

Sensory Systems Technical Committee Annual Report

IEEE Circuits and Systems Society Activities for May 2013 through May 2014

Chair : Teresa Serrano-Gotarredona, National Microelectronics Center, Spain, terese@imse-cnm.csic.es
Secretary: Timothy Constandinou, Imperial College London, t.constandinou@imperial.ac.uk
Chair-Elect: Piotr Dudek, University of Manchester, UK, p.dudek@manchester.ac.uk
Secretary Elect: Amine Bermak, HKUST, Hong Kong, eebermak@ece.ust.hk
Past Chairs: Tobi Delbruck, Institute of Neuroinformatics, Switzerland
Bernabe Linares-Barranco, National Microelectronics Center, Spain
Shih-Chii Liu, Institute of Neuroinformatics, Switzerland
Andre van Schaik, Univ. of Western Sydney
Orly Yadid-Pecht, Univ. of Calgary
Ralph Etienne-Cummings, Johns Hopkins University

2013 Annual Meeting: Was at ISCAS 2013, Beijing, China, China National Convention Center (CNCC), Room 202A Grand Ballroom B (1F), Monday 20th May 2013, from **17:30 to 18:30**

2014 Annual Meeting: Will be at ISCAS 2014, Melbourne, Australia, Melbourne Convention and Exhibition Centre, Room 215, Monday 2nd June 2014, from **12:00 to 13:30**

1. Summary of Activities

The goal of the Sensory Systems Technical Committee (**SSTC**) 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 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.

2. Technical Committee Membership

Committee members are experts, who are active within the field and who contribute to the committee activities. 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.

The bylaws that govern the status of active members state "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".

The SSTC presently has 57 active members (see Appendix A). 15 people attended the 2013 annual meeting including 12 current members and 3 new members. The 2013 minutes provide more details on the meeting.

3. Participation in ISCAS track paper reviews

53 papers were submitted for ISCAS 2013/Melbourne (an increase compared to the 45 for ISCAS 2013/Beijing) and 26 (49%) were accepted, forming 4 lecture (20 papers) and 1 poster (6 papers) tracks.

18 volunteer RCMs handled reviews and at least 3 reviews were arranged for each paper. Many thanks to RCMs and reviewers. The RCM's were Shantanu Chakrabarty, Shoushun Chen, Timothy Constandinou, Tobi Delbruck, Piotr Dudek, Alexander Fish, Walter Daniel Leon-Salas, Shih-Chii Liu, Andrew Mason, Christoph Posch, Matthew Man-Kay Law, Wei Tang, Juan Antonio Lenero, Jennifer Blain Christien, Viktor Gruev, Pantelis Georgiou, Jeremy Holleman and Alejandro Linares.

4. Best Paper Award

The top 10 ranked papers in review (e.g. those with all or almost all "Accept" or "Marginal accept" reviews) were passed out to 7 volunteer rankers from SSTC so that each ranker ranked all papers. Self-ranking assignments were excluded. Each paper was ranked by all rankers. The best paper was chosen from these rankings along with 2 with honourable mention and these will be announced at the annual meeting in Melbourne.

The best paper and honorary mentions will be listed in the 2014 minutes.

5. Out Reach

In addition to ISCAS, over the past year, members of our TC serve on program committees of various conferences such as ECCTD, CNNA, FTFC, IEEE Sensors, ASQED, BioCAS, IEEE Neural Engineering, ICECS, DDECS, CEFC, ICGTC, CAS-FEST, S35, Australian Neuromorphic Engineering Workshop, IJCNN, Workshop on Architecture of Smart Camera, IEEE ICABC, ICDEF, VLSI-SoC, ASQED, ISIC. Several members are active in organizing IEEE and other conferences and workshops (for example, general chair and technical program chair of IEEE BioCAS 2014, general chair of CAS-FEST 2014)

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

6. Committee member activities

The activities by the various committee members are listed in **Appendix A**.

7. 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. New officers should contact Robyn Pearson (vampandora@gmail.com) for edit access.

The officer and member lists are on the site, as well as reports and minutes. After last year the site was updated to include new members and also to revise affiliations and website links to respective home pages. Suggestions for more dynamic content are welcome!

The screenshot shows the IEEE CAS website for the Sensory Systems Technical Committee (SSTC). The header is green and contains the CAS logo, navigation links (CONFERENCES, PUBLICATIONS, COMMUNITY, EDUCATION, ABOUT), and the IEEE logo. Below the header, a breadcrumb trail reads: "You are Here: Home » Community » Technical Committees » Sensory Systems Technical Committee (SSTC)". On the right, there are links for "SIGN IN | JOIN CAS | Q". The main content area features the title "Sensory Systems Technical Committee (SSTC)" in large green font. Below the title is a paragraph: "The goal of the IEEE Circuits and Systems Society (CASS) Sensory Systems Technical Committee (SSTC) is to foster research, development, education and industrial dissemination of knowledge relating to the emerging field of sensors, MEMS 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." To the right, under the heading "Sensory Systems Resources", there is a blue button for "Sensory Systems TC Home" and a list of links: "» Officers and Members", "» Bylaws", and "» Annual Reports and Minutes".

Appendix A. Member activity reports

30 members submitted individual activity reports for period May 2013 – May 2014. These reports follow.

Amine Bermak

Conferences

2014, Track Chair, IEEE International conference on Sensors

Editorial Boards

Associate Editor IEEE Transactions on Biomedical Circuits and Systems.

Associate Editor IEEE Transactions on Circuits and Systems II.

Other IEEE Service and Professional Activities

CAS Biomedical and Life Science Circuits and Systems TC Member

CAS Sensory Systems TC Member

Awards, Honors, Patents

IEEE Distinguished Lecturer (2013-2014).

IEEE Fellow 2013

"A SAR ADC with Forward Error Correction and mixed-signal Correlated-Double-Sampling", US Patent, provisional filing September 2013

Publications

Journal Articles

D. G. Chen*, F. Tang*, M-K Law, and A. Bermak, "A 12 pJ/pixel Analog-to-Information Converter based 816 x 640 CMOS Image Sensor," IEEE Journal of Solid-State Circuits, Vol. 49, Issue 5, pp.1210-1222, May 2014.

Xiaoxiao Zhang, Farid Boussaid*, Amine Bermak, "A 32×32-bit Multi-precision Razor-based Dynamic Voltage Scaling Multiplier with Operands Scheduler," IEEE Transactions on Very Large Scale Integration Systems, Vol. 22, Issue 4, pp.759-770, April 2014.

Bo Wang, Man Kay Law, Amine Bermak, and Howard C. Luong, "A Passive RFID Tag Embedded Temperature Sensor with Improved Process Spreads Immunity for a -30oC to 60oC Sensing Range," IEEE Transactions on Circuits and Systems-I, Vol 61, Issue 2, pp.337-346, Feb, 2014.

Xiaojin Zhao, Xiaofang Pan, Xiaolei Fan, Ping Xu, Amine Bermak and Vladimir G. Chigrinov, "Patterned dual-layer achromatic micro-quarter-wave-retarder array for active polarization imaging", Optics Express, vol. 22, no. 7, pp. 8024-8034, 2014.

Fang Tang*, Amine Bermak, Abbes Amira, Mohieddine Amor Benammar, Debiao He, Xiaojin Zhao, "Two Steps Single Slope/SAR ADC With Error Correction For CMOS Image Sensor", The Scientific World Journal, Vol. 2014, Article ID 861278, pp. 1-6, 2014.

Fang Tang*, Amine Bermak, Abbes Amira, Mohieddine Amor Benammar, "Continuous-Time Sigma Delta ADC With Implicit Variable Gain Amplifier For CMOS Image Sensor", The Scientific World Journal, Vol. 2014, Article ID 208540, pp. 1-8, 2014.

Fang Tang*, Amine Bernak, "CMOS On-Chip Stable True-Random ID Generation Using Antenna Effect", IEEE Electron Device Letters, Vol. 35, pp. 54-56, 2014.

Xiaofang Pan, Xi Liu, Amine Bermak, Zhiyong Fan, "Self-gating Effect Induced Large Performance Improvement of ZnO Nanocomb Gas Sensors", ACS Nano, 7 (10), 9318-9324, Aug. 2013 (Impact Factor: 12)

Fang Tang, Denis Chen, Amine Bermak, "Low-power CMOS image sensor with column-parallel single slope SAR quantization scheme," IEEE Transaction on Electron Devices, vol. 60, no. 8, pp. 2561-2566, Aug. 2013.

Denis Chen, Fang Tang, Amine Bermak, "A Low-power Pilot-DAC based Column Parallel 8b SAR ADC with Forward Error Correction for CMOS Image Sensors," IEEE Transactions on Circuits and Systems-I, Regular Papers, vol.60, no.10, pp.2572-2583, Oct. 2013.

Peer Reviewed Conference Papers

Muhammad Hassan and Amine Bermak, "Gas Classification Using Binary Decision Tree Classifier" IEEE International Symposium on Circuits and Systems (ISCAS), Melbourne, Australia, June 1-5, 2014.

Ikramullah Shah, D. G. Chen, Moaaz Ahmed and Amine Bermak, "Optical Wireless Receiver for Data Delivery to Retinal Implant", IEEE International Symposium on Circuits and Systems (ISCAS), Melbourne, Australia, June 1-5, 2014.

P. J.-H. Lee, D. G. Chen, A. Bermak, and M.-K. Law, "A High Voltage Zero-static Current Voltage Scaling ADC Interface Circuit for Micro-Stimulator," Proceeding of IEEE International Symposium on Circuits and Systems (ISCAS 2014), Melbourne, Australia, June 1-5, 2014.

Muhammad Hassan and Amine Bermak, "Discriminative Metrics for Gas Classification with Spike Latency Coding", International Conference on Electronics, Information and Communication (ICEIC), Malaysia, Jan 15-18, 2014.

S. Mohamad, F. Tang, A. Amira, A. Bermak, M. Bennammar, "A Low Power Temperature Sensor based on a Voltage to Time Converter Cell", IEEE International Conference on Microelectronics (ICM), Lebanon, 2013.

S. Mohamad, F. Tang, A. Amira, A. Bermak, M. Bennammar, "A Low power oscillator based temperature sensor for RFID applications", 5th Asia Symposium on Quality Electronic Design (ASQED), Malaysia, 2013.

D. G. Chen, S. Mohamad and A. Bermak, "Protecting Water Resources via Smart-Sensing Infrastructure: From Silicon to Systems", Proceeding of Qatar Annual Research Conference, Doha, November 24 - 25, 2013.

Ricardo Carmona-Galán

Short Courses, Plenary Sessions, Keynote Speakers, Invited Lectures

Seminar: "CMOS Smart Image and Vision Sensors" (in collaboration with Prof. Á. Rodríguez-Vázquez), Seminar at the Institut de Ciències del Cosmos, Universitat de Barcelona, Spain, January 2014.

Tutorial: "Foundations and Practical Design of CMOS Image Sensors" (in collaboration with Prof. Á. Rodríguez-Vázquez), IEEE International Conference on Electronics, Circuits, and Systems (ICECS 2013) Tutorials, Abu Dhabi, UAE, December 2013.

Conferences

Chair of the 2nd Workshop on Architecture of Smart Camera, Seville, June 3-4, 2013 (<http://eunevis.org/wasc2013/>)

Editorial Boards

Associate Editor of IEEE Transactions on Circuits and Systems-I: January 2012-December 2013

Reviewer of IEEE TCAS-I, IEEE TCAS-II, IEEE TCASVT, ISCAS, ICECS, ECCTD

Other IEEE Service and Professional Activities

Member of the IEEE CASS Technical Committee on Sensory Systems (2012-present)

Member of the IEEE CASS Technical Committee on Cellular Nanoscale Networks and Array Computing (2004-present)

Secretary of the Scientific Staff Meeting, Institute of Microelectronics of Seville (Spain) 2009-present.

Member of the Institute Council, Institute of Microelectronics of Seville (Spain) 2012-present

Awards, Honors, Patents

Conference Best Paper Award: J. Fernández-Berni, R. Carmona-Galán, R. del Río, J. A. Leñero-Bardallo, M. Suárez-Cambre, Á. Rodrí-Vázquez, "Smart imaging for power-efficient extraction of Viola-Jones local descriptors". IS&T/SPIE Electronic Imaging: Image Sensors and Imaging Systems, Proceeding of SPIE, Vol. 9022, pp. 9022-09, San Francisco, California (USA), Feb. 2014. (DOI:10.1117/12.2042384).

Third Best Student Paper Award: M. Suárez, V. M. Brea, D. Cabello, J. Fernández-Berni, R. Carmona-Galán and Á. Rodríguez-Vázquez, "A 176x120 Pixel CMOS Vision Chip for Gaussian Filtering with Massively Parallel CDS and A/D-Conversion", 21st European Conference on Circuit Theory and Design (ECCTD 2013), pp. 45:1-45:4, Dresden (Germany), September 2013.

Publications

Journal Articles

J. Fernández-Berni, R. Carmona-Galán, R. del Río and Á. Rodríguez-Vázquez, "Bottom-up performance analysis of focal-plane mixed-signal hardware for Viola-Jones early vision tasks". International Journal of Circuit Theory and Applications, Vol. xx, No. xx, pp. xxx-xxx. (First published on-line on Apr. 16, 2014. DOI: 10.1002/cta.1996). ISSN: 1097-007X.

L. C. Gontard, G. Moldovan, R. Carmona-Galán, Chao Lin and A. I. Kirkland, "Detecting single-electron events in TEM using low-cost electronics and a silicon strip sensor". Microscopy (Previously Journal of Electron Microscopy), Vol. xx, No. xx, pp. xxx-xxx. (First published online on Jan. 8, 2014. DOI:10.1093/jmicro/dft051) ISSN: 2050-5701, eISSN: 2050-5698.

R. Carmona-Galán, Á. Zarándy, Cs. Rekeczky, P. Földesy, A. Rodríguez-Pérez, C. Domínguez-Matas, J. Fernández-Berni, G. Liñán-Cembrano, B. Pérez-Verdú, Z. Kárász, M. Suárez-Cambre, V. M. Brea-Sánchez, T. Roska and Á. Rodríguez-Vázquez, "A hierarchical vision processing architecture oriented to 3D integration of smart camera chips". Journal of Systems Architecture, Vol. 59, No. 10, Part A, pp. 908-919, 2013. (DOI: 10.1016/j.sysarc.2013.03.002) ISSN: 1383-7621.

Peer Reviewed Conference Papers

Á. Rodríguez-Vázquez, R. Carmona, J. Fernández-Berni, S. Vargas, J. A. Leñero and B. Pérez-Verdú, "Using 3-D Technologies for Form Factor Improvement of Low-Power Vision Sensors". 5th IEEE Latin American Symposium on Circuits and Systems (LASCAS 2014), pp. XX-XX, Santiago (Chile), February 2014.

J. Fernández-Berni, R. Carmona-Galán, R. del Río, J. A. Leñero-Bardallo, M. Suárez-Cambre, Á. Rodrí-Vázquez, "Smart imaging for power-efficient extraction of Viola-Jones local descriptors". IS&T/SPIE Electronic Imaging: Image Sensors and Imaging Systems, Proceeding of SPIE, Vol. 9022, pp. 9022-09, San Francisco, California (USA), Feb. 2014. (DOI:10.1117/12.2042384) Best paper award.

M. Suárez, V. M. Brea, D. Cabello, J. Fernández-Berni, R. Carmona-Galán and Á. Rodríguez-Vázquez, "A 176x120 Pixel CMOS Vision Chip for Gaussian Filtering with Massively Parallel CDS and A/D-Conversion", 21st European Conference on Circuit Theory and Design (ECCTD 2013), pp. 45:1-45:4, Dresden (Germany), September 2013 (Third Best Student Paper Award).

J. Fernández-Berni, R. Carmona-Galán and A. Rodríguez-Vázquez, "Reconfigurable focal-plane hardware for block-wise intra-frame HDR imaging", IISS International Image Sensor Workshop (IISW 2013), pp. 289-292, Snowbird Resort, Utah (USA), June 2013.

J. Fernández-Berni, R. Carmona-Galán and A. Rodríguez-Vázquez, "An Ultra-Low-Power Voltage-Mode Asynchronous WTA-LTA Circuit", IEEE International Symposium on Circuits and Systems (ISCAS 2013), pp. 1817-1820, Beijing, China, May 2013. ISBN: 978-1-4673-5761-6.

I. Vornicu, R. Carmona-Galán and A. Rodríguez-Vázquez, "A CMOS 8x8 SPAD Array for Time-of-Flight Measurement and Light-Spot Statistics", IEEE International Symposium on Circuits and Systems (ISCAS 2013), pp. 2626-2629, Beijing, China, May 2013. ISBN: 978-1-4673-5761-6.

Other Publications

J. A. Díaz-Madrid, G. Domenech-Asensi, G. Rodríguez-Bermúdez, R. Carmona-Galán, "Implementación de un ADC de tipo cíclico y topología pipeline, reconfigurable y de bajo consumo en tecnología CMOS de 0.35um". Congreso nacional de I+D en Defensa y Seguridad (DESEi+d 2013), pp. 43-51, Madrid, Noviembre 2013. ISBN: 978-84-7402-399-2.

Sandro Carrara

Short Courses, Plenary Sessions, Keynote Speakers, Invited Lectures

"Example Talk Title", invited seminar at The University of Madchester, December 2011.

"Another Example Title", keynote talk at 3rd International Workshop on Systems Way Better Than the Ones We Have Already, Grantchester, 31 December 2011

Keynotes

A tiny laboratory under the skin, PhyCS, International Conference on Physiological Computing Systems, organized in conjunction with Sensornets 2014, January 7-9, 2014, Lisbon, Portugal

Integrated Bio-Nano-CMOS-Sensors for Remote Monitoring of Human Metabolism toward Applications in Personalized Medicine, Keynote talk for Theme 3 at IEEE EMBC'13, the 35th Annual International Conference of IEEE Engineering in Medicine and Biology Society, held in Osaka (Japan), July 3-7. 2013

Tutorials

Technologies for an Implantable Nano-Bio-Sensing Laboratory, Bioelectronics Tutorials Track at the IEEE Sensors Conference, Baltimore, November 2013

Other Invited

Integrated NanoBioSensors for Personalized Medicine, University of Edinburgh, January 13th, 2014

A tiny system under the skin for human metabolism, ETH Zurich, November 26th, 2013

A tiny laboratory under the skin, Massachusetts Institute of Technology (MIT), Boston, November 8th, 2013

Integrated Bio-Nano-CMOS-Sensors for Remote Monitoring of Human Metabolism in Personalized Medicine Imperial Collage, London, September 23rd 2013.

New Insight on Bio-sensing by using Nano-fabricated Memristors, Memristor-based Systems for Neuromorphic Applications, September 16-17, 2013, Turin, Italy

Integrated Bio-Nano-CMOS-Sensors for Remote Monitoring of Human Metabolism toward Applications in Personalized Medicine, held in CSEM, Neuchâtel, September 12th, 2013

A tiny laboratory under the skin, Nestlé Institute of Health Science, Lausanne, June 13th 2013

A tiny laboratory under the skin, 7th Medical Innovations Summit of the **Royal Society of Medicine**, London, June 8th 2013

Conferences

General Chair of the IEEE International Conference on Great Things to Come ICGTC 2011
Member of the Technical Committee for the IEEE ICABC conference (2004-present)
Member of the Programme Committee for the IEEE ICDEF conference (2005-present).
General Chair of the IEEE International Conference BioCAS 2014

Editorial Boards

Associate Editor of IEEE Transactions on Neuromorphic Circuits and Systems (2010 – present)
Review Editor of Frontiers in Sensory Systems (2008 – 2011)
Editor in chief of NanoBioScience by Springer publisher
Topic Editor of IEEE Sensors Journal
Associate Editor of the Transactions on Biomedical Circuits and Systems

Other IEEE Service and Professional Activities

IEEE Sensors Council, Board Member (2008-present)
Scientific Advisor to UK government (2010-present)
Member of the IEEE Sensors Council
Member of the TC BioCAS and Life Science in CAS society
Member of the TC Sensors in CAS society

Awards, Honors, Patents

Irene Taurino, Magrez Arnaud, Forro Laszlo, Giovanni De Micheli, Sandro Carrara, Close and Selective Integration of Carbon Nanomaterials by CVD onto working microelectrodes of multi sensing electrochemical biosensors, filed at the European Patent Office on September 13th 2013, registration # EP 13184291.6.

Gözen Küklü, Demirci Tugba, Giovanni De Micheli, Sandro Carrara, A novel High Dynamic Range CMOS Image Sensors with Event/Change Detection and Data Compression, Provisional US Patent Office Application, year 2013, Filing # 61/816,197

Publications

Journal Articles

Sara S. Ghoreishizadeh, Camilla Baj-Rossi, Andrea Cavallini, Sandro Carrara, and Giovanni De Micheli, An Integrated Control and Readout Circuit for Implantable Multi-Target Electrochemical Biosensing, IEEE Transaction on Biomedical Circuit and Systems, 2014, in press.

Sandro Carrara, Camilla Baj-Rossi, Cristina Boero, Giovanni De Micheli, Does Carbon Nanotube contribute to Electrochemical Biosensing? *Electrochimica Acta*, 2014, in press

Francesca Puppo, Massimiliano Di Ventra, Giovanni De Micheli, Sandro Carrara, Memristive sensors for pH measure in dry conditions, *Surface Science*, 624(2014) 76-79

Francesca Puppo, Akshat Dave, Marie-Agnés Doucey, Davide Sacchetto, Yusuf Leblebici, Giovanni De Micheli, Camilla Baj-Rossi, Sandro Carrara, Memristive Biosensors under Varying Humidity Conditions, IEEE TRANSACTIONS ON NANOBIOSCIENCE 13(2014) 19-30

Camilla Baj-Rossi, Giovanni De Micheli, Sandro Carrara, Continuous monitoring of Naproxen by a cytochrome P450-based electrochemical sensor, *Biosensors and Bioelectronics*, 53(2014) 283-287

Irene Taurino, Arnaud Magrez, Federico Matteini, László Forró, Giovanni De Micheli, Sandro Carrara, *Direct growth of nanotubes and graphene nanoflowers on electrochemical platinum electrodes*, *Nanoscale* 5(2013) 12448-12455

Gözen Köklü, Julien Ghaye, Yusuf Leblebici, Giovanni De Micheli, Sandro Carrara, Empowering Low-Cost CMOS Cameras by Image Processing to Reach Comparable Results with Costly CCDs, *BioNanoScience*, 3(2013) 403-414

Irene Taurino, Viviane Van Hoof, Giovanni De Micheli, Sandro Carrara, Superior sensing performance of MWCNT-based electrodes to detect unconjugated bilirubin, *Thin Solid Films* 548 (2013) 546–550
Julien Ghaye, Madhura Avinash Kamat, Linda Corbino-Giunta, Paolo Silacci, Guy Vergères, Giovanni De Micheli, Sandro Carrara, Image Thresholding Techniques for Localization of Sub-Resolution Fluorescent Biomarkers, accepted for publication in *Cytometry*, 83A (2013) 1001-1016

Camilla Baj-Rossi, Giovanni De Micheli, Sandro Carrara, A Linear Approach to Multi-Panel Sensing in Personalized Therapy for Cancer Treatment, *IEEE Sensors Journal* 13(2013) 4860-4865

Jacopo Olivo, Sandro Carrara, and Giovanni De Micheli, *A study of Multi-Layer Spiral Inductors for Remote Powering of Implantable Sensors*, IEEE Transaction of Biomedical Circuits and Systems 7(2013) 536-547

Jacopo Olivo, Sandro Carrara, and Giovanni De Micheli, Micro-fabrication of high-thickness spiral inductors for the remote powering of implantable biosensors, *Journal of Micromechanics and Microengineering*, 113 (2014) 130–135

M. Novak, C. N. Kotanen, S. Carrara, A. Guiseppi-Elie, F. G. Moussy, Diagnostic tools and technologies for infectious and non-communicable diseases in low-and-middle-income countries, *Health Technol.* 3(2013) 271-281

Davide Sacchetto, Pierre-Emmanuel Julien Gaillardon, Michael Zervas, Sandro Carrara, Giovanni De Micheli, Yusuf Leblebici, *Applications of multi-terminal memristive devices: a review*, IEEE Circuits and Systems Magazine 13(2013) 23-41

Fabrizio Mastrantonio, Francesco Valgimigli, Lucia Grassi, Paolo Cappa, Giovanni De Micheli, Sandro Carrara, Comparative Performance of Different Nanostructured Electrochemical Sensors on Insulin Detection, *BioNanoScience* 2(2013) 1-4

Irene Taurino & Reiss Renate, Michael Fairhead, Michael Richter, Linda Thöny-Meyer, Giovanni De Micheli, Sandro Carrara, Comparative study of three lactate oxidases from *Aerococcus viridans* for biosensing applications, *Electrochimica Acta*, 93 (2013) 72–79

Sandro Carrara, Léandre Bolomey, Cristina Boero, Andrea Cavallini, Eric Meurville, Giovanni De Micheli, Fabio Grassi, Tanja Rezzonico, *Remote System for Monitoring Animal Models with Single-Metabolite Bio-Nano-Sensors*, IEEE Sensors, 13(2013) 1018-1024

Qasem Ramadan, Hamideh Jafarpoorchehab, Chaobo Huang, Paolo Silacci, Sandro Carrara, Gözen Köklü, Julien Ghaye, Jeremy Ramsden, Christine Ruffert, Guy Vergeres and Martin A. M. Gijs, *NutriChip: Nutrition Analysis meets Microfluidics*, Lab on a Chip, 13(2013) 196-203.

Peer Reviewed Conference Papers

Irene Taurino, Arnaud Magrez, László Forró, Giovanni De Micheli, Sandro Carrara, Direct and Selective Synthesis of a Wide Range of Carbon Nanomaterials by CVD at CMOS Compatible Temperatures, accepted to IEEE Nano, 2014

Julien Ghaye, Chiara Succa, Danilo Demarchi, Sinan K. Muldur, Pascal Colpo, Paolo Silacci, Guy Vergères, Giovanni De Micheli, and Sandro Carrara, Quantitative Estimation of Biological Cell Surface Receptors by Segmenting Conventional Fluorescence Microscopy Images, accepted contribution to IEEE ISCAS 2014

Francesca Puppo, Marie-Agnès Doucey, Massimiliano Di Ventra, Giovanni De Micheli, Sandro Carrara, Memristor-Based Devices for Sensing, accepted contribution to IEEE ISCAS 2014

Geneviève Massicotte, Mohamad Sawan, Giovanni De Micheli, Sandro Carrara, Multi-Electrodes Amperometric Biosensor for Neurotransmitters Detection, IEEE BioCAS 2013, Rotterdam, the Netherlands, Oct 31-Nov 2, 2013, pag. 162-165

Sara Ghoreishizadeh, Enver G. Kilinc, Camilla Baj-Rossi, Catherine Dehollain, Sandro Carrara, and Giovanni De Micheli, An Implantable Bio-Micro-system for Drug Monitoring, IEEE BioCAS 2013, Rotterdam, the Netherlands, Oct 31-Nov 2, 2013, pag. 218-221

Camilla Baj-Rossi, Enver G. Kilinc, Sara S. Ghoreishizadeh, Daniele Casarino, Tanja Rezzonico, Catherine Dehollain, Fabio Grassi, Laura Pastorino, Giovanni De Micheli, and Sandro Carrara, Fabrication and Packaging of a Fully Implantable Biosensor Array, IEEE BioCAS 2013, Rotterdam, the Netherlands, Oct 31-Nov 2, 2013, pag. 166-169– Among 10 Best Selected Papers invited to journal special issue

Ismael Rattalino, Paolo Motto, Irene Taurino, Gianluca Piccinini, Danilo Demarchi, Giovanni De Micheli, and Sandro Carrara, Nanogap-Based Enzymatic-Free Electrochemical Detection of Glucose, IEEE BioCAS 2013, Rotterdam, the Netherlands, Oct 31-Nov 2, 2013, pag. 130-133

Gözen Köklü, Dechao Sun, Yusuf Leblebici, Giovanni De Micheli, Sandro Carrara, *An Event-Detection High Dynamic Range CMOS Image Sensor*, IEEE Sensors Conference, 03 Nov - 06 Nov 2013, Baltimore, 2013, pag. 1658-1661

Francesca Puppo, Marie-Agnès Doucey, Thomas Moh, Gregory Pandraud, Lina Sarro, Giovanni De Micheli, Sandro Carrara, *Femto-Molar Sensitive Field Effect Transistor Biosensors Based on Silicon Nanowires and Antibodies*, IEEE Sensors Conference, 03 Nov - 06 Nov 2013, Baltimore, 2013, pag. 326-329

Sara S. Ghoreishizadeh, Sandro Carrara, and Giovanni De Micheli, A Configurable IC to Control, Readout, and Calibrate an Array of Biosensors, European Conference on Circuit Theory and Design (ECCTD), 2013, pag. 1-4

Sara Ghoreishizadeh, Gaurav Nanda, Sandro Carrara and Giovanni De Micheli, *Empirical Study of Noise Dependence in Electrochemical Sensors*, proceeding of the Conference IEEE IWASI 2013, pag. 36 - 39

Jacopo Olivo, Sara S. Ghoreishizadeh, Sandro Carrara, and Giovanni De Micheli, Electronic Implants: Power Delivery and Management, invited paper to Design, Automation & Test in Europe Conference & Exhibition (DATE), 2013 (Grenoble), pag. 1540 - 1545

Gözen Köklü, Julien Ghaye, Ralph Etienne-Cummings, Yusuf Leblebici, Giovanni De Micheli, and Sandro Carrara, Characterization of standard CMOS compatible photodiodes and pixels for Lab-on-Chip devices, IEEE ISCAS 2013 (Beijing), pp. 1075 - 1078

Books and Book Chapters

Irene Tauri, Alessandro Sanginario, Giovanni De Micheli, Danilo Demarchi, Sandro Carrara, invited chapter titled: “Carbon nanomaterials for electrochemical medical sensors”, submitted for the book (A. Tagliaferro and D. Demarchi, eds) titled: “Carbon for Sensing Devices”, Springer publisher, under production

Sandro Carrara, What is Bioelectronics?, chapter in Sandro Carrara and Krzysztof Iniewski (Eds) “Handbook of Bioelectronics”, Cambridge University Press, Cambridge, UK, 2014, under production

Sandro Carrara, Molecular components for electronics, chapter in Sandro Carrara and Krzysztof Iniewski (Eds) “Handbook of Bioelectronics”, Cambridge University Press, Cambridge, UK, 2014, under production

Andrea Cavallini, Cristina Boero, Giovanni De Micheli, Sandro Carrara, CNT and proteins for biosensors in personalized therapy, chapter in Sandro Carrara and Krzysztof Iniewski (Eds) “Handbook of Bioelectronics”, Cambridge University Press, Cambridge, UK, 2014, under production

Sandro Carrara, Biological Fuel Cells, chapter in Sandro Carrara and Krzysztof Iniewski (Eds) "Handbook of Bioelectronics", Cambridge University Press, Cambridge, UK, 2014, under production

Sandro Carrara, Biomimetic Systems, chapter in Sandro Carrara and Krzysztof Iniewski (Eds) "Handbook of Bioelectronics", Cambridge University Press, Cambridge, UK, 2014, under production

Sandro Carrara, Lab-on-chip, chapter in Sandro Carrara and Krzysztof Iniewski (Eds) "Handbook of Bioelectronics", Cambridge University Press, Cambridge, UK, 2014, under production

Sandro Carrara, Future perspective in bioelectronics, chapter in Sandro Carrara and Krzysztof Iniewski (Eds) "Handbook of Bioelectronics", Cambridge University Press, Cambridge, UK, 2014, under production

Sandro Carrara, Conclusion: Personal Electronics and Distributed Theragnostics, chapter in Sandro Carrara and Krzysztof Iniewski (Eds) "Handbook of Bioelectronics", Cambridge University Press, Cambridge, UK, 2014, under production

Sandro Carrara, New concepts in Human Telemetry, chapter in Sandro Carrara, Wayne Burleson (Eds) "Security and Privacy for Implantable Medical Devices", Springer, 2013

Other Publications

Giovanni De Micheli, Cristina Boero, Sandro Carrara, *Implantable devices: the future of blood monitoring?*, Clinical Practice, 4(2013) 1-4

Shantanu Chakrabartty

Journal Publications

P. Sarkar, S. Chakrabartty, "Compressive Self-powering of Piezo-Floating-Gate Mechanical Impact Detectors", IEEE Transactions of Circuits and Systems-I, (TCAS), vol. 60, no: 9, 2013.

S. Chakrabartty, R. Shaga, K. Aono "Noise-shaping Gradient Descent based Online Optimization Algorithms for Digital Calibration of Analog Circuits", IEEE Transactions of Neural Networks and Learning Systems, vol. 24, no:4, pp.554-565, 2013.

M. Gu, S. Chakrabartty, "FAST: A Framework for Simulation and Analysis of Large-scale Protein-Silicon Biosensor Circuits", IEEE Transactions of Biomedical Circuits and Systems, vol.7, no:4, 2013.

P. Sarkar, C. Huang, S. Chakrabartty, "An Ultra-linear Piezo-Floating-Gate Strain-Gauge for Self-powered Measurement of Quasi-static-strain", IEEE Transactions of Biomedical Circuits and Systems, vol. 7, no: 4, Aug 2013.

K. Aono, R. Shaga, S. Chakrabartty, "Exploiting Jump-resonance Hysteresis in Silicon Cochlea for Extracting Speaker Discriminative Formant Trajectories", IEEE Transactions of Biomedical Circuits and Systems, vol.7, no:4, pp. 389-400, 2013.

M. Yuan, Alocilja E. C., S. Chakrabartty, "A Novel Biosensor based on Silver-enhanced Self-assembled Radio-frequency Antennas", IEEE Sensors Letters, vol. 14, no: 4, pp. 941-942, 2014.

Conference Publications

N. Lajnef, S. Chakrabartty, R. Burgueno, W. Borchani, "Quasi-static self-powered sensing and data logging", Proceedings of SPIE NDE/Smart Structures, San Diego, USA, 2014 (To appear).

S. Chakrabartty, N. Lajnef, "Compressive Piezo-floating-gate sensors for self-powered sensing of wide-dynamic-range mechanical events", Proceedings of SPIE NDE/Smart Structures, San Diego, USA, 2014 (To appear).

M. Gu, S. Chakrabartty, "A 120dB Input Dynamic Range, Current-Input Current-Output CMOS Logarithmic Amplifier with 230ppm/K Temperature Sensitivity", IEEE Midwest Symposium on Circuits and Systems (MWSCAS 2013), Columbus, Ohio, 2013.

M. Gu, S. Chakrabartty, "Bias-Scalable Inner-Product Approximation Circuit Using Analog Margin Propagation", IEEE Midwest Symposium on Circuits and Systems (MWSCAS 2013), Columbus, Ohio, 2013.

L. Zhou, P. Sarkar, S. Chakrabartty, "Scavenging Thermal-Noise Energy for Implementing Long-Term Self-Powered CMOS Timers", IEEE Symposium on Circuits and Systems (ISCAS 2013), Beijing, China, 2013.

P. Sarkar, S. Chakrabartty, "A Compressive Piezoelectric Front-End Circuit for Self-Powered Mechanical Impact Detectors", IEEE Symposium on Circuits and Systems (ISCAS 2013), Beijing, China, 2013.

Book Chapters

S. Chakrabartty, "Asynchronous Self-powered Sensing, Computation and Data-logging", Advances in Energy Harvesting Methods, eds. A. Ertuk, N. Elvin, Springer, 2013.

IEEE Service

Associate Editor, IEEE Transactions of Biomedical Circuits and Systems.

Review Editor, Frontiers in Neuromorphic Engineering.

Chair-elect, IEEE Circuits and Systems Society, Neural Systems and Applications

Presentations

Expeditions in Floating-gate Circuits and Systems: Self-powered sensing and computing, Department of Electrical and Computer Engineering, Stony Brook University, NY, Dec. 2013.

Expeditions in Floating-gate Circuits and Systems: Self-powered sensing and computing, Department of Electrical and Computer Engineering, Tufts University, MA, Nov. 2013.

Expeditions in Floating-gate Circuits and Systems: From Self-powered sensors to nano-watt analog processors, Department of Electrical and Computer Engineering, University of Toronto, Canada, Nov. 2013.

Expeditions in Floating-gate Circuits and Systems: From Self-powered sensors to nano-watt analog processors, Department of Computer Science and Engineering, Washington University, St. Louis, Oct. 2013.

Shoushun Chen (2013-2014)

Conference organization:

Technical Program Committee member for 2014, IFIP/IEEE International Conference on Very Large Scale Integration (VLSI-SoC); Technical Program Committee member for 2013 Asia Symposium & Exhibits on Quality Electronic Design (ASQED). Web & Logistic co-Chair and Technical Program Committee member International Symposium on Integrated Circuits (ISIC) 2014,

Session co-chair: ISCAS 2013, 2014

Editorial Board:

2011- Associate Editor for Sensors Journal

Reviewer:

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

Publications

Journal papers

Duc Pham, Kay Soon Low and Shoushun Chen, "An Autonomous Star Recognition Algorithm with Optimized Star Catalogue for Fast Search Performance", IEEE Transactions on Aerospace and Electronic Systems (TAES), Volume: 49, Issue: 3, pp. 1467 - 1475, 2013.

Xinyuan Qian, Hang Yu, Shoushun Chen and Kay Soon Low, "An Adaptive Integration Time CMOS Image Sensor with Multiple Readout Channel", IEEE Sensors Journal, Volume: 13, Issue: 12, pp. 4931 - 4939, 2013.

Jose Perez-Carrasco, Bo Zhao, Carmen Serrano, Begona Acha, Teresa Serrano-Gotarredona, Shoushun Chen and Bernabe Linares-Barranco, "Mapping from Frame-Driven to Frame-Free Event-Driven Vision Systems by Low-Rate Rate-Coding. Application to Feed Forward ConvNets", IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI), Volume: 35, Issue: 11, pp. 2706 - 2719, 2013

Conference papers

Bo Zhao, Shoushun Chen and Huajin Tang, "Bio-inspired Categorization using Event-driven Feature Extraction and Spike-based Learning," accepted at the International Joint Conference on Neural Networks (IJCNN), Beijing, China, Jul. 2014.

Xinyuan Qian, Hang Yu, Shoushun Chen and Kay Soon Low, "An Adaptive Integration Time CMOS Image Sensor with Multiple Readout Channels for Star Trackers," accepted at Asian Solid-State Circuits Conference (A-SSCC), Singapore, Nov. 2013.

Vigil Varghese, Xinyuan Qian, Shoushun Chen and ZeXian Shen, "Linear Angle Sensitive Pixels for 4D Light Field Capture," accepted at the 10th International SoC Design Conference (ISOCC), Korea, Nov. 2013 (Best Paper Award).

Bo Zhao and Shoushun Chen, "A Bio-Inspired Feedforward System for Categorization of Aer Motion Events," accepted at Biomedical Circuits & Systems Conference (BIOCAS), Rotterdam, Oct. 2013.

Timothy Constandinou

Short Courses, Plenary Sessions, Keynote Speakers, Invited Lectures

“Next Generation Neural Probes For Large-Scale Recording In the Living Brain”, Future eFutures: Community Event (British Library, London, UK), 4 December 2013

“Next Generation Neural Interfaces: Towards 1,000-Channel BMIs with on-chip Spike Sorting”, Institute of Neuroinformatics (INI), ETH/UZH (Zurich, Switzerland), 15 November 2013.

“Next Generation Neural Interfaces: Towards 1,000-Channel BMIs with on-chip Spike Sorting”, Integrated Systems Centre Seminar, Ecole Polytechnique Federale de Lausanne (Lausanne, Switzerland), 30 September 2013.

Editorial Boards

Associate Editor of IEEE Transactions on Biomedical Circuits and Systems (2011 – present).

Associate Editor of Frontiers in Neuromorphic Engineering (2013-present).

Awards, Honors, Patents

Awards

IEEE ISCAS 2013 (BioCAS Track) Best Paper Award for "Design Optimisation of Front-End Neural Interfaces for Spike Sorting Systems" by DY Barsakcioglu, A Eftekhar, TG Constandinou, 2013.

Patents

R. Quian Quiroga, T. G. Constandinou, A. Jackson, E. Amir, and J. Navajas, “System for a brain-computer interface,” Filed Jan 2014.

Publications

Journal Articles

Eftekhar, W. Ju_ali, J. El-Imad, T. G. Constandinou, and C. Toumazou, “Ngram-derived pattern recognition for the detection and prediction of epileptic seizures,” PLOS ONE, 2014.

J. Navajas, D. Barsakcioglu, A. Eftekhar, A. Jackson, T. G. Constandinou, and R. Quian Quiroga, “Accurate and efficient spike sorting for real-time on-chip applications,” Journal of Neuroscience Methods, 2014.

D. Barsakcioglu, Y. Liu, P. Bhunjun, J. Navajas, A. Eftekhar, A. Jackson, R. Quian Quiroga, and T. G. Constandinou, “An analogue front-end model for developing neural spike sorting systems,” IEEE Transactions in Biomedical Circuits and Systems, 2014.

L. Leene and T. G. Constandinou, “An ultra low power design strategy for two stage amplifier topologies,” IET Electronics Letters, vol. 50, 2014.

S. Luan and T. G. Constandinou, “A charge-metering method for voltage-mode neural stimulation,” Journal of Neuroscience Methods, vol. 224, pp. 39-47, 2014.

I. Williams and T. G. Constandinou, “An energy-efficient, dynamic voltage scaling neural stimulator for a proprioceptive prosthesis,” IEEE Transactions on Biomedical Circuits and Systems , vol. 7, pp. 129-139, 2013

Peer Reviewed Conference Papers

F. Reverter, Y. Liu, T. Prodromakis, K. Nikolic, P. Georgiou, and T. G. Constandinou, “Design considerations for a cmos lab-on-chip microheater array to facilitate the in vitro thermal stimulation of neurons,” Proc. IEEE International Symposium on Circuits and Systems (ISCAS), 2014.

L. Zheng, L. Leene, Y. Liu, and T. G. Constandinou, “An adaptive 16/64 khz, 9-bit sar adc with peak-aligned sampling for neural spike recording,” Proc. IEEE International Symposium on Circuits and Systems (ISCAS), 2014.

S. Yoshizaki, A. Serb, Y. Liu, and T. G. Constandinou, “Octagonal cmos image sensor with strobed rgb led illumination for wireless capsule endoscopy,” Proc. IEEE International Symposium on Circuits and Systems (ISCAS), 2014.

L. Leene, Y. Liu, and T. G. Constandinou, “A compact recording array for neural interfaces,” Proc. IEEE Biomedical Circuits and Systems (BioCAS) Conference, 2013.

I. Williams and T. G. Constandinou, “Modelling muscle spindle dynamics for a proprioceptive prosthesis,” Proc. IEEE Engineering in Medicine and Biology Society (EMBS), 2013.

Books and Book Chapters

L. M. Shepherd, T. G. Constandinou, and C. Toumazou, “Towards ultra-low power bio-inspired processing,” in Body Sensor Networks (G. Yang, ed.), Springer, 2 ed., 2014

Other IEEE Service:

CAS Society, Sensory Systems TC – Secretary (2014-2015).

Other Professional Service:

IET Awards and Prizes Committee – Chair (2014-2016).

Eugenio Culurciello

Short Courses, Plenary Sessions, Keynote Speakers, Invited Lectures

University of California at Riverside, Feb 21st 2014, host: Najjar Walid najjar@cs.ucr.edu, Title: Modeling the human visual system in hardware

Qualcomm, San Diego CA, February 7th 2014, host: Anthony Lewis, Title: Enabling computers to perceive the world

Swinburne University Melbourne, May 28th 2013, Title: Optogenetic tools, models and hardware to reverse engineer the human visual system, host: David Liley, Swinburne

Monash University, Melbourne, May 25th 2013, Title: Optogenetic tools, models and hardware to reverse engineer the human visual system, host: Jamie Evans

University of Melbourne, May 22nd 2013, Title: Modeling the human visual system in hardware, host: Steven Praver

Editorial Boards

- discussing open access and ways to improve the current publishing system: <https://engineering.purdue.edu/elab/html/publications-publishing-model.html>

Awards, Honors, Patents

Invited to the Microsoft Research Faculty Summit 2013, July 2013, Redmond WA

Deep learning research is featured on the MIT Technology Review, on BBC, FierceWireless (Jan. 2014), and on Business Insider, Journal and Courier, on 18WLFV TV, Phys org, the Engineer, Imperial Valley News, Purdue News, Phone Arena, Hoosier AG Today, CN beta, (April 2014)

Publications

Journal Articles

Continuous Time Level Crossing Sampling ADC for Bio-Potential Recording Systems, Wei Tang, Osman, A. ; Kim, D. ; Goldstein, B. ; Huang, C. ; Martini, B. ; Pieribone, V.A. ; Eugenio Culurciello, IEEE Transactions on Circuits and Systems I: Regular Papers, Vol.: 60, Issue: 6, pp. 1407 – 1418, June 2013.

Peer Reviewed Conference Papers

Accelerating Deep Neural Networks on Mobile Processor with Embedded Programmable Logic, Aysegul Dundar, Jonghoon Jin, Vinayak Gokhale, Bharadwaj Krishnamurthy, Alfredo Canziani, Berin Martini and Eugenio Culurciello, NIPS 2013 demonstration, December 5th 2013.

Automated, in-vivo, whole-cell electrophysiology using an integrated patch-clamp amplifier, I. Kolb, G. Holst, B. Goldstein, S.B. Kodandaramaiah, E.S. Boyden, E. Culurciello, C.R. Forest, Proceedings of the 22nd Annual Computational Neuroscience Meeting (CNS 2013), Paris, France, July 13-18, 2013.

Tracking with Deep Neural Networks, Jonghoon Jin, Aysegul Dundar, Jordan Bates, Clement Farabet, Eugenio Culurciello, Conference on Information Science and Systems CISS 2013, Baltimore, MD.

Audio-Visual Saliency Map: Overview, Basic Models and Hardware Implementation, Sudarshan Ramenahalli, Dan Mendat, Salvador Dura-Bernal, Eugenio Culurciello, Ernst Niebur, Andreas G. Andreou, Conference on Information Science and Systems CISS 2013, Baltimore, MD.

Books and Book Chapters

"Biomedical Circuits and Systems", Integrated Instrumentation, by Wei Tang, Evan Joon Hyuk Park, Brian Goldstein, Dongsoo Kim, Pujitha Weerakoon, Eugenio Culurciello, e-Lab. Lulu 2013. A e-Book version is also available. Ralph Etienne-Cummings

Tobi Delbruck

Short Courses, Plenary Sessions, Keynote Speakers, Invited Lectures

NeuroEng workshop, Adelaide, Feb 2014
Australian Neuroscience Meeting, Adelaide, Feb 2014
Bernstein SPARKS Workshop, Dec. 2013
Stockholm INCF short course on Neuroscience. Subject area: “Neuromorphic engineering”, Aug. 2013
Telluride Neuromorphic Cognition Eng. Workshop, July 2013
Intl. Image Sensors Workshop, June 2013
CapoCaccia Cognitive Neuromorphic Engineering Workshop, May 2013
NERF Neurotechnology Symposium, Leuven, Belgium, Apr. 2013
imec, Leuven, Belgium, Apr. 2013

Distinguished Lecturer in 2013-2014:

Editorial Boards

Associate Editor of IEEE Transactions on Biomedical Circuits and Systems (2010 – present).
Associate Editor of Frontiers in Neuromorphic Engineering (2010-present).

Awards, Honors, Patents

Tobi Delbruck awarded IEEE Fellow

Publications

Journal Articles

“Real-time Gesture Interface Based on Event-Driven Processing From Stereo Silicon Retinas,” J. H. Lee, T. Delbruck, M. Pfeiffer, P. K. Park, C. W. Shin, H. Ryu, and B. C. Kang, IEEE Trans Neural Netw., accepted 2014.
“Asynchronous Binaural Spatial Audition Sensor with 2x64x4 Channel Output,” S.-C. Liu, A. van Schaik, B. A. Minch, and T. Delbruck, IEEE Trans. Biomedical Circuits and Systems, accepted 2013.
“Adaptive pulsed laser line extraction for terrain reconstruction using a dynamic vision sensor,” C. Brandli, T. A. Mantel, M. Hutter, and T. Delbruck, Front. Neurosci, vol. 7, p. 275, 2014.
“Robotic goalie with 3 ms reaction time at 4% CPU load using event-based dynamic vision sensor,” T. Delbruck and M. Lang, Front Neurosci, vol. 7, Nov. 2013 [Online]. Available:<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3836084/>. [Accessed: 07-Feb-2014]
“Real-time classification and sensor fusion with a spiking deep belief network,” P. O’Connor, D. Neil, S.-C. Liu, T. Delbruck, and M. Pfeiffer, Front. Neurosci, vol. 7, p. 178, 2013.

Peer Reviewed Conference Papers

R. Berner, C. Brandli, M. Yang, S. -C. Liu, and T. Delbruck, A 240×180 120dB 10mW 12μs-latency Sparse Output Vision Sensor for Mobile Applications , Proceedings of the 2013 International Image Sensor Workshop, pp. 41-44, 2013
R. Berner, C. Brandli, M. Yang, S. -C. Liu, and T. Delbruck, A 240×180 120dB 10mW 12μs-latency Sparse Output Vision Sensor for Mobile Applications , IEEE VLSI Symposium, pp. 186-187, 2013

Piotr Dudek

Short Courses, Plenary Sessions, Keynote Speakers, Invited Lectures

“Implementing Neural and Synaptic Dynamics in Analogue CMOS”, Workshop on neuromorphic models, circuits, and emerging nano-technologies for real-time neural processing systems, Living Machines 2013, London, 2 August 2013
“Implementation of Cortical Models using Configurable Analogue Spiking Neural Network Circuits”, eFutures Community Meeting, London, 4 December 2013

Conferences

Demos and Exhibitions Chair and Member of the Scientific Committee, CNNA 2014
Member of the Review Committee, ISCAS 2014

Editorial Boards

Review Editor, *Frontiers in Neuromorphic Engineering* (2010 – present)

Other IEEE Service and Professional Activities

Chair-Elect, IEEE CAS Sensory Systems TC (2013-2015)

Co-organiser of UK Design Forum, Manchester, 19-20 March 2014

Champion of the Special Interest Group on "Neurally-Inspired Engineering", UK Neuroinformatics Node

Publications

Journal Articles

P.Mroszczyk and P.Dudek, "Tunable CMOS Delay Gate With Improved Matching Properties", *IEEE Transactions on Circuits and Systems I* (in print)

S.J.Carey, D.R.W.Barr and P.Dudek, "Low Power High-Performance Smart Camera System based on SCAMP Vision Sensor". *Journal of Systems Architecture*, Vol 59, Issue 10, Part A, pp.889-899, November 2013

S.J.Carey, D.R.W.Barr, B.Wang, A.Lopich and P.Dudek, "Mixed signal SIMD processor array vision chip for real-time image processing", *Analog Integrated Circuits and Signal Processing*, Vol 77, Issue 3, pp.385-399, November 2013

Peer Reviewed Conference Papers

P.Mroszczyk and P.Dudek, "The Accuracy and Scalability of Continuous-Time Bayesian Inference in Analogue CMOS Circuits", *IEEE International Symposium on Circuits and Systems, ISCAS 2014*

S.J.Carey, Á.Zarándy and P.Dudek, "Characterization of processing errors on analog fully-programmable cellular sensor-processor arrays", *IEEE International Symposium on Circuits and Systems, ISCAS 2014*

D.R.W. Barr, D.Walsh and P.Dudek, "A Smart Surface Simulation Environment", *IEEE International Conference on Systems, Man and Cybernetics, SMC 2013*, October 2013.

I.Georgilas, A.Adamatzky, D.Barr, P.Dudek and C.Melhuish, "Metachronal waves in cellular automata: Cilia-like manipulation in actuator arrays", *VI International Workshop on Nature Inspired Cooperative Strategies for Optimisation (NICSO 2013)*, September 2013

P.Mroszczyk and P.Dudek, "Trigger-Wave Propagation in Arbitrary Metrics in Asynchronous Cellular Logic Arrays", *European Conference on Circuit Theory and Design, ECCTD 2013*, Dresden, Germany, 8-12 September 2013

A.Lopich and P.Dudek, "A General-purpose Vision Processor with 160x80 Pixel-Parallel SIMD Processor Array", *IEEE Custom Integrated Circuits Conference, CICC 2013*, San Jose, California, 23-25 September 2013

B.Wang and P.Dudek, "AMBER: Adapting Multi-resolution Background Extractor", *IEEE International Conference on Image Processing, ICIP 2013*, Melbourne, Australia, 15-18 September 2013

P.Mroszczyk and P.Dudek, "Tunable CMOS Delay Gate with Reduced Impact of Fabrication Mismatch on Timing Parameters", *IEEE International NEWCAS Conference 2013*, Paris, pp.1-4, June 2013.

S.J.Carey, A.Lopich, D.R.W.Barr, B.Wang and P.Dudek, "A 100,000 fps Vision Sensor with Embedded 535 GOPS/W 256x256 SIMD Processor Array", *VLSI Circuits Symposium 2013*, Kyoto, pp.C182-C183, June 2013

Other Publications

S.J.Carey, D.R.W. Barr, B.Wang, A.Lopich, and P.Dudek, "Live Demonstration: A Sensor-Processor Array Integrated Circuit for High-speed Real-time Machine Vision", *IEEE International Symposium on Circuits and Systems, ISCAS 2014*

Alex Fish

Conferences

General Co-chair, Workshop on Energy Efficient Electronics, EPFL, Switzerland, 2014

Technical Program Chair, IEEE FTFC Conference, Monaco, France, 2014

Special Sessions Chair, IEEE Sensors Conference, Seville, Spain, 2014

Senior Committee member, IEEE S3S Conference, San Francisco, USA, 2014

Editorial Boards

Editor-in-Chief, *Journal of Low Power Electronics and Applications*, MDPI (2010-present)

Associate Editor, *IEEE Sensors Journal* (2010-present)

Associate Editor, *IEEE Access Journal* (2013-present).

Associate Editor, Integration, the VLSI Journal, Elsevier (2013-present).

Associate Editor, Microelectronics Journal, Elsevier (2013-present).

Awards, Honors, Patents

A. Fish and A. Kaizerman, I. Levy and S. Fisher, "Design of dual mode logic circuits", PCT Application No. PCT/IL2013/050111.

M. Avital, H. Dagan and A. Fish, "Randomized multi topology logic against side channel attacks", US provisional application, 2013

Publications

Journal Articles

H. Dagan, A. Shapira, A. Teman, A. Mordakhay, S. Jameson, E. Pikhay, V. Dayan, Y. Roizin, E. Socher and A. Fish, "A Low-Power Low-Cost 24-GHz RFID Tag with a C-Flash Based Embedded Memory", in press, IEEE Journal of Solid State Circuits, April, 2014.

M. Avital, H. Dagan, O. Keren and A. Fish, "Randomized Multi Topology Logic (RMTL) against Differential Power Analysis", in press, IEEE Transactions on VLSI systems, April 2014.

A. Teman, P. Meinerzhagen, R. Giterman, A. Fish and A. Burg, "Replica Technique for Adaptive Refresh Timing of Gain Cell embedded DRAM, in press, IEEE Transactions on Circuits and Systems II, January 2014.

H. Dagan, A. Teman, E. Pikhay, V. Dayan, Y. Roizin and A. Fish, "A Low-Power DCVSL-Like GIDL-Free Voltage Driver for Low-Cost RFID Non-Volatile Memory", IEEE Journal of Solid State Circuits, vol.48, no.6, June 2013.

I. Levi, A. Belenky and A. Fish, "Logical Effort for CMOS based Dual Mode Logic (DML) gates", in press, IEEE Transactions on VLSI systems, 2013.

A. Morgenshtein, V. Yuzhaninov, A. Kovshilovsky and A. Fish, "Full-Swing Gate Diffusion Input Logic –case-study of low-power CLA Adder design", in press, Integration, The VLSI Journal, Elsevier, vol.47, issue 1, pp. 62-70, January 2014.

N. Krihely, S. Ben-Yaakov and A. Fish, "Efficiency Optimization of Step-Down Switched Capacitor Converter for Sub-Threshold Applications", IEEE Transactions on VLSI systems, vol. 21, no. 12, December 2013.

I. Levi and A. Fish, Dual Mode Logic Design for Energy Efficiency and High Performance, IEEE Access, pp. 258-265, vol1, 2013

O. Bass, A. Meiri, Z. Zalevsky and A. Fish, "Photonic XOR with inherent loss compensation mechanism for memory cell implementation in a standard nanoscale VLSI fabrication process", Optics Letters, vol. 38, issue 9, pp. 1473-1475, May 2013.

P. Meinerzhagen, A. Teman, R. Giterman, A. Burg and A. Fish, "Exploration of Sub-VT and Near-VT 2T Gain-Cell Memories for Ultra-Low Power Applications under Technology Scaling", *Journal of Low Power Electronics and Applications*, pp.54-72, vol. 3, issue 2, June 2013.

A. Teman, A. Mordakhay and A. Fish, "Functionality and Stability Analysis of a 400 mV Quasi-Static RAM (QSRAM) Bitcell", Microelectronics Journal, Elsevier, vol.44, pp. 236-247, March, 2013.

I. Levi, A. Kaizerman and A. Fish, "Low Voltage Dual Mode Logic: Model Analysis and Parameter Extraction", in press, Microelectronics Journal, Elsevier, vol.44, issue 6, pp. 553-560, June 2013

Peer Reviewed Conference Papers

R. Giterman, A. Teman, P. Meinerzhagen, A. Burg and A. Fish, "4T Gain-Cell with Internal-Feedback for Ultra-Low Retention Power at Scaled CMOS Nodes", accepted to IEEE ISCAS 2014, Melbourne, Australia, June 2014.

M. Avital and A. Fish, "Secured Dual Mode Logic (DML) as a countermeasure against Differential Power Analysis", accepted to IEEE ISCAS 2014, Melbourne, Australia, June 2014.

L. Atias, A. Teman and A. Fish, "A 13T Radiation Hardened SRAM Bitcell for Low-Voltage Operation", Proc. IEEE S3S conference, Monterey, USA, October 2013.

A. Mordakhay and A. Fish, "Analog Readout Circuit for Zero Leakage Planar-Hall-Effect-Magnetic-Random-Access-Memory", Proc. IEEE FTFC 2014 conference, Monaco, May, 2014.

R. Buzilo, B. Likhtrou, R. Giterman, I. Levi, A. Fish and A. Belenky, "Approach to Integrated Energy Harvesting Voltage Source Based on Novel Active TEG Array System", Proc. IEEE FTFC 2014 conference, Monaco, May, 2014. Books and Book Chapters

Péter Földesy

Conferences

Editorial Board, Conference on Electromagnetic Field Computations (2013-present)

Member of the Programme Committee for the IEEE Symposium on Design and Diagnostics of Electronic Circuits and Systems (2012-present).

Other IEEE Service and Professional Activities

IEEE Sensors Council, Board Member (2011-present)
Panel member of the Hungarian Scientific Research Fund (2012-present)

Publications

Journal Articles

Károlyi Gergely, Gergelyi Domonkos, Földesy Péter, "Sub-Thz Sensor Array with Embedded Signal Processing in 90nmCMOS Technology", IEEE SENSORS JOURNAL PP:(99) p. in press. 13 p. (2014)

Kárász Zoltán, Földesy Péter, Fiath Richárd, Angel Rodríguez-Vázquez, „Tunable low noise amplifier implementation with low distortion pseudo-resistance for in vivo brain activity measurement”, IEEE SENSORS JOURNAL 14:(5) pp. 1357-1363. (2013)

Földesy Péter, "Terahertz responsivity of field-effect transistors under arbitrary biasing conditions", JOURNAL OF APPLIED PHYSICS 114:(11) pp. 114501-1-114501-10. (2013)

Földesy Péter, "Current steering detection scheme of three terminal antenna-coupled terahertz field effect transistor detectors", OPTICS LETTERS 38:(15) pp. 2804-2806. (2013)

Carmona-Galán R, Zarándy A, Rekeczky C, Földesy P, Rodríguez-Pérez A, Domínguez-Matas C, Fernández-Berni J, Liñán-Cembrano G, Pérez-Verdú B, Kárász Z, Suárez-Cambre M, Brea-Sánchez V, Roska T, Rodríguez-Vázquez A, „A hierarchical vision processing architecture oriented to 3D integration of smart camera chips”, JOURNAL OF SYSTEMS ARCHITECTURE 59:(10) pp. 908-919. (2013)

Peer Reviewed Conference Papers

Péter Földesy „Quadrature phase shifted interferometry in the THz spectrum”, Infrared, Millimeter, and Terahertz Waves (IRMMW-THz), 2013 38th International Conference on, Mainz, Germany, 2013.09.14-2013.09.19.p. 1.

Julius Georgiou

Short Courses, Plenary Sessions, Keynote Speakers, Invited Lectures

“A Bio-inspired System for Acoustic Scene Analysis”, Mediterranean Acoustics Festival, 22nd April 2014, Limassol, Cyprus

“Smart Alloy Memristors and the Need for Multiscale Volatility”, Workshop on Memristor-based Systems for Neuromorphic Applications, 16th-17th Sept, 2013, Turin, Italy.

“Vestibular Implant: the next commercial bionic device?”, 4th Annual NanoNetwork Workshop, 17th-19th June, 2013, Bergen, Norway.

Editorial Boards

Associate Editor of IEEE Transactions on Biomedical Circuits and Systems (2011 – present).
Associate Editor of Frontiers in Neuromorphic Engineering (2011-present).

Other IEEE Service and Professional Activities

IEEE BioCAS Technical Committee Secretary (2012-2014)

Patents

J. Georgiou and C. Andreou, “All-CMOS, Low-voltage, Wide-Temperature Range, Voltage Reference Circuit”, PCT/US14/38659, 19th May 2014

Publications

Journal Articles

L. Shestopalova, T. M. B'ohm, A. Bendixen, A. G. Andreou, J. Georgiou, G. Garreau, B. Hajdu, S. L. Denham and I. Winkler, “Do Audio-Visual Motion Cues Promote Segregation of Auditory Streams?,” Frontiers in Neuroscience, Vol. 8, No. 64, 1-11, April 2014.

N. Nicolaou and J. Georgiou, “Spatial Analytic Phase Difference of EEG activity during anesthetic-induced unconsciousness”, Clinical Neurophysiology, February 2014, DOI: 10.1016/j.clinph.2014.02.011

N. Nicolaou and J. Georgiou, “Global Field Synchrony during general anaesthesia”, British Journal of Anaesthesia, 29th Oct 2013, DOI:10.1093/bja/aet350

S. Dura-Bernal, G. Garreau, J. Georgiou, A.G.Andreou, S.L. Denham and T. Wennekers, "Multimodal Integration Of Micro-Doppler Sonar And Auditory Signals For Behavior Classification With Convolutional Networks", International Journal of Neural Systems, DOI: 10.1142/S0129065713500214

N. Nicolaou and J. Georgiou, "Neural Network based classification of anesthesia/awareness using Granger Causality features", Journal of Clinical EEG and Neuroscience, July 2013, <http://dx.doi.org/10.1177/1550059413486271>

S. Cassidy, J. Georgiou and A.G. Andreou, "Design of silicon brains in the nano-CMOS era: Spiking neurons, learning synapses and neural architecture optimization", Neural Networks, Available online 6 June 2013, ISSN 0893-6080, <http://dx.doi.org/10.1016/j.neunet.2013.05.011>.

T. M. Böhm, L. Shestopalova, A. Bendixen, A. G. Andreou, J. Georgiou, G. Garreau, P. Pouliquen, A. Cassidy, S. L. Denham and I. Winkler, "The role of perceived source location in auditory stream segregation: Distance affects sound organization, common fate does not!", Learning & perception, 5(2):55-72, June 2013, <http://dx.doi.org/10.1556/LP.5.2013.Suppl2.5>

Peer Reviewed Conference Papers

C. M. Andreou, Y. Pahitas, E. Pilavaki and J. Georgiou, "Bio-Mimetic Gyroscopic Sensor for Vestibular Prostheses", BioCAS 2013, pp.17-20, 31st Oct – 2nd Nov, Rotterdam, Netherlands

N. Nicolaou and J. Georgiou, "Towards Automatic Sleep Staging via Cross-Recurrence Rate of EEG and ECG Activity" BioCAS 2012, pp 198-201, 31st Oct – 2nd Nov, Rotterdam, Netherlands.

N. Nicolaou and J. Georgiou, "Autoregressive model order estimation criteria for monitoring awareness during anaesthesia", AIAI2013, 9th Int. Conf. on Artificial Intelligence Applications and Innovations, pp. 71-80, Sept 30th-Oct 2nd, Paphos, Cyprus.

N. Nicolaou and J. Georgiou, "Monitoring Depth of Hypnosis under Propofol General Anaesthesia: Granger Causality and Hidden Markov Models ", Neurotechnix 2013, 18th-20th Sept 2013, Vilamoura, Portugal.

C. M. Andreou and J. Georgiou, "An All-Subthreshold, 0.75V Supply, 2ppm/°C, CMOS Voltage Reference", 2013 IEEE International Symposium on Circuits and Systems (ISCAS 2013), May 19th -23rd, 2013, Beijing, China.

Other Publications

J. Georgiou, "Smart Alloy Memristors and the Need for Multiscale Volatility", Workshop on Memristor-based Systems for Neuromorphic Applications, 16th-17th Sept, 2013, Turin, Italy.

N. Nicolaou and J. Georgiou, "Non-linear coupling of EEG and ECG signals during sleep", 5th Cyprus Workshop on Signal Processing and Informatics, Nicosia, Cyprus 9th July, 2013

A. Kyriakides, Andreas Spanias, J. Georgiou and Costas Pitris, "Noise-Robust Classification using Rank Order Kernels", 6th Cyprus Workshop on Signal Processing and Informatics, Nicosia, Cyprus 9th July, 2013

Pantelis Georgiou

Short Courses, Plenary Sessions, Keynote Speakers, Invited Lectures

P. Georgiou, "Bio-inspired Semiconductors for Healthcare" Institute of Physics, London Branch, 21-Mar-2014

P. Georgiou, "Bio-inspired Semiconductors for Healthcare" Institute of Physics, University of Kent, 4-Feb-2014

P. Georgiou, "Semiconductors For Healthcare", University of Leeds, School of Electronic and Electrical Engineering, Leeds, 27-Nov-2013

P. Georgiou, "Crossing Science Boundaries", London International Youth Science Forum (LIYSF), Imperial College, London, July 2013

Conferences

P. Georgiou, Demo Session Chair, IEEE ISCAS conference, 2014 (Melbourne, Australia)

P. Georgiou, Technical Program Chair, IEEE BioCAS conference, 2014 (Lausanne, Switzerland)

P. Georgiou, Technical Program Committee, IEEE ISCAS conference, 2013 (Beijing, China)

Editorial Boards

P. Georgiou, IEEE Sensors Journal, Associate Editor (2014 – present)

Awards, Honors, Patents

P.Georgiou, Institution of Engineering and Technology (IET), Mike Sergeant achievement award – 2013 Awarded to an engineering professional for outstanding achievement over a number of years

Publications

Journal Articles

Hu, Y.; Georgiou, P., "A robust ISFET pH-measuring front-end for chemical reaction monitoring," *Biomedical Circuits and Systems*, IEEE Transactions on , vol.PP, no.99, pp.1,1

Pagkalos, I.; Herrero, P.; Toumazou, C.; Georgiou, P., "Bio-Inspired Glucose Control in Diabetes Based on an Analogue Implementation of a Beta-Cell Model," *Biomedical Circuits and Systems*, IEEE Transactions on , vol.PP, no.99, pp.1,1

Reddy M, Herrero P, El Sharkawy M, Pesl P, Jugnee N, Thomson H, Pavitt D, Toumazou C, Johnston DG, Georgiou P, Oliver N. Feasibility Study of a Bio-inspired Artificial Pancreas in Adults with Type 1 Diabetes. *Diabetes Technology and Therapeutics* 2014; In press

Toumazou C, Thay TS, Georgiou P, 2014, A new era of semiconductor genetics using ion-sensitive field-effect transistors: the gene-sensitive integrated cell., Royal Society of London. *Philosophical Transactions A. Mathematical, Physical and Engineering Sciences*, Vol:372, ISSN:1364-503

Toumazou C, Shepherd LM, Reed S, ... Georgiou P et al., 2013, Simultaneous DNA amplification and detection using a pH-sensing semiconductor system, *Nature Methods*, Vol:10, ISSN:1548-7105

Bergmann JHM, Gulati V, Anastasova-Ivanova S, Spulber I, Georgiou P, McGregor A, 2013, An attachable clothing sensor system for measuring knee joint angles, *IEEE Sensors Journal*, Vol:13, ISSN:1530-437X, Pages:4090-4097

Peer Reviewed Conference Papers

Yuanqi Hu; Georgiou, P., "A direct-capacitive feedback ISFET interface for pH reaction monitoring," *Circuits and Systems (ISCAS)*, 2013 IEEE International Symposium on , vol., no., pp.189,192, 19-23 May 2013

Yuanqi Hu; Georgiou, P., "A study of the partitioned dynamic programming algorithm for genome comparison in FPGA," *Circuits and Systems (ISCAS)*, 2013 IEEE International Symposium on , vol., no., pp.1897,1900, 19-23 May 2013

Pagkalos, I.; Herrero, P.; Georgiou, P., "An analogue implementation of the beta cell insulin release model," *Circuits and Systems (ISCAS)*, 2013 IEEE International Symposium on , vol., no., pp.2489,2492, 19-23 May 2013

Reverter, Y. Liu, P. Georgiou, T. Prodromakis, and T. Constandinou. Design considerations for a cmos lab-on-chip microheater array to facilitate the in vitro thermal stimulation of neurons. Engineering in Medicine and Biology Society, 2013 IEEE-EMBS 2013 Annual International Conference of the, 2013.

Sohbati, M.; Georgiou, P.; Toumazou, C., "REFET replication for ISFET-based SNP detection arrays," *Circuits and Systems (ISCAS)*, 2013 IEEE International Symposium on , vol., no., pp.185,188, 19-23 May 2013

Maysam Ghovanloo

Short Courses, Plenary Sessions, Keynote Speakers, Invited Lectures

"Tongue Drive System" *NIBIB Discoveries in Technology*, National Institute of Biomedical Imaging and Bioengineering, National Institutes of Health, Washington, DC, Apr. 2014.

"From Implantable Microelectronic Devices to Modern Assistive Technologies" Department of Biomedical Engineering, University of Minnesota, Minneapolis, MN, Apr. 2014.

"Tongue Drive System," *Quality of Life for Senior Citizens Task Force*, Georgia Tech Research Institute, Atlanta, GA, Feb. 2014. Technologies for Wireless Biosystems" Bioelectronics Tutorial, *IEEE Sensors'13*, Baltimore, MD, Nov. 2013.

"Transcutaneous Power and Data Transmission to Implantable Microelectronic Devices" RF-Assisted Medicine Workshop, IEEE IMS/RFIC'13, Seattle, WA, June 2013.

Conferences

Technical Program Co-Chair, IEEE Biomedical Circuits and Systems Conference, Lausanne, Switzerland, 2014.

Co-Organizer and Co-Chair, IEEE Neural Engineering, Pre-Conference Symposium on Problems at the Neural Interface 2013, San Diego, CA, Nov. 2013 (with Dominique Durand)

Editorial Boards

Associate Editor, *IEEE Transactions on Biomedical Engineering*, (Dec 2011 – Present)

Associate Editor, *IEEE Transactions on Biomedical Circuits and Systems*, (Dec 2010 – Present)

Member of Subcommittee on Imagers, MEMS, Medical and Displays (IMMD), *International Solid States Circuits Conference (ISSCC)* (Feb. 2009 – Feb. 2014)

Guest Editor, *IEEE Transactions on Biomedical Circuits and Systems*, Special Issue on ISSCC 2013 (Feb. 2014) (with Patrick Mercier and Simone Gambini)

Publications

Journal Articles

- D. Ahn, M. Kiani, and M. Ghovanloo, "Enhanced wireless power transmission using strong paramagnetic response," *IEEE Trans. on Magnetics*, vol. 50, no. 3, Article#: 8000308, Mar. 2014.
- U. Jow, P. McMenamin, M. Kiani, J.R. Manns, and M. Ghovanloo, "EnerCage: A smart experimental arena with scalable architecture for behavioral experiments," *IEEE Trans. Biomed. Eng.*, vol. 61, no. 1, pp. 139-148, Jan. 2014.
- J.S. Minocha, J.S. Holbrook, D.P. West, M. Ghovanloo, A. Laumann, "Development of a tongue-piercing method for use with assistive technology," *J. Am. Med. Association (JAMA) Dermatology*, Published online jamadermatology.com, Nov. 27, 2013. DOI:10.1001/jamadermatol.2013.7165
- J. Kim, H. Park, J. Bruce, E. Sutton, D. Rowles, D. Pucci, J. Holbrook, J. Minocha, B. Nardone, D. West, A. Laumann, E. Roth, M. Jones, E. Veledar, and M. Ghovanloo, "Tongue enables computer and wheelchair access for the people with high-level disabilities," *Science Translational Medicine*, vol. 5, no. 213, p. 213ra166, Nov. 2013. DOI: 10.1126/scitranslmed.3006296
- M. Kothari, P. Svensson, J. Jensen, T. Davidsen-Holm, M. Skorstengaard, Feldbek-Nielsen, M. Ghovanloo, L. Baad-Hansen, "Tongue controlled computer game: A new approach for rehabilitation of tongue motor function," *Archives of Physical Medicine and Rehabilitation*, Oct. 2013, In press <http://dx.doi.org/10.1016/j.apmr.2013.08.008>
- X. Huo, H. Park, J. Kim, and M. Ghovanloo, "A dual-mode human computer interface combining speech and tongue motion for people with severe disabilities," *IEEE Trans. on Neural Sys. Rehab*, vol. 21, no. 6, pp. 979-991, Nov. 2013.
- M. Kiani and M. Ghovanloo, "A figure-of-merit for designing high performance inductive power transmission links," *IEEE Trans. on Industrial Eng.*, vol. 60, no. 11, pp. 5292-5305, Nov. 2013.
- X. Huo, A.N. Johnson-Long, M. Ghovanloo, and M. Shinohara, "Motor performance of tongue with a computer integrated system under different levels of background physical exertion," *Ergonomics*, vol. 56, no. 11, pp. 1733-1744, Sep. 2013.
- H.M. Lee and M. Ghovanloo, "A power-efficient wireless capacitor charging system through an inductive link," *IEEE Trans. on Circuits and Systems-II*, vol. 60, no. 10, pp. 707-711, Sep. 2013.
- H.M. Lee, H. Park, and M. Ghovanloo, "A power-efficient wireless system with adaptive supply control for deep brain stimulation," *IEEE J. Solid-State Circuits*, vol. 48, no. 9, pp. 2203-2216, Sep. 2013.
- M. Kothari, P. Svensson, J. Jensen, A. Kjærsgaard, J. Kim, M. Ghovanloo, L. Baad-Hansen, "Training-induced cortical plasticity compared between three tongue-training paradigms," *Neuroscience*, vol. 246, pp. 1-12, <http://dx.doi.org/10.1016/j.neuroscience.2013.04.040>, Aug. 2013.
- M. Kiani and M. Ghovanloo, "A 20 Mbps pulse harmonic modulation transceiver for wideband near-filed data transmission," *IEEE Trans. on Circuits and Systems II*, vol. 60, no. 7, pp. 382-386, July 2013.
- S.B. Lee, M. Yin, J.R. Manns, and M. Ghovanloo, "A wideband dual-antenna receiver for wireless recording from animals behaving in large arenas," *IEEE Trans. Biomed. Eng.*, vol. 60, no. 7, pp. 1993-2004, July 2013.
- Y.M. Choi and M. Ghovanloo, "Challenges to a persistent medication adherence monitoring system for seniors," *J. Neuroscience and Neuroengineering*, vol. 2, no. 3, pp. 250-254, June 2013. DOI: <http://dx.doi.org/10.1166/jnsne.2013.1055>
- U. Jow and M. Ghovanloo, "Geometrical design of a scalable overlapping planar spiral coil array to generate a homogeneous magnetic field," *IEEE Trans. on Magnetics*, vol. 49, no. 6, pp. 2933-2945, June 2013.
- H.M. Lee and M. Ghovanloo, "A high frequency active voltage doubler in standard CMOS using offset-controlled comparators for inductive power transmission," *IEEE Trans. on Biomed. Circuits and Systems*, vol. 7, no. 3, pp. 213-224, June 2013.
- H. Park and M. Ghovanloo, "A 13-bit noise shaping SAR-ADC with dual-polarity digital calibration," *Analog Integrated Circuits and Signal Processing*, No. 75, pp. 459-465, DOI 10.1007/s10470-013-0050-x, May 2013.

Peer Reviewed Conference Papers

- T. Olubanjo and M. Ghovanloo, "Real-time swallowing detection based on tracheal acoustics," to be presented at *IEEE Intl. Conf. on Acoustics, Speech, and Signal Proc. (ICASSP'14)*, Florence, Italy, May 2014.
- S. Viseh, A. Ayala-Acevedo, M. Ghovanloo, and T. Mohsenin, "Towards a low power FPGA implementation for a stand-alone intraoral tongue drive system," to be presented at *Government Microcircuits and Critical Technologies Conference (GOMACTech'14)*, Charleston, SC, Apr. 2014.
- H.M. Lee, K.Y. Kwon, W. Li, and M. Ghovanloo, "A power-efficient switched-capacitor stimulating system for electrical/optical deep-brain stimulation," *Digest of technical papers IEEE Intl. Solid State Cir. Conf.*, pp. 414-415, Feb. 2014.
- K.Y. Kwon, H.M. Lee, and M. Ghovanloo, and W. Li, "A wireless slanted optrode array with integrated micro LEDs for optogenetics," *Proceedings of the IEEE MEMS Conf.*, pp. 813-816, Jan. 2014.
- S. Eiring, Y.M. Choi, and M. Ghovanloo, "Privacy in medication adherence and personal emergency response systems," *Intl. Conf. Design Principles and Practices*. Vancouver, Canada, vol. 8, Jan. 2014
- P. McMenamin, U. Jow, M. Kiani, J.R. Manns, and M. Ghovanloo, "A smart cage for behavioral experiments on small freely behaving animal subjects," *IEEE Neural Engineering Conference*, pp. 985-988, Nov. 2013.
- J. Ki, C. Bulach, K.M. Richards, D. Wu, A.J. Butler, and M. Ghovanloo, "An apparatus for improving upper limb function by engaging synchronous tongue motion," *IEEE Neural Engineering Conference*, pp. 1574-1577, Nov. 2013.

T. Xu, C. Tekes, S. Satir, E. Arkan, M. Ghovanloo, and F. L. Degertekin, "Design, modeling and characterization of 35 MHz 1-D CMUT phased array," Proc. IEEE International Ultrasonic Symposium, July 2013.

Y.M. Choi, T. Olubanjo, A. Farajidavar, and M. Ghovanloo, "Potential barriers in adoption of a medication compliance neckwear by elderly population," Proc. IEEE 35th Eng. in Med. and Biol. Conf., pp. 4678-4681, June 2013.

Books and Book Chapters

M. Ghovanloo and M. Kiani, (Sep. 2014) "Inductive Coupling," in Handbook of Biomedical Telemetry, Ed. K.S. Nikita, Ch. 7, Hoboken: John Wiley & Sons, Inc.

M. Ghovanloo, (Dec. 2013) "Tongue Drive System," McGraw-Hill Yearbook of Science & Technology 2014, ISBN 978-0071831062.

Viktor Gruev

Short Courses, Plenary Sessions, Keynote Speakers, Invited Lectures

"Compact spectral-polarization imaging sensors" in Proc. SPIE Photonics West, San Francisco, CA, 2014.

"Functional Neural Imaging via Custom Polarization Imagers" – keynote talk at Iberia Information Processing Workshop, Bariloche, Argentina, September 2013.

"Spectral-Polarization Focal Plane Sensing for Functional Neural Imaging" – Biomedical Engineering Department, Purdue University, West Lafayette, IN, March 2013.

"Spectral-Polarization Focal Plane Sensing for Functional Neural Imaging" – Neuroscience Seminar, University of California San Diego, San Diego, CA, March 2013.

"Spectral-Polarization Focal Plane Sensing for Functional Neural Imaging" – Electrical and Computer Engineering Department, Georgia Institute of Technology, Atlanta, GA, March 2013.

"Spectral-Polarization Imaging Sensors" – Microsoft Research, Redmond, WA, February 2013.

Conferences

Member of the Technical Committee for the SPIE Defense and Sensing Symposium (2013-present)

Member of the Technical Committee for IEEE ISCAS.

Editorial Boards

Guest editor for Special Issues in Journal of Sensors on polarization imaging sensing

Other IEEE Service and Professional Activities

SPIE Senior member

Awards, Honors, Patents

S. Achilefu, Y. Liu, V. Gruev, J. P. Culver, W. Akers and A. Bauer, "Goggle imaging systems and methods," patent pending 2013.

V. Gruev, "Sensor for Spectral-Polarization Imaging," patent pending, 2013.

V. Gruev, Z. Yang and J. Van der Spiegel, "CMOS Linear Voltage/Current Dual-Mode Imager," U.S. Patent # . 8,471,189, July 2013.

Media reports and press:

Intraoperative goggle device with visible and near infrared imagers for cancer detection – BBC, MIT Technology Review, Science Daily, Fox News.

Publications

Journal Articles

R. Njuguna and V. Gruev, "Current-Mode CMOS Imaging Sensor with Velocity Saturation Mode of Operation and Feedback Mechanism," IEEE Sensors Journal, vol.14, no.3, pp.710-721, 2014.

E. Gilboa, J. Cunningham, A. Nehorai and V. Gruev, "Image interpolation and denoising for division of focal plane sensors using Gaussian Processes," Optics Express, 2014.

T. York, L. Kahan, S. Lake and V. Gruev, "Real-time high-resolution measurement of collagen alignment in dynamically loaded soft tissue," Journal of Biomedical Optics, 2014.

N. Zhu, S. Mondal, S. Gao, S. Achilefu, V. Gruev, and R. Liang, "Dual-mode imaging system for fluorescence image-guided surgery," Optics Letters, 2014.

B. S. Acharya, et al. , "Introducing the CTA concept," *Astroparticle Physics* 43(0), 3-18, 2013.

S. Powell and V. Gruev, "Calibration methods for division-of-focal-plane polarimeters," *Optics Express*, vol. 21, pp. 21040-21056, 2013.

Y. Liu, R. Njuguna, T. Matthews, W. Akers, G. Sudlow, S. Mondal, R. Tang, V. Gruev and S. Achilefu, "Near-infrared Fluorescence Goggle System with CMOS Imaging Sensor and See-Through Display," *Journal of Biomedical Optics*, vol. 18, pp. 101303.1- 101303.7, 2013.

S. Gao and V. Gruev, "Gradient-based interpolation method for division-of-focal-plane polarimeters," *Optics Express*, vol. 21, pp. 1137-1151, 2013.

G. Calabrese, P. Brady, V. Gruev, and M. Cumming, "Dynamic Polarization Signaling in Swordtails Alters Female Mate Preference," to appear in *Proceedings of the National Academy (PNAS)*

T. Charanya, T. York, S. Bloch, G. Sudlow, R. Tang, W. Akers, D. Rubin, V. Gruev, S. Achilefu, " A Combination of tumor-selective molecular probe and dual modal fluorescence-polarization endoscope accurately detects flat lesions in colitis-associated cancer " to appear in *Gut*.

Peer Reviewed Conference Papers

T. York and V. Gruev "A 220 X 128 120 mW 60 Frames/S Current Mode Polarization Imager for in Vivo Optical Neural Recording," *IEEE International Symposium on Circuits and Systems*, Melbourne, Australia, 2014.

S. Powell, J. Marshall, T. Cronnin, and V. Gruev, "Underwater polarization camera for real-time and high definition imaging," in *Proc. SPIE*, Baltimore, MD, 2014.

T. York, J. Marshall, T. Cronnin and V. Gruev, "A 250-frames-per-second 640 by 480 pixels division of focal plane polarimeter for the visible spectrum," in *Proc. SPIE*, Baltimore, MD, 2014.

V. Gruev, "Compact spectral-polarization imaging sensor," in *Proc. SPIE Photonics West*, San Francisco, CA, 2014.

S. B. Mondal, S. Gao, N. Zhu, G. P. Sudlow, W. J. Akers, R. Liang, V. Gruev and S. Achilefu, "Intraoperative imaging and fluorescence image guidance in oncologic surgery using a wearable fluorescence goggle system," in *Proc. SPIE Photonics West*, San Francisco, CA, 2014.

N. Zhu, S. Gao, S. B. Mondal, V. Gruev, S. Achilefu and R. Liang, "Optical design of fluorescence imaging system for image guided surgery," in *Proc. SPIE Photonics West*, San Francisco, CA, 2014.

T. Charanya, T. York, W. Akers, S. Bloch, G. Sudlow, N. Kotagiri, B. Xu, V. Gruev, D. Rubin and S. Achilefu, "Dual modal Fluorescence-Polarization Endoscope for an in-vivo evaluation of Colitis-Associated Cancer, " *Advances in Optics Conference*, Lake Tahoe, CA, USA, 2013.

S. Gao, R. Njuguna and V. Gruev, "Fabrication and performance evaluation of pixelated nano-wire grid polarizer" in *Proc. SPIE*, San Diego, California, USA 2013.

S. Powell and V. Gruev, "Calibration method for division of focal plane polarimeters," in *Proc. SPIE*, San Diego, California, USA 2013.

M. Kulkarni and V. Gruev, "A high resolution spectral-polarization imaging sensor," in *International Image Sensor Workshop*, Snowbird, Utah, 2013.

Jeremy Holleman

Short Courses, Plenary Sessions, Keynote Speakers, Invited Lectures

"Smart Silicon: Low-power Circuits for Intelligent Wireless Sensors", invited seminar at The University of Virginia, Department of Electrical and Computer Engineering, March 2014.

"Scalable Power-Efficient Multi-Target Tracking Using Hybrid Analog Computations", *Neuro-Inspired Computational Elements Workshop*, Albuquerque, NM, Feb. 2014.

Editorial Boards

- Paper reviews: *ISCAS*, *TCAS*, *TCAS-2*, *TBCAS*, *TVLSI*

Awards, Honors, Patents

U. Tennessee "Outstanding Professional Promise in Research"

Publications

Journal Articles

S. Young, J. Lu, J. Holleman, I. Arel, "On the Impact of Approximate Computation in an Analog DeSTIN Architecture," *IEEE Transactions on Neural Networks and Machine Learning*, Vol. 25, Issue 5, pp. 934-946, 2014.

M. S. Jahan and J. Holleman, "A 4 uW Dual-Modulus Frequency Divider with 198% Locking Range for MICS Band Applications," Springer Analog Integrated Circuits and Signal Processing, Vol.77, Issue 3, pp. 549--556, Dec. 2013.

Peer Reviewed Conference Papers

J. Lu, S. Young, I. Arel, J. Holleman, "A 1 TOPS/W Analog Deep Machine-Learning Engine with Floating-Gate Storage in 0.13um CMOS" IEEE International Solid-State Circuits Conference, Digest of Technical Papers, Feb. 2014.

J. Lu, S. Young, I. Arel, and J. Holleman, "An Analog Online Clustering Circuit in 130nm CMOS," IEEE Asian Solid-State Circuits Conference, Nov. 2013.

T. Yang, J. Lu, J. Holleman, "A High Input Impedance Low-Noise Instrumentation Amplifier with JFET Input," IEEE 56th International Midwest Symposium on Circuits and Systems (MWSCAS), 2013. Chiara Bartolozzi

Short Courses, Plenary Sessions, Keynote Speakers, Invited Lectures

"Neuromorphic engineering and event-driven architectures", invited lecture at The University of Genova, May 2014.

Conferences

Co-organiser and chair of a special session at IEEE International Symposium on Circuits and Systems (ISCAS2014), Melbourne, Australia, 1-5 June 2014, session B1L-A Analog Circuits for Short & Long Term Synaptic Dynamics

Reviewer of International Joint Conference on Neural Networks (IJCNN 2014) Beijing, China, July 6-11, 2014

Reviewer of IEEE International Symposium on Circuits and Systems (ISCAS2014), Melbourne, Australia, 1-5 June 2014

Editorial Boards

Associate editor for Frontiers in Neuromorphic Engineering

Co-editor of Special Topic "Synaptic plasticity for Neuromorphic Systems" for Frontiers in Neuromorphic Engineering

Reviewer of Journal of Neuroscience Methods

Other IEEE Service and Professional Activities

Member of IEEE Sensory Systems Technical Committee

Member of IEEE Neural Systems and Applications Technical Committee

Publications

Journal Articles

Rea F., Metta G., Bartolozzi C. Event-driven visual attention for the humanoid robot iCub Frontiers in Neuroscience 10.3389/fnins.2013.00234 2013

Benosman R., Ieng S., Clercq C., Bartolozzi C., Srinivasan M. Asynchronous Frameless Event-based Optical Flow Neural Networks 10.1016/j.neunet.2011.11.001 2012

Peer Reviewed Conference Papers

Wiesmann G., Schraml S., Litzberger M., Belbachir A., Hofstatter M., Bartolozzi C. Event-driven Embodied System for Feature Extraction and Object Recognition in Robotic Applications 2012 IEEE Computer Society Conference on Computer Vision and Pattern Recognition 10.1109/CVPRW.2012.6238898 2012

Matthew Man-Kay Law

Short Courses, Plenary Sessions, Keynote Speakers, Invited Lectures

"An Ultra-Low-Power CMOS Smart Temperature Sensor for Clinical Temperature Monitoring", Invited presentation at Solomon Systech, Hong Kong, October 2013.

Conferences

IEEE Circuits and Systems society (CASS) Sensory Systems Technical Committee Member (2012-present)

IEEE Circuits and Systems society (CASS) Biomedical Circuits and Systems Technical Committee Member (2012-present)

Technical Session Co-Chair for the Asia Symposium on Quality Electronic Design (2012-2013)

Other IEEE Service and Professional Activities

Member of the Review Committee for the IEEE Symposium on Circuits and Systems (2012-present)

Member of the Review Committee for the IEEE Biomedical Circuits and Systems Conference (2012-present)

Publications

Journal Articles

D. G. Chen, F. Tang, A. Bermak and M. K. Law, "A 12 pJ/pixel Analog-to-Information Converter based 816 x 640 Pixel CMOS Image Sensor", *IEEE Journal of Solid-State Circuits (JSSC)*, vol. 49, issue 5, pp. 1210-1222, May 2014.

B. Wang, M. K. Law, A. Bermak and H. C. Luong, "A Passive RFID Tag Embedded Temperature Sensor With Improved Process Spreads Immunity for a -30°C to 60°C Sensing Range", *IEEE Trans. on Circuits and Systems I (TCAS-I)*, pp. 337 – 346, Feb. 2014.

T. Zhang, P. I Mak, M. I. Vai, P. Mak, M. K. Law, S. H. Pun, F. Wan and R. P. Martins, "15-nW Biopotential LPFs in 0.35- μ m CMOS Using Subthreshold-Source-Follower Biquads with and without Gain Compensation", *IEEE Trans. on Bio. Circuits and Systems (TBCAS)*, vol. 7, issue 5, pp. 690-702, Oct. 2013.

Peer Reviewed Conference Papers

J. H. Lee, D. G. Chen, A. Bermak and M. K. Law, "A High Voltage Zero-Static Current Voltage Scaling ADC Interface Circuit for Micro-Stimulator", *IEEE Int. Symp. on Circuits and Systems (ISCAS)*, accepted, 2014.

W. Wang, Z. Yan, P. I. Mak, M. K. Law and R. P. Martins, "Micropower Two-Stage Amplifier Employing Recycling Current-Buffer Miller Compensation", *IEEE Int. Symp. on Circuits and Systems (ISCAS)*, accepted, 2014.

Z. Yan, P. I. Mak, M. K. Law and R. P. Martins, "A 0.0013mm² 3.6 μ W Nested-Current-Mirror Single-Stage Amplifier Driving 0.15-to-15nF Capacitive Loads with >62° Phase Margin", *IEEE Int. Solid-State Circuit Conference (ISSCC)*, pp. 288 - 289, Feb. 2014.

Y. Zhao, P. I. Mak, M. K. Law and R. P. Martins, Student Research Preview, *IEEE Int. Solid-State Circuit Conference (ISSCC)*, Feb. 2014.

Y. Zhao, P. I. Mak, M. K. Law and R. P. Martins, "A 0.127-mm², 5.6-mW, 5th-Order SC LPF with +23.5-dBm IIP3 and 1.5-to-15-MHz Clock-Defined Bandwidth in 65-nm CMOS", *IEEE Asian Solid-State Circuits Conference (A-SSCC)*, pp 361-364, Nov. 2013.

K. M. Lei, P. I. Mak, M. K. Law and R. P. Martins, "A 2.93- μ W 8-Bit Capacitance-to-RF Converter for Movable Laboratory Mice Blood Pressure Monitoring", *IEEE Asia Symposium on Quality Electronic Design (ASQED)*, pp. 216-219, Aug. 2013.

M. Li, C. I. Jeong, M. K. Law, P. I. Mak, M. I. Vai and R. P. Martins, "Sub-threshold Standard Cell Library Design for Ultra-Low Power Biomedical Applications", *IEEE Int. Conference of the Engineering in Medicine and Biology Society (EMBC)*, pp. 1454-1457, July 2013.

Z. Chen, M. K. Law, P. I. Mak and R. P. Martins, "Optimization of Microwatt On-Chip Charge Pump for Single-Chip Solar Energy Harvesting", *IEEE Int. Conference of Electron Devices and Solid-State Circuits (EDSSC)*, June. 2013.

T. Wu, M. K. Law, P. I. Mak and R. P. Martins, "An Ultra-Low Power CMOS Smart Temperature Sensor for Clinical Temperature Monitoring", *IEEE Int. Conference of Electron Devices and Solid-State Circuits (EDSSC)*, June. 2013.

C. I. Jeong, M. Li, M. K. Law, P. I. Mak, M. I. Vai, P. Mak, F. Wan and R. P. Martins, "Standard Cell Library Design with Voltage Scaling and Transistor Sizing for Ultra-Low-Power Biomedical Applications," *IEEE Int. Conf. of Electron Devices and Solid-State Circuits (EDSSC)*, June. 2013.

J. Wu, M. K. Law, P. I. Mak, Rui P. Martins, "A 1.83 μ W, 0.78 V_{rms} Input Referred Noise Neural Recording Front End", *IEEE Int. Symp. on Circuits and Systems (ISCAS)*, pp. 405-408, May 2013.

Juan Antonio Leñero-Bardallo

Conferences

Review Committee Member of ISCAS 2014.

Editorial Boards

Reviewer of IEEE Transactions on Neural Networks and Learning Systems, TNNLS (2012-present).

Reviewer of IEEE Transactions on Biomedical Circuits and Systems, TBIOCAS (2011-present).

Reviewer of IEEE Transactions of Circuits and Systems, part I, TCAS-I (2010-present)

Reviewer of International Journal of Computer Vision (2013-present).

Other IEEE Service and Professional Activities

IEEE Sensory Systems Committee Member (2011-present)

Awards, Honors, Patents

Best conference paper award for the paper: Jorge Fernández-Berni, Ricardo Carmona Galán, Rocío del Río, Juan A. Leñero-Bardallo, Ángel Rodríguez-Vázquez, "Smart Imaging for Power-efficient Extraction of Viola-Jones Local Descriptors", Image Sensors and Imaging Systems, February 2014, SPIE, San Francisco, USA. doi:10.1117/12.2042384.

Publications

Journal Articles

Juan A. Leñero-Bardallo, D. H. Bryn, and Philipp Häfliger, "Bio-inspired Asynchronous Pixel Event Tri-color Vision Sensor", IEEE Transactions on Biomedical Circuit and Systems, vol. xx, No. xx, pp. 1-13, ISSN:1932-4545, August 2013. DOI: 10.1109/TBCAS.2013.2271382 .

Peer Reviewed Conference Papers

Juan A. Leñero-Bardallo, D. H. Bryn, and Philipp Häfliger, "Flame Monitoring with an AER Color Vision Sensor", IEEE International Symposium on Circuits and Systems, ISCAS 2013, Beijing, China.

Juan A. Leñero-Bardallo and Philipp Häfliger, "A bio-inspired tri-operation mode vision sensor", 4th Annual NanoNetwork Workshop, Bergen, Norway, June 2013.

Juan A. Leñero-Bardallo and Philipp Häfliger, "A dual operation mode bio-inspired vision sensor", IEEE Biomedical Circuits and Systems Conference (BioCAS), Rotterdam, The Netherlands, November 2013.

Jorge Fernández-Berni, Ricardo Carmona Galán, Rocío del Río, Juan A. Leñero-Bardallo, Ángel Rodríguez-Vázquez, "Smart Imaging for Power-efficient Extraction of Viola-Jones Local Descriptors", Image Sensors and Imaging Systems, February 2014, SPIE, San Francisco, USA. doi:10.1117/12.2042384

Juan A. Leñero-Bardallo, Jorge Fernández-Berni, and Ángel Rodríguez-Vázquez, "Review of ADCs for imaging", Image Sensors and Imaging Systems, February 2014, SPIE, San Francisco, USA, doi:10.1117/12.2041682,

Books and Book Chapters

Book: Juan Antonio Leñero Bardallo; Sergio A. Cruces Álvarez. Técnicas ICA de procesamiento de datos para señales de audio. Aplicación a la separación ciega de fuentes de audio con retrasos temporales. pp. 1 - 144. Publicia, 08/04/2014. ISBN 978-3-639-55634-6

Alejandro Linares Barranco

Short Courses, Plenary Sessions, Keynote Speakers, Invited Lectures

"Example Talk Title", invited seminar at The University of Madchester, December 2011.

"Another Example Title", keynote talk at 3rd International Workshop on Systems Way Better Than the Ones We Have Already, Grantchester, 31 December 2011

Conferences

Member of the NSA Technical Committee for the IEEE ISCAS conference (2010-present)

Co-chair of the track NSA of ISCAS 2014.

Other IEEE Service and Professional Activities

Chair of the Neural Systems and Applications TC

Member of the Sensory Systems TC

Reviewer of IEEE Transactions on Cybernetics

Reviewer of IEEE TCAS-I

Reviewer of IEEE TNNLS

Reviewer of ICANN'14, ICNC'14, CITS'14, IJCNN'14, MUSIC'13, SIGMAP'13 conferences.

Reviewer in Elsevier Robotics and Autonomous Systems

Reviewer in IOPScience Measurement Science and Technology

Publications

Journal Articles

Fernando Perez-Peña, Arturo Morgado-Estevez, Alejandro Linares-Barranco, Angel Jimenez-Fernandez, Francisco Gomez-Rodriguez, Gabriel Jimenez-Moreno, Juan Lopez-Coronado. "Neuro-Inspired Spike-Based Motion: From Dynamic Vision Sensor to Robot Motor Open-Loop Control through Spike-VITE". Sensors 01/2013; 13(11):15805-15832.

Peer Reviewed Conference Papers

T. Serrano-Gotarredona, J. Park, A. Linares-Barranco, A. Jimenez, R. Benosman, B. Linares-Barranco. "Improved contrast sensitivity DVS and its application to event-driven stereo vision". Circuits and Systems (ISCAS), 2013 IEEE International Symposium on;

Serrano Gotarredona, Maria Teresa, Linares Barranco, Bernabe, Camuñas Mesa, Luis Alejandro, Linares Barranco, Alejandro: Event-driven sensing and processing. A new paradigm for high-speed vision. Comunicación en congreso. 28th Edition of Conference on Design of Circuits and Integrated Systems (DCIS). Donostia - San Sebastián (España). 2013

Manuel Jesus Domínguez-Morales, Elena Cerezuela-Escudero, Fernando Perez-Peña, Angel Jimenez-Fernandez, Alejandro Linares-Barranco, Gabriel Jimenez-Moreno. "On the AER Stereo-Vision Processing: A Spike Approach to Epipolar Matching". 11/2013; DOI:10.1007/978-3-642-42054-2_34 ISBN: 978-3-642-42053-5 In book: Neural Information Processing, Edition: 2013, Chapter: On the AER Stereo-Vision Processing: A Spike Approach to Epipolar Matching, Publisher: Springer, Editors: Minhoo Lee, Akira Hirose, Zeng-Guang Hoe, Rhee-Man Kil, pp.267-275. ICONIP 2013.

Fernando Perez-Peña, Arturo Morgado-Estevez, Alejandro Linares-Barranco, ManuelJesus Dominguez-Morales, Angel Jimenez-Fernandez. SVITE: A Spike-Based VITE Neuro-Inspired Robot Controller; DOI:10.1007/978-3-642-42054-2_35 ISBN: 9783642420535 In book: Neural Information Processing, Publisher: Springer Berlin Heidelberg, Editors: Lee, Minhoo and Hirose, Akira and Hou, Zeng-Guang and Kil, RheeMan, pp.276-283. ICONIP 2013.

Fernando Perez-Peña, Arturo Morgado-Estevez, Alejandro Linares-Barranco, Angel Jiménez-Fernández, Juan Lopez-Coronado, JoseLuis Muñoz-Lozano. A FPGA Spike-Based Robot Controlled with Neuro-inspired VITE; DOI:10.1007/978-3-642-38679-4_29 ISBN: 9783642386787 In book: Advances in Computational Intelligence, Chapter: 29, Publisher: Springer Berlin Heidelberg, Editors: Ignacio Rojas, Gonzalo Joya, Joan Gabestany, pp.299-308. IWANN 2013.

Elena Cerezuela-Escudero, Manuel Jesus Domínguez-Morales, Angel Jiménez-Fernandez, Rafael Paz-Vicente, Alejandro Linares-Barranco, Gabriel Jiménez-Moreno. Spikes Monitors for FPGAs, an Experimental Comparative Study. IWANN, 2013

Shih Chii Liu

Conferences

Review Member of the Technical Committee for the IEEE ISCAS conference 2012.

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
Reviewer for IEEE TCAS, IEEE TNN, IEEE TBCAS journals
Co-Organizer Telluride Neuromorphic Cognition Workshop 2013.

Publications

Journal Articles

D. Neil and S-C. Liu, Minitaur, an event-driven FPGA-based spiking network accelerator, IEEE Transactions on VLSI Systems, 2014.

S-C. Liu, A. van Schaik, B. Minch, and T. Delbruck, Asynchronous binaural spatial audition sensor with 2x64x4 channel output, IEEE Transactions on Biomedical Circuits and Systems}, 2014.

Y-X Wang and S-C. Liu, Active processing of spatio-temporal input patterns in silicon dendrites, IEEE Transactions on Biomedical Circuits and Systems}, 7(3), pp. 307—318, 2013.

Peer Reviewed Conference Papers

S. Hussain, R. Gopalakrishnan, A. Basu, and S-C. Liu, A morphological learning: Increased memory capacity of neuromorphic systems with binary synapses exploiting AER based reconfiguration, 2013 International Joint Conference on Neural Networks (IJCNN), Aug 4--9, Dallas, Texas, 2013.

R. Berner, C. Brandli, M. H. Yang, S-C. Liu, and T. Delbruck, A 240x180 120dB 10mW 12us-latency sparse output vision sensor for mobile applications, 2013 Symposium on VLSI Technology and Circuits, Jun 11--14, Kyoto, Japan, 2013.

P. Park, H. Ryu, J. H. Lee, C. W. Shin, K. B. Lee, J. Y. Woo, J-S Kim, B. C. Kang, S-C. Liu, and T. Delbruck, Fast neuromorphic sound localization for binaural hearing aids, 2013 IEEE Engineering in Medicine and Biology Society (EMBS), July 3--7, Osaka, Japan, 2013.

R. Berner, C. Brandli, M. H. Yang, S-C. Liu, and T. Delbruck, A 240x180 120dB 10mW 12us-latency sparse output vision sensor for mobile applications, 2013 International Image Sensor Workshop (IISW), Jun 12--16, Snowbird, Utah, USA, 2013.

Books and Book Chapters

S-C. Liu and A. van Schaik, Neuromorphic Sensors, Cochlea, Encyclopedia of Computational Neuroscience, Jaeger D. and Jung R. eds, Springer-Verlag, Berlin Heidelberg, DOI: 10.1007/SpringerReference_348183 2013-08-20, 2013.

Christoph Posch

Short Courses, Plenary Sessions, Keynote Speakers, Invited Lectures

“Neuromorphic vision – sensing and encoding for temporal resolution, dynamic range and power efficiency”, invited talk at the Symposium on Grand Challenges in Neural Technology 2013, Singapore, December 2013.

“Bio-inspired vision”, invited seminar at the National University of Singapore NUS, SINAPSE, Singapore, December 2013.

Conferences

Member of the Review Committee for the IEEE International Symposium on Circuits and Systems (2010 – present)

Editorial Boards

Review Editor of Frontiers in Neuromorphic Engineering (2010 – present)

Other IEEE Service and Professional Activities

Member IEEE Sensory Systems Technical Committee (SSTC)

Member IEEE Neural Systems and Applications Technical Committee (NSATC)

Awards, Honors, Patents

Prix La Recherche – Lauréat Technologie 2013

Publications

Journal Articles

João Carneiro, Sio-Hoi Ieng, Christoph Posch, Ryad Benosman, “Event-based 3D reconstruction from neuromorphic retinas”, Neural Networks, Volume 45, September 2013, Pages 27-38, ISSN 0893-6080

Orchard, G.; Meyer, C.; Etienne-Cummings, R.; Posch, C.; Thakor, N.; and Benosman, R., “From HMAX to HFIRST, a temporal approach to object recognition”, Pattern Analysis and Machine Intelligence, IEEE Transactions on, under review, 11/2013.

Peer Reviewed Conference Papers

Orchard, G., Matolin, D., Lagorce, X., Benosman, R., Posch, C., “Accelerated frame-free time-encoded multi-step imaging”, IEEE International Symposium on Circuits and Systems, 2014, accepted.

Books and Book Chapters

E. Neftci, C. Posch, E. Chicca, “Neuromorphic Engineering”, UNESCO Encyclopedia of Life Support Systems, 2013, accepted.

Themis Prodromakis

Short Courses, Plenary Sessions, Keynote Speakers, Invited Lectures

"Reliably Unreliable Nanoelectronics", Department of Electronic & Electrical Engineering", University College London, UK, May 2014.

"Reliably Unreliable Nanoelectronics", Physics and Maths Department", University of Hull, UK, Nov 2013.

"Practical Applications of Solid-State Memristors", Faculty of Information Technology, Pázmány Péter Catholic University, Hungarian Academy of Sciences, Budapest, HU, Sep 2013.

"Synaptic electronics with inherently unreliable nano devices", Telluride Neuromorphic Cognition Engineering Workshop, Colorado, USA, Jul 2013.

"Demonstrating both short and long-term synaptic dynamics with single TiO₂ memristors", Technische Universität Dresden, Dresden, DE, Jun 2013.

"Bio-inspired Devices: Monitoring and Emulating Biological Functions", Institute of Microelectronics, NCSR Demokritos, Athens, Greece, Jun 2013.

"Practical Applications of Solid-state Memristors", 60th Anniversary Celebrations, NUDT, Changsha, China, May 2013.

Conferences

General Chair of the IEEE Circuits & Systems Society Forum on Emerging & Selected Topics (CAS-FEST), Melbourne 2014

Editorial Boards

Associate Editor of *Frontiers in Neuromorphic Engineering* (2013 – present)

Other IEEE Service and Professional Activities

Member of the IEEE CAS Nanoelectronics and Gigascale Systems Technical Program Committees (2013–present)

Member of the IEEE CAS Sensory Systems Technical Program Committees (2013–present)

Member of the IEEE CAS Biomedical and Life Science Circuits and Systems Technical Program Committees (2010–present)

Publications

Journal Articles

I. Salaoru, A. Khiat, R. Berdan, Q. Li, C. Papavassiliou and T. Prodromakis, "Origin of the OFF State Variability in ReRAM Cells", *J. Phys. D: Appl. Phys.* 47, 145102, 2014

A. Khiat, I. Salaoru, and T. Prodromakis, "Resistive switching characteristics of indium-tin-oxide thin film devices", *Physica Status Solidi A: Applications and Materials Science*, 2014

T. Trantidou, C. Rao, H. Barrett, P. Camelliti, K. Pinto, M.H. Yacoub, T. Athanasiou, C. Toumazou, C.M. Terracciano and T. Prodromakis, "Selective hydrophilic modification of Parylene C films: a new approach, *Biofabrication*, vol. 6, 025004, 2014.

Q. Li, A. Khiat, I. Salaoru, C. Papavassiliou and T. Prodromakis, "Memory Impedance of TiO₂-based Metal-Insulator-Metal Devices", *Scientific Reports*, 2014

R. Berdan, C. Lim, A. Khiat, C. Papavassiliou and T. Prodromakis, "A Memristor SPICE Model Accounting for Volatile Characteristics of Practical ReRAM", *IEEE Electron Device Letters*, vol. 35, no. 1, 2014

I. Salaoru, A. Khiat, Q. Li, R. Berdan and T. Prodromakis, "Pulse-induced resistive and capacitive switching in TiO₂ thin film devices", *Applied Physics Letters*, vol. 103, no. 24, 2013

G. Indiveri, B. Linares-Barranco, R. Legenstein, G. Deligeorgis and T. Prodromakis, "Integration of nanoscale memristor synapses in neuromorphic computing architectures", *Nanotechnology*, 24, 384010, 2013

C. Rao, H. Barratt, T. Prodromakis and C.M. Terracciano, "Tissue Engineering Techniques in Cardiac Repair and Disease Modelling", *Current pharmaceutical design*, 2013

T. Trantidou, D. Payne, V. Tsiligkiris, Y-C. Chang, C. Toumazou and T. Prodromakis, "The dual role of Parylene C in chemical sensing: acting as an encapsulant and as a sensing membrane for pH monitoring applications", *Sensors & Actuators: B*, vol. 186, 2013

T. Trantidou, T. Prodromakis, V. Tsiligkiris, Y-C. Chang, and C. Toumazou, "Sensing H⁺ with conventional neural probes", *Applied Physics Letters*, vol. 102, 223506, 2013

T. Serrano-Gotarredona, T. Prodromakis, B. Linares-Barranco, "A Proposal for Hybrid Memristor-CMOS Spiking Neuromorphic Learning Systems", *IEEE Circuits and Systems Magazine*, vol. 12, no. 2, pp. 74-88, May 2013

Peer Reviewed Conference Papers

T. Trantidou, C. Rao, H. Barrett, C. Terracciano, C. Toumazou and T. Prodromakis, "Next generation cell culturing platforms for in vitro toxicology assays," Lab-on-a-Chip European Congress, Berlin, Germany, March 2014.

I. Marei, A. Chester, T. Prodromakis and M. Yacoub, "Assessment Of Parylene C Thin Films For Heart Valve Tissue Engineering", Qatar Foundation Annual Research Forum Proceedings: Vol. 2013, BIOSP 037, 2013.

T. Trantidou, M. Tariq, Y-C. Chang, C. Toumazou, T. Prodromakis, "Free-standing Parylene C Thin Films As Flexible pH Sensing Membranes", IEEE Sensors Conference, Nov 2013.

F. Reverter, Y. Liu, P. Georgiou, T. Prodromakis, and T. G. Constantinou, "Design Considerations for a CMOS Lab-on-Chip Microheater Array to Facilitate the in vitro Thermal Stimulation of Neurons," Engineering in Medicine and Biology Society, 2013 IEEE-EMBS 2013 Annual International Conference of the, 2013.

R. Berdan, T. Prodromakis, F.P. Diaz, E. Vasilaki, A. Khiat, I. Salaoru and C. Toumazou, "Temporal Processing with Volatile Memristors", Proceedings of the IEEE International Symposium on Circuits and Systems, May 2013.

T. Trantidou, C. Rao, H. Barrett, D. Payne, C. Toumazou, C. Terracciano and T. Prodromakis, "Parylene C micro-engineered scaffolds promote cellular anisotropism and calcium cycling of cardiac myocytes", The Royal Society - Cellular polarity: from mechanisms to disease, London, UK, 2013.

André van Schaik

Professional Activities and Service

Conference organization:

Technical program chair for ISCAS 2014 in Melbourne

Advisory board member, Telluride Cognitive Neuromorphic Engineering Workshop 2013

Organiser of the Australian Neuromorphic Engineering Workshop in June 2014

Editorial Board:

Special Research Topic editor for Frontiers in Neuromorphic Engineering

Associate editor for Frontiers in Neuromorphic engineering.

Awards, Honors, and Patents:

Elevated to Fellow of the IEEE starting January 2014

Other IEEE Service:

Member NSA TC, Sensory Systems TC, Analog Signal Processing TC, Biomedical and Life-Science CAS TC

Other Professional Service:

Reviewer for numerous journals and funding bodies.

Publications

Journal papers

R. M. Wang, T. J. Hamilton, J. C. Tapson, and A. van Schaik, "A mixed-signal implementation of a polychronous spiking neural network with delay adaptation," Frontiers in Neuroscience, vol. 8, no. March, pp. 1–16, Mar. 2014.

C. Jin, A. Tew, P. Guillon, N. Epain, R. Zolfaghari, A. van Schaik, C. Hetherington, and J. Thorpe, "Creating the Sydney York Morphological and Acoustic Recordings of Ears Database," IEEE Transactions on Multimedia, vol. 16, no. 1, pp. 37–46, 2014.

L. Kuhlmann, M. Hauser-Raspe, J. H. Manton, D. B. Grayden, J. Tapson, and A. van Schaik, "Approximate, computationally efficient online learning in bayesian spiking neurons.," Neural computation, vol. 26, no. 3, pp. 472–96, Mar. 2014.

Y. Buskila, J. W. Morley, J. Tapson, and A. van Schaik, "The adaptation of spike backpropagation delays in cortical neurons.," Frontiers in cellular neuroscience, vol. 7, p. 192, Jan. 2013.

G. D. Gargiulo, A. L. McEwan, P. Bifulco, M. Cesarelli, C. Jin, J. Tapson, A. Thiagalingam, and A. van Schaik, "Towards true unipolar bio-potential recording: a preliminary result for ECG.," Physiological measurement, vol. 34, no. 1, pp. N1–7, Jan. 2013.

S.-C. Liu, A. van Schaik, B. a Minch, and T. Delbruck, "Asynchronous Binaural Spatial Audition Sensor With $2 \times 64 \times 4$ Channel Output.," IEEE transactions on biomedical circuits and systems, pp. 1–12, Nov. 2013.

G. D. Gargiulo, A. L. McEwan, P. Bifulco, M. Cesarelli, C. Jin, J. Tapson, A. Thiagalingam, and A. van Schaik, "Towards true unipolar ECG recording without the Wilson central terminal (preliminary results).," Physiological measurement, vol. 34, no. 9, pp. 991–1012, Aug. 2013.

K. M. Stiefel, J. Tapson, and A. van Schaik, "Temporal Order Detection and Coding in Nervous Systems.," Neural computation, vol. 25, pp. 510–531, Nov. 2013.

S. Afshar, G. K. Cohen, R. M. Wang, A. Van Schaik, J. Tapson, T. Lehmann, and T. J. Hamilton, "The ripple pond: enabling spiking networks to see," Frontiers in Neuroscience, vol. 7, no. November, pp. 1–12, 2013.

J. C. Tapson, G. K. Cohen, S. Afshar, K. M. Stiefel, Y. Buskila, R. M. Wang, T. J. Hamilton, and A. van Schaik, "Synthesis of neural networks for spatio-temporal spike pattern recognition and processing," *Frontiers in Neuroscience*, vol. 7, 2013.

J. Tapson and A. van Schaik, "Learning the pseudoinverse solution to network weights.," *Neural networks*, vol. 45, pp. 94–100, Sep. 2013.

R. Wang, G. Cohen, K. M. Stiefel, T. J. Hamilton, J. Tapson, and A. van Schaik, "An FPGA Implementation of a Polychronous Spiking Neural Network with Delay Adaptation," *Frontiers in Neuroscience*, vol. 7, no. February, pp. 1–14, 2013.

Conference papers

R. Wang, T. J. Hamilton, J. Tapson, and A. van Schaik, "An improved aVLSI axon with programmable delay using spike timing dependent delay plasticity," in *IEEE International Symposium on Circuits and Systems*, 2013, pp. 1592–1595.

J. Tapson, A. van Schaik, and G. Cohen, "ELM Solutions for Event-Based Systems," in *International Conference on Extreme Learning Machines*, 2013, pp. 1–16.

A. Nicholson, J. Jenkins, A. N. Irfansyah, N. Politi, A. van Schaik, T. J. Hamilton, and T. Lehmann, "A 0.3mm² 10-b 100MS/s pipelined ADC using Nauta structure op-amps in 180nm CMOS .," in *IEEE International Symposium on Circuits and Systems*, 2013, pp. 1833–1836.

A. van Schaik and J. Tapson, "Online and Adaptive Pseudoinverse Solutions for ELM Weights," in *International Conference on Extreme Learning Machines*, 2013, pp. 1–9.

G. D. Gargiulo, J. Tapson, A. van Schaik, A. Mcewan, and A. Thiagalingam, "Unipolar ECG circuits : towards more precise cardiac event identification," in *IEEE International Symposium on Circuits and Systems*, 2013, pp. 662–665.

Books and Book Chapters

S.-C. Liu and A. van Schaik, "Neuromorphic Sensors, Cochlea," *Encyclopedia of Computational Neuroscience*: SpringerReference. Springer-Verlag, 2013.

Teresa Serrano-Gotarredona

Short Courses, Plenary Sessions, Keynote Speakers, Invited Lectures

"Spiking Hardware for Frame-Free Event-Driven Vision Sensing and Processing" invited lecture at the University of Lincoln as part of the talk series of the School of Psychology and the School of Computer Science, October 2013

Conferences

Editorial Boards

Associate Editor of *IEEE Transactions on Circuits and Systems*, part I (2012 – present)

Associate Editor of *IEEE Transactions on Circuits and Systems*, part II (January 2014 – present)

Academic Editor *PlosONE* (2008 – August 2013)

Other IEEE Service and Professional Activities

Chair of the IEEE SSTC (May 2013-present)

Chair of the IEEE CASS Spain Chapter (October 2013-present)

Awards, Honors, Patents

Publications

Journal Articles

C. Zamarreño-Ramos, R. Kulkarni, J. Silva-Martínez, T. Serrano-Gotarredona, and B. Linares-Barranco, "A 1.5ns OFF/ON Switching-Time Voltage-Mode LVDS Driver/Receiver Pair for Asynchronous AER Bit-Serial Chip Grid Links with up to 40 Times Event-Rate Dependent Power Savings", *IEEE Trans. on Biomedical Circuits and Systems*, vol. 10, pp. 722-731, Oct. 2013. ISSN: 1932-4545. DOI: 10.1109/TBCAS.2012.2232925

Teresa Serrano-Gotarredona, Themis Prodromakis, and Bernabe Linares-Barranco, "A Proposal for Hybrid Memristor-CMOS Spiking Neuromorphic Learning Systems," *IEEE Circuits and Systems Magazine*, pp. 74-88, vol. 13, issue 2, 2013.

J. A. Pérez-Carrasco, B. Zhao, C. Serrano, B. Acha, T. Serrano-Gotarredona, S. Chen and B. Linares-Barranco, "Mapping from Frame-Driven to Frame-Free Event-Driven Vision Systems by Low-Rate Rate-Coding and Coincidence Processing. Application to Feed-Forward ConvNets," *IEEE Trans. on Pattern Analysis and Machine Intelligence*, vol. 35, No. 11, pp. 2706-2719, Nov. 2013.

Peer Reviewed Conference Papers

Teresa Serrano-Gotarredona, A. Linares, L. Camuñas-Mesa, and Bernabé Linares-Barranco, "Event-Driven Sensing and Processing. A new paradigm for high-speed vision", Proceedings of the 2013 Conference on Design of Circuits and Integrated Systems (DCIS2013), San Sebastian, November 2013.

L. Camuñas-Mesa, S. Ieng, T. Serrano-Gotarredona, R. Benosman, and Bernabé Linares-Barranco, "Event-Driven Stereo Vision with Orientation Filters", Proceedings of the 2014 International Symposium on Circuits and Systems, ISCAS 2014, Melbourne, June, 2014.

F. Pérez-Peña, F. Gómez-Rodríguez, V. Ferrer-García, A. Morgado-Estevez, A. Jiménez-Fernández, T. Serrano-Gotarredona and A. Linares, "Spike-Based Vite Control with Dynamic Vision Sensor Applied to an Arm Robot", Proceedings of the 2014 International Symposium on Circuits and Systems, ISCAS 2014, Melbourne, June, 2014.

T. Iakymchuk, A. Jiménez-Fernández, A. Rosado, A. Linares, T. Serrano-Gotarredona, G. Jiménez-Moreno and B. Linares-Barranco, "An AER handshake-less modular infrastructure PCB with x8 2.5Gbps LVDS serial links", Proceedings of the 2014 International Symposium on Circuits and Systems, ISCAS 2014, Melbourne, June, 2014.

Books and Book Chapters

T. Serrano-Gotarredona, T. Masquelier, and B. Linares-Barranco, "Spike-Timing-Dependent-Plasticity with Memristors", Memristor networks, A. Adamatzky and L. Chua (Eds.). Springer. January 2014. ISBN: 978-3-319-02629-9. ISBN: 978-3-319-02630-5 (ebook). DOI: 10.1007/978-3-319-02630-5

T. Serrano-Gotarredona, and B. Linares-Barranco, "Neuromorphic Vision Sensors", Encyclopedia of computational Neuroscience, Neuromorphic Engineering, R. Jung and D. Jaeger (Eds.). Springer. ISBN: 978-1-4614-6674-1

Milutin Stanačević

Short Courses, Plenary Sessions, Keynote Speakers, Invited Lectures

"Wireless Power Transfer for Small Size Implantable Medical Devices", invited talk at The 10th International Conference and Expo on Emerging Technologies for a Smarter World, October 2013.

"Power Harvesting and Integrated Sensing in Implantable Devices", invited lecture by The IEEE Long Island Chapter of Engineering in Medicine and Biology Society (EMBS), May 2014.

Editorial Boards

Associate Editor of IEEE Transactions on Biomedical Circuits and Systems (2010 – present)

Other IEEE Service and Professional Activities

ETF BAFA Vice President, Scholarship Awards Program

Awards, Honors, Patents

IEEE Region 1 Technological Innovation Award for contributions to the design of sensory signal processing circuits and systems

Publications

Peer Reviewed Conference Papers

A. Butt and M. Stanačević, "Implementation of Mind Control Robot", Proc. Long Island Systems Applications and Technology Conference (LISAT), May 2014.

S. Li, Y. Lin and M. Stanačević, "Mixed-signal VLSI Microsystem for Acoustic Source Separation", Proc. 56th. IEEE Midwest Symp. on Circuits and Systems (MWSCAS'2013), Columbus, Ohio, 2013.

Y. Lin and M. Stanačević, "A Low-Power, High-Linearity Filter Bank for Auditory Signal Processing Microsystem", Proc. 56th. IEEE Midwest Symp. on Circuits and Systems (MWSCAS'2013), Columbus, Ohio, 2013.

Books and Book Chapters

M. Stanačević, Y. Lin and E. Salman, "Analysis and Design of 3-D Potentiostat for Deep Brain Implantable Devices", in "Neural Computation, Neural Devices and Neural Prosthesis", Z. Yang (Ed.), p.261-287, Springer, 2014.

Chai Wah Wu

Editorial Boards

Senior Editorial Board Member, IEEE JETCAS
Deputy Editor-in-Chief, IEEE CAS magazine

Other IEEE Service and Professional Activities

IEEE-EAB ABET evaluator
Moody's Mega Math Challenge Judge
Organizing Committee Member, IMA Hot Topics Workshop: Mathematical and Computational Challenges in the Control, Optimization, and Design of Energy-Efficient Buildings, June 11-14, 2013.
Webmaster/Social Media, IEEE Mid-Hudson section
Publicity Chair, IEEE Mid-Hudson section

Awards, Honors, Patents

IEEE R1 Technological Innovation Award, 2013.

Publications

Journal Articles

H. Liu, M. Cao, C. W. Wu, "Coupling Strength Allocation for Synchronization in Complex Networks Using Spectral Graph Theory", IEEE TCAS-I, vol. 61, issue 5, pp. 1520 – 1530, May 2014.

Peer Reviewed Conference Papers

K. Chandu, M. Stanich, C. W. Wu, B. Trager, "Hybrid halftoning using direct multi-bit search (DMS) screen algorithm", Electronics Imaging 2014, Color Imaging XIX: Displaying, Processing, Hardcopy, and Applications, 90150P, Proceedings of SPIE 9015, January 2014.
C. W. Wu, B. Trager, K. Chandu, M. Stanich, "A Riesz energy based approach to generating dispersed dot patterns for halftoning applications", Electronics Imaging 2014, Color Imaging XIX: Displaying, Processing, Hardcopy, and Applications, 90150Q, Proceedings of SPIE 9015, January 2014.
H. Liu, M. Cao, C. W. Wu, "Graph comparison and its application in network synchronization", European Control Conference, July 2013, pp. 3809-3814.
H. Liu, M. Cao, C. W. Wu, "New spectral graph theoretic conditions for synchronization in directed complex networks", ISCAS 2013, May 2013, pp. 2307-2310.

Orly Yadid-Pecht

Short Courses, Plenary Sessions, Keynote Speakers, Invited Lectures

Invited Panelist in the Calgary Innovate Speaker Series, "How to Bring Innovations to Market", Calgary Innovate Speaker Series, 5th November, 2013.
Invited talk "Contact Fluorescence Imaging for Wide Field of View of Multiple Micro-Fluorescent Samples", CMOS ET, Whistler, 17-19 July 2013.
Invited talk "Pseudobezoars: Technology and New Prospects as a Medical Platform", Tianjin Medical University General Hospital, China, June 2013.
Invited talk "Contact Fluorescence Imaging of a Micro-fluorescent Sample", Photonics, North Montreal, 4th June 2013.

Conferences

Member of the Technical Committee for CMOS ET conference (2010-present)
Member of the IEEE CAS Analog Signal Processing Neural Networks and Sensors Technical Committee (1996-present)
Member of the Steering Committee for IEEE ICECS (2003-present)

Editorial Boards

Member of the Editorship Board, International Journal Information Models and Analysis, 2013 -2014
Associate Editor, Journal for Low Power Engineering Applications, 2011-2013

Other IEEE Service and Professional Activities

Chair of the IEEE Sensor Journal Best Paper Award, Selection Committee (2014)

Member of the IEEE Fellow nominations committee for CAS (2012, 2013)

Awards, Honors, Patents

Awarded AITF Chair

Publications

Journal Articles

M. D. Poscente, G. Wang, D. Filip, P. Ninova, O. Yadid-Pecht, C. N. Andrews, M. P. Mintchev, "Real-Time Gastric Motility Monitoring using Transcutaneous Intraluminal Impedance Measurements (TIIM)", *Physiological Measurement*, Vol.35, pp.217-229, February 2014.

A.K. Mudraboyina, L. Blockstein, C.C. Luk, N.I. Syed, O. Yadid-Pecht, "A Novel Miniature Contact Imaging System for Monitoring Calcium Changes in Live Neurons", *IEEE Photonics Journal*, Vol. 6, No.1, pp.1-15, 2014.

C.A. Ofili, S. Glozman, O. Yadid-Pecht, "Hardware Implementation of an Automatic Rendering Tone Mapping Algorithm for a Wide Dynamic Range Display", *Journal of Low Power Electronics and Applications*, Vol. 3, No. 4, pp. 337-367, October 2013.

Q. Gao, O. Yadid-Pecht, "A Low Power CMOS Imaging System with Smart Image Capture and Adaptive Compression", *JLPEA Special Issue: Energy Efficient Sensors and Applications*. Vol. 3, No. 3, pp. 267-278, August 2013.

A. Hore, C.A. Ofili, O. Yadid-Pecht, "A Joint Global and Local Tone Mapping Algorithm for Displaying Wide Dynamic Range Images", *International Journal Information Models & Analysis*, Vol. 2, No. 1, pp. 3-14, June 2013.

O. Yadid-Pecht, M.P., Mintchev, "Pseudobozaars: Technology Progress and New Prospects as a Medical Platform", *Journal Engineering* Vol. 5, No. 5B, pp. 10-14, May 2013 (Invited).

Peer Reviewed Conference Papers

A. Hore, O. Yadid-Pecht, "A Statistical Derivation of an Automatic Tone Mapping Algorithm for Wide Dynamic Range Display", accepted to *IEEE International Conference on Acoustics, Speech, and Signal Processing*, 2014. Accepted

A. Spivak, O. Yadid-Pecht, "A 128 x 128 CMOS APS with Extended Noise Suppression for High and Low Light Imaging Applications", *IEEE International Symposium on Circuits and Systems (ISCAS)*, 2014. Accepted.

X. Zhang, M. S. Noor, C.B. McCracken, Z. H.T. Kiss, O. Yadid-Pecht, K. Murari, "A Miniaturized System for Imaging Vascular Response to Deep Brain Stimulation", *Biomedical Circuits and Systems Conference (BioCAS)*, Holland, pp. 126-129, November 2013.

Y. Li, P. Barclay, O. Yadid-Pecht, "Enhanced Supercontinuum Generation in Highly Non-Linear Fiber by Selected Feedback Seeding", *Proceedings of 13th International Conference on Numerical Simulation of Optoelectronic Devices (NUSOD) Conference*, Vancouver, pp. 119-120, August 2013.

O. Yadid-Pecht, L. Blockstein, "Contact Fluorescence Imaging of a Fluorescent Micro-Sample", *Photonics North Conference*, Ottawa, June 2013.

H.R. Karkvandi, E. Pecht, O. Yadid-Pecht, "Improved Lifetime Routing for Wireless Sensor Networks", *IEEE International Symposium on Circuits and Systems (ISCAS)*, 2013, China, pp.1580-1583, May 2013.

George Yuan

Conferences

Track Chair of the IEEE International Symposium on Circuits and Systems 2013-2014

Session Chair of the IEEE International Symposium on Circuits and Systems 2013-2014

Editorial Boards

Associate Editor of IEEE Transactions on Biomedical Circuits and Systems

Associate Editor of IEEE Transactions on Circuits and Systems II: Express Briefs

Guest Editor of IEEE Transactions on Circuits and Systems I: Regular Papers

Other IEEE Service and Professional Activities

Member of the ASPTC

Member of the SSTC

Chair of the BIOCAS TC

Publications

Peer Reviewed Conference Papers

- Suwen Li, Jing Guo, Mansun Chan, and Jie Yuan, "Carbon nanotube coated microelectrode array for sensitive dopamine detection", 9th IEEE international conference on Nano/Micro Engineered and Molecular Systems, Hawaii, Apr. 2014.
- W. NG, R. Xu, and J. Yuan, "A 1/2.5" 400fps 36.5V/lx·s VGA CMOS Image Sensor with Minimized CTIA Pixels", 2014 International Solid-State Circuits Conference Student Research Preview, San Francisco, Feb. 17, 2014
- J. Huang, S. Yang, and J. Yuan, "A 10-MHz bandwidth 70-dB SNDR 640MS/s continuous-time sigma-delta ADC using Gm-C filter with nonlinear feedback DAC calibration", IEEE Custom Integrated Circuits Conference, San Jose, USA, Sep. 25, 2013, pp. 1-4.
- J. Guo, W. Ng, J. Yuan, and M. Chan, "A 200-channel 10uW 0.04mm² dual-mode acquisition IC for high density MEA", VLSI Circuits Symp. Dig. Tech. Papers, June, 2013, pp. 48-49
- J. Guo, W. Ng, J. Yuan, and M. Chan, "A 51fA/Hz0.5 low power heterodyne impedance analyzer for electrochemical impedance spectroscopy", VLSI Circuits Symp. Dig. Tech. Papers, June, 2013, pp. 56-57
- R. Xu, B. Liu, and J. Yuan, "A 1500fps highly-sensitive CMOS imaging sensor design", International Symposium on Photoelectronic Detection and Imaging, Jun. 2013, Beijing, China, invited
- J. Yuan, "CMOS imaging sensor circuit design", International Symposium on VLSI Technology, Systems and Applications, Apr. 2013, Hsinchu, Taiwan, invited short course
- J. Guo, and J. Yuan, "200-Channel Dual-mode Power Efficient Acquisition IC for High Density MEA", 2013 International Solid-State Circuits Conference Student Research Preview, San Francisco, Feb. 17, 2013

Akos Zarandy

Conferences

- ECCTD 2013, Technical Program Committee
- CNNA 2014: Scientific Committee

Publications

Journal Articles

- R. Carmona-Galán, Á. Zarándy, C. Rekeczky, P. Földesy, A. Rodríguez-Pérez, C. Domínguez-Matas, J. Fernández-Berni, G. Liñán-Cembrano, B. Pérez-Verdú, Z. Kárász, M. Suárez-Cambre, V. Brea-Sánchez, T. Roska, Á. Rodríguez-Vázquez, „A hierarchical vision processing architecture oriented to 3D integration of smart camera chips”, *Journal of Systems Architecture* (2013), doi: <http://dx.doi.org/10.1016/j.sysarc.2013.03.002>
- Tamas Zsedrovits, Akos Zarandy, Balint Vanek, Tamas Peni, Jozsef Bokor, Tamas Roska, „Estimation of Relative Direction Angle of Distant, Approaching Airplane in Sense-and-avoid” *Journal of Intelligent and Robotic Systems*, Volume 69, Issue 1-4 , pp 407-415, 2013

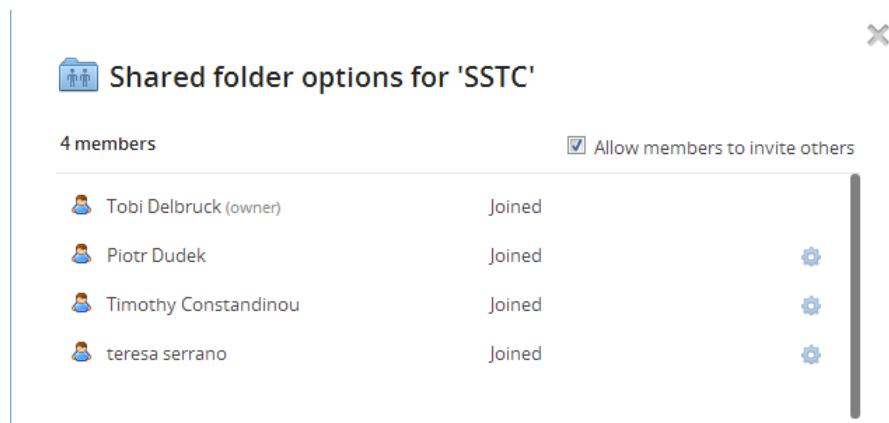
Peer Reviewed Conference Papers

- A. Zarandy, Z. Nagy, B. Vanek, T. Zsedrovits, A. Kiss, M. Nemeth, "A Five-Camera Vision System for UAV Visual Attitude Calculation and Collision Warning", *Computer Vision Systems (ICVS 2013, St. Petersburg)*, Lecture Notes in Computer Science Volume 7963, 2013, pp 11-20
- Ákos Zarándy, Tamás Zsedrovits, Zoltán Nagy, András Kiss, Tamás Roska, „On-board see-and-avoid system”, *Conference of the Hungarian Association for Image Processing and Pattern Recognition (Kepaf 2013)* pp 604-617. Bakonybel, 2013
- S. J. Carey, Á. Zarándy, P. Dudek, „Characterization of processing errors on analog fully-programmable cellular sensor-processor arrays” *ISCAS-2014, Melbourne, Australia*

Appendix B: Current member list

Member records

As of August 2013, 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. Contact the secretary for access to this folder if you are officer of the SSTC.



Membership list

- 1 Pamela Abshire, University of Maryland (pabshire@umd.edu)
- 2 Andreas Andreou, Johns Hopkins University (andreou@jhu.edu)
- 3 Diego Barrettino, University of Applied Science of Southern Switzerland (diego.barrettino@supsi.ch)
- 4 Chiara Bartolozzi, Italian Institute of Technology (chiara.bartolozzi@iit.it)
- 5 Amine Bermak, The Hong Kong University of Science and Technology (eebermak@ee.ust.hk)
- 6 Ricardo Carmona-Galán, Sevilla Microelectronics Institute (rcarmona@imse-cnm.csic.es)
- 7 Sandro Carrara, EPFL (sandro.carrara@epfl.ch)
- 8 Gert Cauwenberghs, University of California, San Diego (gert@ucsd.edu)
- 9 Shantanu Chakrabartty, Michigan State University (shantanu@msu.edu)
- 10 Shoushun Chen, Nanyang Tech. Univ. (NTU) Singapore (eechenss@ntu.edu.sg)
- 11 Jennifer Blain Christen, Arizona State University (jennifer1@asu.edu)
- 12 Marc Cohen, University of Maryland (mhcohen@glue.umd.edu)
- 13 Steve Collins, University of Oxford (steve.collins@eng.ox.ac.uk)
- 14 Timothy Constandinou, Imperial College London (t.constandinou@ic.ac.uk)
- 15 Eugenio Culurciello, Purdue Univ. (euge@purdue.edu)
- 16 Tobi Delbruck, University of Zurich and ETH Zurich (tobi@ini.phys.ethz.ch)
- 17 Piotr Dudek, The University of Manchester (p.dudek@manchester.ac.uk)
- 18 Ralph Etienne-Cummings, Johns Hopkins University (retienne@jhu.edu)
- 19 Alexander Fish, Ben-Gurion University (afish@ee.bgu.ac.il)
- 20 Peter Foldesy, MTA SZTAKI, Hungary (foldesy@sztaki.hu)
- 21 Roman Genov, University of Toronto, Canada (roman@eecg.toronto.edu)
- 22 Julius Georgiou, University of Cyprus (julio@ucy.ac.cy)
- 23 Pantelis Georgiou, Imperial College London (pantelis@imperial.ac.uk)
- 24 Maysam Ghovanloo, Georgia Institute of Technology (mghovan@ece.gatech.edu)
- 25 Viktor Gruev, Washington Univ. St. Louis (vgruev@seas.wustl.edu)

- 26 Philipp Hafliger, University of Oslo, Norway (hafliger@ifi.uio.no)
- 27 Tara Julia Hamilton, Univ. of Western Sydney (t.hamilton@unsw.edu.au)
- 28 John G. Harris, University of Florida (harris@cnel.ufl.edu)
- 29 Jennifer Olson Hasler, Georgia Institute of Technology (phasler@ece.gatech.edu)
- 30 Jeremy Hollemann, University of Tennessee (jeremy.holleman@utk.edu)
- 31 Zeljko Ignjatovic, Univ of Rochester (ignjatov@ece.rochester.edu)
- 32 Giacomo Indiveri, University of Zurich and ETH Zurich (giacomo@ini.phys.ethz.ch)
- 33 Tae-Chan Kim, Samsung Electronics Corp, System LSI Div. (taechan@samsung.com)
- 34 Tor (Bassen) Sverre Lande, University of Oslo (bassen@ifi.uio.no)
- 35 Man Kay (Matthew) Law, University of Macau (MKLaw@umac.mo)
- 36 Junheang Lee, Samsung Advanced Inst. of Technology (junhaeng2.lee@samsung.com)
- 37 Juan Antonio Leñero-Bardallo, University of Seville (juanle@imse-cnm.csic.es)
- 38 Walter Daniel Leon-Salas, University of Purdue (wleonsal@purdue.edu)
- 39 Alejandro Linares-Barranco, University of Sevilla (alinares@atc.us.es)
- 40 Bernabe Linares-Barranco, Sevilla Microelectronics Institute (bernabe@imse.cnm.es)
- 41 Shih-Chii Liu, University of Zurich and ETH Zurich (shih@ini.phys.ethz.ch)
- 42 Christoph Maier, UC San Diego (chmaier@ucsd.edu)
- 43 Andrew Mason, Michigan State University (mason@msu.edu)
- 44 Jonne Poikonen, University of Turku (jokapo@utu.fi)
- 45 Christoph Posch, Vision Institute, Paris (cposch@yahoo.com)
- 46 Themis Prodromakis, University of Southampton (t.prodromakis@soton.ac.uk)
- 47 Hyunsurk (Eric) Ryu, Samsung Advanced Inst. of Technology (eric_ryu@samsung.com)
- 48 Francisco Serra-Graells, Barcelona Microelectronics Institute (paco.serra@imb-cnm.csic.es)
- 49 Teresa Serrano-Gotarredona, Sevilla Microelectronics Institute (terese@imse.cnm.es)
- 50 Andre van Schaik, University of Western Sydney (a.vanschaik@uws.edu.au)
- 51 Milutin Stanacevic, SUNY, Stonybrooke (milutin.stanacevic@stonybrook.edu)
- 52 Wei Tang, New Mexico State University (wtang@nmsu.edu)
- 53 John Tapson, University of Western Sydney (jtapson@gmail.com)
- 54 Peter (Chung-Yu) Wu, National Chiao Tung University, Taiwan (peterwu@mail.nctu.edu.tw)
- 55 Orly Yadid-Pecht, Ben-Gurion University (orly.yadid-pecht@ucalgary.ca)
- 56 Jie (George) Yuan, Hong Kong Univ. Science & Techn. (eeyuan@ust.hk)
- 57 Akos Zarandy, Hungarian Academy of Sciences (zarandy@sztaki.hu)