazen, P. Lichtsteiner, P. Hafliker, T. Delbruck, A. Jensen, Experiments in Fluids: 51:5 5 (2011), pp 1465-1469.

Event-Based Pixel Sensitive to Changes of Color and Brightness, (2011) R. Berner, T. Delbruck, IEEE Transactions on Circuits and Systems I (TCAS I), 58:7, pp 1581-1590.

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

Peer Reviewed Conference Papers

Live demonstration: Behavioural Emulation of Event-Based Vision Sensors, M. Katz, K. Nikolic, T. Delbruck, in ISCAS 2012, Seoul, in press.

Live demonstration: Gesture-Based remote control using stereo pair of dynamic vision sensors, J. Lee, T. Delbruck, P.K.J. Park, M. Pfeiffer, C.W. Shin, H. Ryu, and B.C. Kang, in ISCAS 2012, Seoul, in press.

Addressable Current Reference Array with 170dB Dynamic Range, M. Yang, S.C. Liu, C. Li, T. Delbruck, in ISCAS 2012, Seoul, in press.

Confession Session: Learning from Others Mistakes, T. Delbruck et al., in ISCAS 2011, Rio de Janeiro, pp. 1149-1162. First-ever special session at ISCAS devoted to confessions of errors of all types. 26 confessions.

Alejandro Linares Barranco

Short Courses, Plenary Sessions, Keynote Speakers, Invited Lectures

"The neuromorphic AER: Spiking from sensors to actuators", invited seminar at The University of Ulster, January 2011.

Invited Lecturer to the 2012 PhD courses of the University of Cadiz, SPAIN: Program of Modeling, Simulating and Testing of Signal and Data Processing. Subject: Advances in Bioinspired and Robotic Systems. April-2012

Conferences

Financial and Registration Chair of the IEEE/SCS 2012 International Conference on Computer, Information and Telecommunication Systems, Amman, Jordan, <http://congreso.us.es/cits2012/>

Program Chair of the 2011 Proceedings of the International Conference on Signal Processing and Multimedia Applications (ICETE-2011). ISBN: 978-989-8425-72-0. <http://sigmap.icete.org>

TPC of the the International Conference on Signal Processing and Multimedia Applications (ICETE), 2010 to present.

TPC of the the International Conference on Data Communication Networking. (ICETE), 2010 to present.

RCM of the NSA Track of ISCAS (2010 to present).

Editorial Boards

Reviewer Pool on Sensors (<http://www.mdpi.com/journal/sensors/>) (2011 to present)

Review editor on Frontiers on Neuromorphic Engineering(http://www.frontiersin.org/Neuromorphic_Engineering) (2010 to present)

Co-editor of the 2011 Proceedings of the International Conference on Signal Processing and Multimedia Applications (ICETE-2011). ISBN: 978-989-8425-72-0. <http://sigmap.icete.org>

Publications

Journal Articles

M. Domínguez-Morales, A. Linares-Barranco, P. Iñigo, J.L. Font, D. Cascado, G. Jimenez, F. Díaz, J.L. Sevillano. "A PCI AER co-processor evaluation based on CPUs performance counters". Journal of Internet Technology. JCR 0,448. In press.

Carlos Zamarreño-Ramos, Alejandro Linares-Barranco, Teresa Serrano-Gotarredona, and Bernabé Linares-Barranco. "Multi-Casting Mesh AER: A Scalable Assembly Approach for Reconfigurable Neuromorphic Structured AER Systems. Application to ConvNets". IEEE Transactions on Bio Circuits & Systems. JCR 1,74. Accepted for publication.

Angel Jimenez-Fernandez, Gabriel Jimenez-Moreno, Alejandro Linares-Barranco, Manuel J. Dominguez-Morales, Rafael Paz-Vicente and Anton Civit-Balcells. "A Neuro-Inspired Spike-Based PID Motor Controller for Multi-Motor Robots with Low Cost FPGAs". Sensors. <http://www.mdpi.com/1424-8220/12/4/3831/> JCR 1,771. March-2012.

Clément Farabet, Rafael Paz, Jose Perez-Carrasco, Carlos Zamarreño, Alejandro Linares-Barranco, Yann LeCun, Eugenio Culurciello, Teresa Serrano-Gotarredona, Bernabe Linares-Barranco. "Comparison Between Frame-Constrained Fix-Pixel-Value and Frame-Free Spiking-Dynamic-Pixel ConvNets for Visual Processing". Frontiers in Neuromorphic Engineering. http://www.frontiersin.org/neuromorphic_engineering/10.3389/fnins.2012.00032/abstract February-2012.

Peer Reviewed Conference Papers

M. Dominguez-Morales, A. Jimenez-Fernandez, R. Paz, A. Linares-Barranco, D. Cascado, J. L. Coronado, J. L. Muñoz and G. Jimenez. "An AER to CAN Bridge for Spike-Based Robot Control". IWANN, Malaga, SPAIN, June-2011.

Ángel Francisco Jiménez Fernández; Manuel Jesús Domínguez Morales; Elena Cerezueta Escudero; Rafael Paz Vicente; Alejandro Linares Barranco; Gabriel Jimenez Moreno. "Simulating Building Blocks For Spikes Signals Processing". IWANN, Malaga, SPAIN, June-2011.

Rafael Jesús Montero González; Arturo Morgado Estevez; Alejandro Linares Barranco; Bernabe Linares Barranco; Fernando Pérez Peña; Jose Antonio Pérez Carrasco; Ángel Francisco Jiménez Fernández. "Performance Study Of Software Aer-Based Convolutions On A Parallel Supercomputer". IWANN, Malaga, SPAIN, June-2011.

Fernando Pérez Peña; Arturo Morgado Estevez; Alejandro Linares Barranco; Gabriel Jimenez Moreno; Jose Maria Rodriguez Corral; Rafael Jesús Montero González "Frequency Analysis Of A 64x64 Pixel Retinomorphic System With Aer Output To Estimate The Limits To Apply Onto Specific Mechanical Environment". IWANN, Malaga, SPAIN, June-2011.

Manuel Rivas Pérez; Alejandro Linares Barranco; Francisco De Asís Gómez Rodríguez; Arturo Morgado Estevez; Gabriel Jimenez Moreno; Antonio Abad Civit Balcells "An Aer Spike-Processing Filter Simulator And Automatic Vhdl Generator Based On Cellular Automata". IWANN, Malaga, SPAIN, June-2011.

Gomez-Rodriguez, F., Miro-Amarante, L., Rivas, M., Jimenez, G., Diaz-del-Rio, F. "Neuromorphic Real-Time Objects Tracking Using Address Event Representation and Silicon Retina". IWANN, Malaga, SPAIN, June-2011.

Manuel Jesús Domínguez Morales; Ángel Francisco Jiménez Fernández; Rafael Paz Vicente; Manuel Ramón López Torres; Elena Cerezueta Escudero; Alejandro Linares Barranco; Gabriel Jimenez Moreno; Arturo Morgado Estevez. "An Approach to Distance Estimation with Stereo Vision using Address-Event-Representation". ICONIP, Shanghai, China, Nov-2011.

Manuel Ramón López Torres; Fernando Diaz Del Rio; Manuel Jesús Domínguez Morales; Gabriel Jimenez Moreno; Alejandro Linares Barranco. "AER Spiking Neuron Computation on GPUs: The Frame-To-AER Generation". ICONIP, Shanghai, China, Nov-2011.

Ángel Francisco Jiménez Fernández; Gabriel Jimenez Moreno; Alejandro Linares Barranco; Elena Cerezueta Escudero; Rafael Paz Vicente "On the Designing of Spikes Band-Pass Filters for FPGA" ICANN, Helsinki, Finland, June-2011.

Manuel Jesús Domínguez Morales; Elena Cerezueta Escudero; Ángel Francisco Jiménez Fernández; Rafael Paz Vicente; Juan Luis Font Calvo; Pablo Iñigo Blasco; Alejandro Linares Barranco; Gabriel Jimenez Moreno "Image Matching Algorithms in Stereo Vision Using Address-Event-Representation". ICETE-SIGMAP, Sevilla-SPAIN, July-2011.

Rafael Jesús Montero González; Arturo Morgado Estevez; Fernando Pérez Peña; Alejandro Linares Barranco; Ángel Francisco Jiménez Fernández; Bernabe Linares Barranco; Jose Antonio Pérez Carrasco "Visual AER-Based Processing with Convolutions for a Parallel Supercomputer" ICETE-SIGMAP, Sevilla-SPAIN, July-2011.

Fernando Pérez Peña; Arturo Morgado Estevez; Alejandro Linares Barranco; Rafael Jesús Montero González; Gabriel Jimenez Moreno "Video Surveillance at an Industrial Environment using an Address Event Vision Sensor - Comparative between two different Video Sensor based on a Bioinspired Retina" ICETE-SIGMAP, Sevilla-SPAIN, July-2011.

Manuel Rivas Pérez; Alejandro Linares Barranco; Ángel Luis Jiménez Fernández; Antonio Abad Civit Balcells; Gabriel Jimenez Moreno. "AER-Spike Processing Filter Simulator - Implementation of an AER Simulator Based on Cellular Automata" ICETE-SIGMAP, Sevilla-SPAIN, July-2011.

Montero-Gonzalez, R.; Perez-Pena, F.; Morgado-Estevez, A.; Paz, R.; Linares-Barranco, A.; Rodriguez, M.A.; Jimenez, G "Performance study of spike visual processing on a Supercomputer: AER-based spike convolution processing on a 320-core cluster" SPECTS 2011, The Hague, Netherlands, July-2011.

Other Publications

Fernando Pérez Peña; Arturo Morgado Estevez; Alejandro Linares Barranco "Adaptación Teórica de un Algoritmo Generador de Trayectorias al Paradigma Pulsante AER". Comunicación en libro de actas de las III jornadas pre-doctorales de la Universidad de Cádiz. Sept-2011.

Viktor Gruev

Short Courses, Plenary Sessions, Keynote Speakers, Invited Lectures

"High resolution Polarization Imaging Sensors" – IEEE BME chapter in St. Louis, MO, USA

"Advances in Spectral-Polarization Imaging" – University of Arizona, Tucson, AZ, USA

"Real-time and high resolution Polarization Imaging" – IEEE Conference on Computational Photography, Seattle, WA, USA

"Advances in Imaging Technologies" – Air Force institute of Technology, Patterson AFB, Ohio, USA

Conferences

Chair for the Analog Signal Processing Technical Committee at IEEE ISCAS.

Member of Sensory Systems Technical Committee, Member of Biomedical Circuits and Systems Technical Committee

Awards, Honors, Patents

V. Gruev, Z. Yang and J. Van der Spiegel, "Current/Voltage Mode Image Sensor With Switchless Active Pixels" U.S. Patent # 7,924,332, April 2011.

Publications

Journal Articles

York, T and V. Gruev, "Optical Characterization of a Visible Spectrum Division-of-Focal-Plane Polarimeter" to appear in *Applied Optics*.

Njuguna, R. and Gruev, V., "Low Power Programmable Current Mode Computational Imaging Sensor," *IEEE Sensors Journal*, Vol. 12, No. 4, pp727 - 736, 2012.

V. Gruev, "Fabrication of a dual-layer aluminum nanowires polarization filter array," *Optics Express*, vol. 19, pp. 24361-24369, 2011.

S. Gao and V. Gruev, "Bilinear and bicubic interpolation methods for division of focal plane polarimeters," *Optics Express*, vol. 19, pp. 26161-26173, 2011.

Peer Reviewed Conference Papers

V. Gruev, "Fabrication of a Dual-Layer Aluminum Nanowires Polarization Filter Array," Proc. IEEE Int. Symp. Circuits and Systems, Seoul, South Korea (2011).

Shengkui Gao and Viktor Gruev, "Gradient Based Interpolation for Division of Focal Plane Polarization Imaging Sensors," Proc. IEEE Int. Symp. Circuits and Systems, Seoul, South Korea (2011).

Meenal Kulkarni and Viktor Gruev, "Division of Focal Plane Spectral-Polarization Imaging Sensor," Proc. SPIE, Baltimore, MD (2012).

Xiaoxiao Xu, Meenal Kulkarni, Arye Nehorai and Viktor Gruev, "A Correlation-Based Interpolation Algorithm for Division-of-Focal-Plane Polarization Sensors," Proc. SPIE, Baltimore, MD (2012).

Timothy York, Sam Powell, Roger Chamberlain and Viktor Gruev, "A Comparison of Polarization Image Processing Across Different Platforms," Proc. SPIE, San Diego, CA (2011).

Gruev, V.; York, T., "High Resolution CCD Polarization Imaging Sensor," International Image Sensor Workshop, Sapporo, Japan, June 2011.

Short Courses, Plenary Sessions, Keynote Speakers, Invited Lectures

- “Frame-Free Event-Driven Vision Sensing and Processing,” Keynote speech at the 2010 CNRS french workshop on future system on chip and emerging technologies, Paris, France.
- “Spiking Hardware for Frame-Free Event-Driven Vision Sensing and Processing,” Invited Lecture at Pompeu Fabra University, Barcelona, Spain, July 2010.
- “The EKV/ACM compact models for mismatch modeling down to 90nm and for new emergent non-CMOS nanotechnology FETs,” Invited Lecture at the Workshop “MOS-AK 2010: Over Two Decades of Enabling Compact Modeling R&D Exchange”, co-celebrated with the European Solid-State Circuits Conference (ESSCIRC) September 2010, Sevilla, Spain.
- “How to compute with memristors: dedicated bio-inspired architectures,” Keynote speech at “FET11: The European Future Technologies Conference and Exhibition”, Science Beyond Fiction, 4-6 May 2011, Budapest, Hungary. April 2011.

Editorial Boards

Associate Editor *Frontiers in Neuromorphic Engineering*

Other IEEE Service and Professional Activities

Chair of the IEEE Circuits and Systems Spanish Chapter

Awards, Honors, Patents

Teresa Serrano Gotarredona and Bernabé Linares Barranco, “Low-consumption low-mismatch gain transimpedance circuit for temporal difference photosensors in dynamic vision sensors,” Spanish Patent, P201130862, May 2011.

Publications

Journal Articles

- 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
- L. Camuñas-Mesa, A. Acosta-Jiménez, C. Zamarreño-Ramos, T. Serrano-Gotarredona, and B. Linares-Barranco, “A 32x32 Pixel Convolution Processor Chip for Address Event Vision Sensors with 155ns Event Latency and 20Meps Throughput,” *IEEE Trans. Circ. and Syst. Part-I*, vol. 58, No. 4, pp. 777-790, April 2011
- Carlos Zamarreño-Ramos, Luis A. Camuñas-Mesa, Jose A. Perez-Carrasco, Timothee Masquelier, Teresa Serrano-Gotarredona, and Bernabe Linares-Barranco, “On Spike-Timing-Dependent-Plasticity, Memristive Devices, and building a Self-Learning Visual Cortex,” *Frontiers in Neuromorphic Engineering. Front. Neurosci.* 5:26, 2011. doi: 10.3389/fnins.2011.00026, 17 March 2011.
- Leñero-Bardallo, J. A. Serrano-Gotarredona, T. Linares-Barranco, B., “A 3.6 μ s Latency Asynchronous Frame-Free Event-Driven Dynamic-Vision-Sensor,” *IEEE Journal of Solid-State-Circuits*, vol. 46, n. 6, pp. 1443-55, June 2011.
- C. Zamarreño-Ramos, T. Serrano-Gotarredona, and B. Linares-Barranco, “An Instant-Startup Jitter-Tolerant Manchester-Encoding Serializer/Deserializer Scheme for Event-Driven Bit-Serial LVDS Inter-Chip AER Links,” *IEEE Trans. Circ. and Syst. Part-I*, vol. 58, No. 11, pp. 2647-60, November, 2011.
- L. Camuñas-Mesa, C. Zamarreño-Ramos, A. Linares-Barranco, A. Acosta-Jiménez, T. Serrano-Gotarredona, and B. Linares-Barranco, “An Event-Driven Multi-Kernel Convolution Processor Module for Event-Driven Vision Sensors,” *IEEE J. of Solid-State Circuits*, *IEEE J. of Solid-State Circuits*, vol. 47, No. 2, pp. 504-517, Feb. 2012.
- F. Alibart, S. Pleutin, O. Bichler, C. Gamrat, T. Serrano-Gotarredona, B. Linares-Barranco and D. Vuillaume, “A memristive nanoparticle/organic hybrid synapstor for neuro-inspired computing,” *Advanced Functional Materials* 2011, DOI: 10.1002/adfm.201101935, wileyonlinelibrary.com.
- C. Farabet, R. Paz, J. Pérez-Carrasco, C. Zamarreño-Ramos, A. Linares-Barranco, Y. LeCun, E. Culurciello, T. Serrano-Gotarredona, and B. Linares-Barranco, “Comparison Between Frame-Constrained Fix-Pixel-Value and Frame-Free Spiking-Dynamic-Pixel ConvNets for Visual Processing,” *Frontiers in Neuromorphic Engineering, Front. Neurosci.*, 6:32. doi: 10.3389/fnins.2012.00032.
- C. Zamarreño-Ramos, A. Linares-Barranco, T. Serrano-Gotarredona, and B. Linares-Barranco, “Multi-Casting Mesh AER: A Scalable Assembly Approach for Reconfigurable Neuromorphic Structured AER Systems. Application to ConvNets,” *IEEE Trans. on Biomedical Circuits and Systems*, in Press.
- C. Zamarreño-Ramos, T. Serrano-Gotarredona, and B. Linares-Barranco, “A 0.35 μ m Sub-ns Wake-up Time ON-OFF Switchable LVDS Driver-Receiver Chip I/O Pad Pair for Rate-Dependent Power Saving in AER Bit-Serial Links,” *IEEE Trans. on Biomedical Circuits and Systems*, in Press.
- S. Chen, P. Akselrod, B. Zhao, J. A. Pérez-Carrasco, B. Linares-Barranco and E. Culurciello, “Efficient feedforward categorization of objects and human postures with address-event image sensors,” *IEEE Trans. on Pattern Analysis and Machine Intelligence*, vol. 34, No. 2, pp. 302-314, Feb. 2012.

Peer Reviewed Conference Papers

- Carlos Zamarreño-Ramos, Teresa Serrano-Gotarredona, Bernabé Linares-Barranco, Raghavendra Kulkarni, José Silva-Martínez, "Voltage Mode Driver for Low Power transmission of High Speed Serial AER Links," Proceedings of the 2011 IEEE International Symposium on Circuits and Systems (ISCAS 2011), pp. 2433-2436, Rio Janeiro, May 2011.
- Teresa Serrano-Gotarredona, Juan Antonio Leñero-Bardallo, and Bernabé Linares-Barranco, "A Bioinspired 128x128 pixel dynamic-vision-sensor," Proceedings of the 2011 Conference on Design of Circuits and Integrated Systems (DCIS2011), Albufeira, November 2011.

Other Publications

- 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

Shih-Chii Liu

Short Courses, Plenary Sessions, Keynote Speakers, Invited Lectures

- "Artificial event-based sensors", talk at IEEE International Joint Conference on Neural Networks, Neuromorphic hardware: design and application workshop, San Jose, CA, USA, Aug 2011.

Conferences

- Review member of IEEE ISCAS 2012
Track Co-Chairman, Neural Systems and Networks Track in IEEE ISCAS Brazil (May 2011)

Editorial Boards

- IEEE Trans. on Biomedical Circuits and Systems Associate Editor
Frontiers in Neuromorphic Engineering Associate Editor

Other IEEE Service and Professional Activities

- Member of the IEEE CAS Sensory Systems and Neural Systems and Applications Technical Committees
Chair of IEEE Swiss CAS/ED Chapter
Co-organizer of IEEE Swiss Image and Vision Sensors Workshop, Sep 8, University of Zurich, Switzerland, 2011
Topic Leader Co-organizer of session on Neuromorphic Asynchronous Circuits at Telluride Neuromorphic Cognition Engineering Workshop, Telluride, Colorado, 2011
Reviewer for Neural Information Processing Systems (NIPS) Conference, IEEE TCAS, IEEE TNN, IEEE TBCAS journals

Publications

Journal Articles

- Y-X. Wang and S-C. Liu, "A two-dimensional configurable active silicon dendritic neuron array", IEEE Transactions on Circuits and Systems, 58(9), pp 2159—2171, 2011.
- 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

Peer Reviewed Conference Papers

- M. Abdollahi and S-C. Liu, "Speaker-independent isolated digit recognition using an AER silicon cochlea", IEEE Biomedical Circuits and Systems Conference, pp 269--272, Nov 10--12, San Diego, CA, 2011.
- Y-X. Wang and S-C. Liu, "A two-dimensional configurable active silicon dendritic neuron array", IEEE International Symposium on Circuits and Systems, pp 677--680, May 15--18, Rio de Janeiro, Brazil, 2011.
- H. Finger and S-C. Liu, "Estimating the location of a sound source with a spike-timing localization algorithm", IEEE International Symposium on Circuits and Systems, pp 2461--2464, May 15--18, Rio de Janeiro, Brazil, 2011.

Books and Book Chapters

- T. Delbruck and S-C. Liu, "Spiking silicon retinas and cochleas for vision and audition", in Frontiers in Sensing - From Biology to Engineering, F.G. Barth, J. A.Humphrey, and M.V. Srinivasan, eds, Springer-Verlag Berlin Heidelberg, 2012.

Teresa Serrano-Gotarredona

Conferences

Member of the Technical Committee for the IEEE MWSCAS 2012

Editorial Boards

Associate Editor of IEEE Transactions on Circuits and Systems, part I (January 2012-present)
Academic Editor PlosOne (May 2008 – present)

Awards, Honors, Patents

Teresa Serrano Gotarredona and Bernabé Linares Barranco, "Low-consumption low-mismatch gain transimpedance circuit for temporal difference photosensors in dynamic vision sensors," Spanish Patent, P201130862, May 2011

Publications

Journal Articles

- 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.Followosele, S.Saighi, T.Serrano-Gotarredona, J.Wijekoon, Y.Wang and K.Boahen, "Neuromorphic Silicon Circuits", *Frontiers in Neuroscience*, 5:73. pp 1-23, 2011
- L. Camuñas-Mesa, A. Acosta-Jiménez, C. Zamarreño-Ramos, T. Serrano-Gotarredona, and B. Linares-Barranco, "A 32x32 Pixel Convolution Processor Chip for Address Event Vision Sensors with 155ns Event Latency and 20Meps Throughput," *IEEE Trans. Circ. and Syst. Part-I*, vol. 58, No. 4, pp. 777-790, April 2011
- Carlos Zamarreño-Ramos, Luis A. Camuñas-Mesa, Jose A. Perez-Carrasco, Timothee Masquelier, Teresa Serrano-Gotarredona, and Bernabe Linares-Barranco, "On Spike-Timing-Dependent-Plasticity, Memristive Devices, and building a Self-Learning Visual Cortex," *Frontiers in Neuromorphic Engineering. Front. Neurosci.* 5:26, 2011. doi: 10.3389/fnins.2011.00026, 17 March 2011.
- Leñero-Bardallo, J. A. Serrano-Gotarredona, T. Linares-Barranco, B., "A 3.6 μ s Latency Asynchronous Frame-Free Event-Driven Dynamic-Vision-Sensor," *IEEE Journal of Solid-State-Circuits*, vol. 46, n. 6, pp. 1443-55, June 2011.
- C. Zamarreño-Ramos, T. Serrano-Gotarredona, and B. Linares-Barranco, "An Instant-Startup Jitter-Tolerant Manchester-Encoding Serializer/Deserializer Scheme for Event-Driven Bit-Serial LVDS Inter-Chip AER Links," *IEEE Trans. Circ. and Syst. Part-I*, vol. 58, No. 11, pp. 2647-60, November, 2011.
- L. Camuñas-Mesa, C. Zamarreño-Ramos, A. Linares-Barranco, A. Acosta-Jiménez, T. Serrano-Gotarredona, and B. Linares-Barranco, "An Event-Driven Multi-Kernel Convolution Processor Module for Event-Driven Vision Sensors," *IEEE J. of Solid-State Circuits*, *IEEE J. of Solid-State Circuits*, vol. 47, No. 2, pp. 504-517, Feb. 2012.
- F. Alibart, S. Pleutin, O. Bichler, C. Gamrat, T. Serrano-Gotarredona, B. Linares-Barranco and D. Vuillaume, "A memristive nanoparticle/organic hybrid synapstor for neuro-inspired computing," *Advanced Functional Materials* 2011, DOI: 10.1002/adfm.201101935, wileyonlinelibrary.com.
- C. Farabet, R. Paz, J. Pérez-Carrasco, C. Zamarreño-Ramos, A. Linares-Barranco, Y. LeCun, E. Culurciello, T. Serrano-Gotarredona, and B. Linares-Barranco, "Comparison Between Frame-Constrained Fix-Pixel-Value and Frame-Free Spiking-Dynamic-Pixel ConvNets for Visual Processing," *Frontiers in Neuromorphic Engineering, Front. Neurosci.*, 6:32. doi: 10.3389/fnins.2012.00032.
- C. Zamarreño-Ramos, A. Linares-Barranco, T. Serrano-Gotarredona, and B. Linares-Barranco, "Multi-Casting Mesh AER: A Scalable Assembly Approach for Reconfigurable Neuromorphic Structured AER Systems. Application to ConvNets," *IEEE Trans. on Biomedical Circuits and Systems*, in Press.
- C. Zamarreño-Ramos, T. Serrano-Gotarredona, and B. Linares-Barranco, "A 0.35 μ m Sub-ns Wake-up Time ON-OFF Switchable LVDS Driver-Receiver Chip I/O Pad Pair for Rate-Dependent Power Saving in AER Bit-Serial Links," *IEEE Trans. on Biomedical Circuits and Systems*, in Press.

Peer Reviewed Conference Papers

- Carlos Zamarreño-Ramos, Teresa Serrano-Gotarredona, Bernabé Linares-Barranco, Raghavendra Kulkarni, José Silva-Martínez, "Voltage Mode Driver for Low Power transmission of High Speed Serial AER Links," *Proceedings of the 2011 IEEE International Symposium on Circuits and Systems (ISCAS 2011)*, pp. 2433-2436, Rio Janeiro, May 2011.
- Teresa Serrano-Gotarredona, Juan Antonio Leñero-Bardallo, and Bernabé Linares-Barranco, "A Bioinspired 128x128 pixel dynamic-vision-sensor," *Proceedings of the 2011 Conference on Design of Circuits and Integrated Systems (DCIS2011)*, Albufeira, November 2011.

Christoph Posch

Short Courses, Plenary Sessions, Keynote Speakers, Invited Lectures

"Bioinspired vision", invited keynote at the "Topical Workshop on Electronics for Particle Physics – TWEPP 2011", Vienna, Austria, 26-30 September, 2011.

"Bioinspired vision", invited lecture, Osaka University, Graduate School of Engineering, Osaka, Japan, 19 December 2011.
"Bio-mimetic, event-driven image sensing", invited presentation at the "3rd Global COE International Symposium on Electronic Devices Innovation – EDIS 2011", Osaka, Japan, 16-17 December 2011.

Conferences

Member of the Review Committee for the IEEE ISCAS conference (2009-present).

Editorial Boards

Review Editor of "Frontiers in Neuromorphic Engineering" (2009-present)

Other IEEE Service and Professional Activities

Member IEEE CAS Sensory Systems Technical Committee (SSTC)
Member IEEE CAS Neural Systems and Applications Technical Committee (NSATC)

Awards, Honors, Patents

Best Live Demonstration Award at IEEE Biomedical Circuits and Systems Conference, BioCAS, 2011.

Publications

Journal Articles

Benosman, R., Ieng, S.H., Rogister, P., Posch, C., "Asynchronous Event-based Epipolar Geometry", IEEE Transactions on Neural Networks, vol. 22, no. 1, pp- 1723-1734, 2011.
Posch, C.; "Bio-Inspired Vision", IOP Journal of Instrumentation, 2012 JINST 7 C01054, doi:10.1088/1748-0221/7/01/C01054, 2012.

Peer Reviewed Conference Papers

Posch, C.; Matolin, D., " Sensitivity and Uniformity of a 0.18 μ m CMOS Temporal Contrast Pixel Array", Circuits and Systems, ISCAS 2011. IEEE International Symposium on, May 2011.

Books and Book Chapters

Posch, C., "A Biomimetic Frame-Free Event-Driven Image Sensor", in "Focal-Plane Sensor-Processor Chips", ISBN 978-1441964748, 1st ed., Springer, Berlin, 2011.

Chai Wah Wu

Short Courses, Plenary Sessions, Keynote Speakers, Invited Lectures

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.

Conferences

Review Committee Member, Session Chair and Track Chair, IEEE International Symposium on Circuits and Systems 2011.

Editorial Boards

Guest Associate Editor, International Journal of Bifurcation and Chaos, 2010-present.
Associate Editor, IEICE NOLTA journal, 2009-present.

Other IEEE Service and Professional Activities

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.

Awards, Honors, Patents

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

Publications

Journal Articles

- 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.

Peer Reviewed Conference Papers

- 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.
- 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.
- 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.
- 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.

Appendix B: Current member list

As of August 2012, the SSTC files are stored in a shared dropbox folder accessible to officers of the SSTC. The spreadsheet contains details of attendance and service as RCM, best paper ranker, etc.

	First name	Middle Name	Family Name	Organization	email
1	Pamela		Abshire	University of Maryland	pabshire@umd.edu
2	Andreas		Andreou	Johns Hopkins University	andreou@jhu.edu
3	Salvatore		Baglio	University of Catania	salvatore_baglio@diies.unict.it
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