



Date: 5 May 2006

Annual Report 2005-2006

Biomedical Circuits and Systems (Biocas) Technical Committee

IEEE Circuits and Systems Society

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Introduction

Our TC members are all actively involved in a number of technical activities. Below is a list of those who participated to build this report. Also, but I am sure several more should have been included. In addition to the numerous contributions of our members, the past year was marked by increasing interest in Biocas activities in most CASS activities. Also, we were representing the CASS in biotechnology council and we were planning the new Transactions on biomedical circuits and systems (TBCAS). Here are the main contributions.

1. IEEE Services: *Workshops/Conferences/Panels/Invited Talks/Review committees*

1.1. Invited Speakers

- R. Etienne-Cummings, SPIE Conference, Orlando, FL, 2005
- R. Etienne-Cummings, Post IJCNN Neuromorphic Workshop, Montreal, 2005
- R. Etienne-Cummings, NRO, Chantilly, VA, 2005.
- R. Etienne-Cummings, Agilent Corp., Palo Alto, CA, 2005.
- R. Etienne-Cummings, SPIE Conference, Orlando FL, 2005.
- R. Etienne-Cummings, NSF Grantees Meeting, Washington, DC, 2005.
- R. Etienne-Cummings, Columbia University, NY, 2005.
- R. Etienne-Cummings, NASA, Goddard, MD, 2005.
- R. Etienne-Cummings, Workshop on Neuromorphic Systems, IJCNN, Montreal, 2005.
- R. Etienne-Cummings, ETHZ-INI/INE Workshop, Zurich, Switzerland, 2005.
- R. Etienne-Cummings, National Society of Black Engineers, Greenbelt, MD, 2005.
- Y. Lian, Three Distinguished Lecturer talks on the wireless biomedical sensors in University of Oslo, Linköping University, Tampere University of Technology, 2005.
- S. Chakrabarty, Invited talk at Midwest symposium on Circuits and Systems 2005, Cincinnati, Online calibration of floating gate RFID sensors.
- M. Sawan, "Biomedical Circuits and Systems Dedicated to Remote Sensing and Neurostimulation", New Jersey CAS Chapter, USA, May 2006.
- M. Sawan, "Wireless Communication Circuits for Biomedical Devices", SYTACom Workshop, ACFAS, Montreal, May 2006.
- M. Sawan, "Mise en oeuvre de dispositifs de surveillance et stimulation intracorticales", GRSTB Workshop, Montreal, May 2006.
- M. Sawan, "The Pursuit of Sight Restoration for the Blind by Intracortical Microstimulation", Northeast Bioengineering Conference, Easton, PA, April 2006.
- M. Sawan, "Microelectronics to build microsystems dedicated to several applications", FQRNT Workshop, Montreal, January 2006.

- M. Sawan, "De la puce à l'oreille jusqu'à l'oeil électronique ", Profil deVinci, Polytechnique, Montreal, January 2006.
- M. Sawan, "Biomedical Circuits and Systems for Implantable Devices", Lebanese American University, Beirut, Dec. 2005.
- M. Sawan, "Wireless Biomedical Circuits and Systems Techniques dedicated to Sensoring and Neurostimulation", LIRMM Centre, Montpellier, France, Nov. 2005.
- M. Sawan, "BioCAS to Build Wirelessly Powered and Controlled Medical Devices", Tutorial, ECCTD, Ireland, September 2005.
- M. Sawan, HU, Y., COULOMBE, J., "Wireless Powered and Bidirectional Data Exchanged in Smart Medical Microsystems", invited paper in IEEE-CICC, San Jose, September 2005.
- M. Sawan, "BioCAS to Build Wirelessly Powered and Controlled Medical Devices", Tutorial at IEEE-ECCTD, Ireland, September 2005.
- M. Sawan, "Les implants microélectroniques : capteurs et microstimulateurs", PRECARN IS Conference, Quebec, Canada, June 2005.
- M. Sawan, "Advanced Circuit Techniques to Implement Biomedical Implantable Microsystems", Tutorial at IEEE-ISCAS, Kobe, Japan, May 2005.
- M. Sawan, "Advanced Techniques To Build Smart Implantable Medical Devices", Vancouver IEEE-CAS Chapter, Vancouver, Canada, May 2005.
- M. Sawan, "Advanced Techniques To Build Smart Implantable Medical Devices", Calgary IEEE-CAS Chapter, Calgary, Canada, May 2005.
- M. Sawan, "Implantable Medical Devices To Recuperate Vital Neural Functions", Lebanese International University, Lebanon, April 2005.
- M. Sawan, "Microsystems dedicated to build Smart Medical Devices: Present and future directions", IEEE Polytechnique Student Chapter, Montreal, Canada, April 2005.
- M. Sawan, "Wirelessly Powered and Fully Controlled Smart Medical Microsystems", Halifax IEEE-CAS Chapter, Halifax, Canada, March 2005.
- O. Yadid-Pecht, "CMOS Imagers—following Biology", Invited lecture as IEEE Distinguished Lecturer, Hungarian Institute of Science, Budapest, Hungary, October 2005.
- O. Yadid-Pecht, "CMOS Imagers—from Pixels to Systems", Invited lecture as IEEE Distinguished Lecturer, National Microelectronics Center, CNM-CSIC, Spain, December 2005.
- G. Jullien, "Are we driving into a local minimum?" Invited talk at the University of Adelaide, South Australia.
- G. Jullien, "CAS - Where are We Headed ?", Keynote talk at the 2005 IEEE-NEWCAS, Quebec City, June 21st, 2005.

1.2. Organizers : Panels, Special Sessions, ...

- R. Etienne-Cummings, Review Panel: NIH SBIR Panel, Washington, DC, Nov 2005.
- R. Etienne-Cummings, NSF Telluride Neuromorphic Engineering Workshop, Telluride, CO, 2005.
- R. Etienne-Cummings, Topical Meeting on Time Domain Neural Signal Processing, Zurich, 2005.
- R. Etienne-Cummings, Special Sessions on Sensory Systems for Biological Applications, Kobe, ISCAS 2005.
- R. Etienne-Cummings, Demonstration Sessions on Sensory Systems, ISCAS 2005.
- R. Etienne-Cummings, Session Chair, ISCAS 2005
- P. Häfliger, A. Stocker and R. Etienne-Cummings, Special session on Live Demonstrations of Circuits and Systems, ISCAS 2006.

- Y. Lian, Finance Chair of the IEEE 2005 Conference on Field Programmable Technology, 11-14 December 2005, Singapore.
- Y. Lian, TPC member of the 6th International Conference on ASIC, 24 – 27 October 2005, Shanghai, China.
- Y. Lian, TPC member of the 2005 International Workshop on VLSI Design and Video Technology, 28 – 31 May 2005, Suzhou, China.
- Y. Lian, Review Committee Member of BioCAS Track in ISCAS06.
- Y. Lian, Special session and chair for the Invited Session: Digital Signal Processing Techniques for Biomedical Circuits & System in ISCAS06.
- Y. Lian, Technical Session Chairs in ISCAS06 for Biomedical I, and Circuits for Biomedical Applications, respectively.
- Y. Lian, Technical Program Co-Chair of the 2006 IEEE Asia Pacific Conference on Circuits and Systems, 4-7 Dec. 2006, Singapore.
- Y. Lian, Technical Program Co-Chair of the 2006 IEEE Int. Conference on Biomedical Circuits and Systems, 29 Nov. – 1 Dec. 2006, London, UK.
- Y. Lian, Member of International Advisory Committee of the International Conference on Computer and Communication Engineering, Malaysia, 2006.
- E. Bruun, Technical Program, IEEE Prime (Ph.D. research in microelectronics and electronics) 2005 (Lausanne, Switzerland).
- E. Bruun, Technical Program, ESSCIRC 2005 (Grenoble, France).
- E. Bruun, Technical Program, Fifth Electronic Circuits and Systems Conference 2005 (Bratislava, Slovakia).
- E. Bruun, Technical Program, European Conference on Circuit Theory and Design (ECCTD) 2005 (Cork, Ireland).
- E. Bruun, Technical Program, IEEE Norchip 2005 (Oulu, Finland).
- E. Bruun, Technical Program, IEEE Prime 2006, (Otranto, Italy).
- E. Bruun, Technical Program, ESSCIRC 2006, (Montreaux, Switzerland).
- E. Bruun, Technical Program, IEEE Norchip 2006 (Linkoping, Sweden).
- E. Bruun, Technical Program, International Conference on Electronics, Circuits and Systems (ICECS) 2006, (Nice, France).
- E. Bruun, Technical Program, IASTED International Conference on Circuits, Signals and Systems (CSS 2006) (San Francisco, USA).
- M. Sawan, Technical program co-Chair of the Int. Midwest Symposium on CAS (MWSCAS2006).
- M. Sawan, Co-Chair of the IEEE Int. Conf. On Electronics, Circuits and Systems (ICECS2006).
- M. Sawan, Co-Chair of the IEEE Int. Computer Architecture for Machine Perception and Sensors (CAMPS2006).
- M. Sawan, General Chair of the Int. Functional Electrical Stimulation Society Conference (IFESS2005).
- G. Jullien, TPC, IEEE 16th Int. Conf. on Application-specific Systems, Architectures and Processors, Samos, Greece, July 23-25, 2005.
- G. Jullien, TPC, 2005 International Conference on MEMS, NANO and Smart Systems (ICMENS), Banff, Jul. 24-27, 2005.
- G. Jullien, TPC, IEEE- NEWCAS 2005, Québec City, Canada, June 19-22, 2005.
- G. Jullien, TPC, SPIE Conference: Advanced Signal Processing Algorithms, Architectures, and Implementations XV, August 2-4, 2005.
- G. Jullien, General Chair, 5th International Workshop on System-on-Chip for Real-time Applications (IWSOC), Banff, Jul. 20-24, 2005.

1.3. Other professional activities, editorial services, ...

- R. Etienne-Cummings, Associate Editor: IEEE Sensors Journal
- R. Etienne-Cummings, Program Committee: ISSCC, SPIE, BIS, ISCAS, NIPS, COSI
- Y. Lian, Distinguished Lecturer of the IEEE CASS for 2004-2005
- Y. Lian, Associate Editor for the IEEE Trans. on Circuits and Systems Part I for 2004 – 2005
- Y. Lian, Associate Editor for the IEEE Trans. on Circuits and Systems Part II in 2006.
- Y. Lian, Associate Editor for the journal of Circuits, Systems and Signal Processing.
- Y. Lian, Guest co-Editor for the Special Issue on Biomedical Circuits and Systems: A New Wave of Technologies in the IEEE Trans. on Circuits and Systems Part I, Dec. 2005.
- Y. Lian, Guest co-Editors for the Special Issue on Computationally Efficient Digital Filters: Design Techniques and Applications in the journal of Circuits, Systems and Signal Processing, March 2006.
- E. Brunn, Reviewer for IEEE J. solid state circuits and IEEE Trans. circuits & systems I and II.
- E. Bruun, Member of the editorial board of Springer Analog Integrated Circuits and Signal Processing Journal.
- S. Chakrabartty, Organizing Committee, Sponsorships and exhibit chair, Editorial Committee member, and Session chair (MEMS and Nanotechnology), IEEE Electro-information Technology Conference, East Lansing, Michigan, May 2006.
- S. Chakrabartty, member of the Analog Signal Processing Technical review committee.
- S. Chakrabartty, Reviewer for ISCAS 2006, TCAS-I and TCAS-II, Trans. of BME, and Trans. of Signal Processing.
- O. Yadid-Pecht, Distinguished Lecturer of the IEEE CASS for 2004 and 2005.
- O. Yadid-Pecht, Member of the Editorial Board (Deputy Editor in Chief), IEEE Trans. on Circuits and Systems I, 2004-2006
- O. Yadid-Pecht, Member of the Editorial Board (Guest Editor), Analog Integrated Circuits and Signal Processing, 2003-2004.
- O. Yadid-Pecht, Past Chair of the IEEE CAS Technical Sensors Committee, 2004-2005.
- O. Yadid-Pecht, IEEE Sensors Council – CAS representative
- O. Yadid-Pecht, Member of the IEEE CAS Analog Signal Processing, Neural Networks, Biocas and Sensors Technical Committees, 1996-present,
- O. Yadid-Pecht, Member of the SPIE Solid State Sensor Arrays international conference program committee, 1997-present.
- O. Yadid-Pecht, Member of the Technical Committee for the IEEE workshop on CCDs and Advanced Image Sensors, 1998-present.
- G. Jullien, Guest editor (with Magdy Bayoumi) on an IEEE Proceedings Special Issue on System-on-Chip (due out in the June 2006 Issue).
- G. Jullien, Editorial Board of the Journal of VLSI Signal Processing (JVSP).
- G. Jullien, Member of the CAS Fellow Committee, 2006.
- G. Jullien, Served on the Board of Directors of DALSA Inc., and CMC Microsystems, 2005-06.
- G. Jullien, Member of the Steering Committee of IEEE 39th Asilomar Conference on Signals, Systems and Computers, Pacific Grove, CA, Oct. 30-Nov. 3, 2005.
- G. Jullien, Review committee of ISCAS 2005, ISCAS 2006, and MWSCAS 2006.
- J. Chang, Associate Editor, IEEE Transactions on Circuits and Systems I.
- G. Wang, Reviewer for IEEE TCAS I & II, IEEE JSSC, IEEE Trans. On BME, IEEE ISCAS, IEEE BioCAS Conference.

- M. Sawan, Distinguished Lecturer of the IEEE CASS for 2004, 2005, and 2006.
- M. Sawan, Chair Biocas technical committee of the IEEE-Circuits & Systems Society, 2005.
- M. Sawan, Member of the International Biotechnology council, IEEE CAS representative, 2005.
- M. Sawan, Editor of the Springer Mixed-signal Letter, 2004-....

2. Awards, and honors

- R. Etienne-Cummings, Recipient of the Visit African Fellowship Award, *University of Cape Town*, 2006
- R. Etienne-Cummings, Selected for Fulbright Fellowship Award to South Africa, 2005/2006
- R. Etienne-Cummings, Re-Elected to the Board of Governors, *IEEE CAS Society*, 2003-2005, 2006 – Present.
- M. Sawan, Recipient of the J. A. Bombardier Award for Research innovation and technology transfer, 2005.

3. Publications

3.1. Journal manuscripts

1. M. Clapp and R. Etienne-Cummings, "Bearing Angle Estimation for Sonar Micro-Array Using Analog VLSI Spatiotemporal Processing," *IEEE Trans. Circuits and Systems-I*, Vol. PP, No. 99, Future Issue 2006.
2. Z. Li, QB Sun and Y Lian, "Design and Analysis of a Scalable Watermarking Scheme for the Scalable Audio Coder", *IEEE Transactions on Signal Processing*, 2006.
3. TB Deng, and Y Lian, "Weighted-Least Squares Design of Variable Fractional-Delay FIR Filters Using Coefficient-Symmetry", *IEEE Transactions on Signal Processing*, 2006.
4. Y Lian, and WS Lu, "Guest Editorial of Special Issue on Computationally Efficient Digital Filters: Design Techniques and Applications", *Circuits Systems and Signal Processing*, vol. 25, no. 2, April 2006.
5. L. Cen, and Y Lian, "Hybrid Genetic Algorithm for the Design of Modified Frequency-Response Masking Filters", *Circuits Systems and Signal Processing*, vol. 25, no. 2, April 2006.
6. S. Mehta and R. Etienne-Cummings, "A Normal Optical Flow Camera," accepted to *IEEE Trans. Circuits and Systems-I*, Fall 2005.
7. S. Mehta and R. Etienne-Cummings, "Normal Optical Flow Camera," *IEE Electronics Letters*, Vol. 41, No. 13, pp. 732 – 733, June 2005.
8. TS Lande, Y Lian and C Toumazou, "Guest Editorial of Special Issue on Biomedical Circuits and Systems: A New Wave of Technologies", *IEEE Transactions on Circuits and Systems Part I*, vol. 52, no. 12, Dec. 2005.
9. Y Lian, and Y Wei, "A Computationally Efficient Non-Uniform Digital FIR Filter Bank for Hearing Aid", *IEEE Transactions on Circuits and Systems Part I*, vol. 52, no. 12, Dec. 2005.
10. K.T. Christensen, T.H. Lee, and E. Bruun, "A High Dynamic Range Programmable CMOS Front-End Filter with a Tuning Range from 1850 to 2400 MHz," *Analog Integrated Circuits and Signal Processing*, vol. 42, pp. 55-64, January 2005.
11. J.H. Nielsen and E. Bruun, "A CMOS Low-Noise Instrumentation Amplifier Using Chopper Modulation," *Analog Integrated Circuits and Signal Processing*, vol. 42, pp. 65-76, January 2005.
12. M. Cassia, P.Shah, and E. Bruun, "A Novel Calibration Method for Phase-Locked Loops," *Analog Integrated Circuits and Signal Processing*, vol. 42, pp. 77-84, January 2005.
13. J.H. Nielsen and E. Bruun, "An Implantable CMOS Front-End System for Nerve-Signal Sensors," *Analog Integrated Circuits and Signal Processing*, vol.46, pp. 7-16, January 2006.

14. NORMANDIN, F., SAWAN, M., FAUBERT, J., "A New Integrated Front-End for a Non-Invasive Brain Imaging System Based on Near-Infrared Spectroreflectometry", IEEE Transactions on CAS-I, Vol. 52, no. 12, 2005, pp. 2663-2671.
15. HU, Y., SAWAN, M., "A Fully-Integrated Low-Power BPSK Demodulator for Implantable Medical Devices", IEEE Transactions on CAS-I, Vol. 52, no. 12, 2005, pp. 2552-2562.
16. LU, Z., HU, Y., SAWAN, M., "A 900 mV 66 μ W Sigma-Delta Modulator Dedicated to Implantable Sensors", IEICE Transactions on Information and Systems, Vol. E88-D, no. 7, July 2005, pp. 1610-1617.
17. BELLEMARE, F., PECCHIARI, M., BANDINI, M., SAWAN, M., D'ANGELO, E., "Reversibility of Airflow Obstruction by Hypoglossus Nerve Stimulation in Anesthetized Rabbits", American Journal of Respiratory and Critical Care Medecine, Vol. 172, 2005, pp. 606-612.
18. KASSEM, A., SAWAN, M., BOUKADDOUM, M., "A New Digital Scan Conversion Architecture for Ultrasonic Imaging Systems", The J. of Circuits, Systems, and Computers (JCSC), Vol. 14, No. 2, 2005, pp. 367-382.
19. DJEBBI, M., ASSI, A., SAWAN, M., "Design of Monolithic Tunable CMOS Band-Pass Filter Using Current Feedback Operational Amplifiers", Springer Analog ICs & Signal Proc. J., Vol. 45, no. 2, 2005, pp. 143-154.
20. KASSEM, A., SAWAN, M., BOUKADDOUM, M., HAIDAR, A., "Perception SoC based on an ultrasonic array of sensors: Efficient DSP core implementation and subsequent experimental results", EURASIP J. on Applied Signal Processing, Vol. 7, no. 11, 2005, pp. 1071-1081.
21. BUFFONI, L.X., SAWAN, M., COULOMBE, J., "Image Processing Strategies Dedicated to Visual Cortical Stimulators: A Survey", Artificial Organs J., Vol 29, no 8, 2005, pp. 658-664.
22. SAWAN, M., HU, Y., COULOMBE, J., "Wireless Smart Implants Dedicated to Multichannel Monitoring and Microstimulation", IEEE Circuits and Systems Magazine, Vol. 5, 2005, pp. 21-39.
23. COULOMBE, J., CARNIGUIAN, S., SAWAN, M., "A Power Efficient Electronic Implant For A Visual Cortical Stimulator", Artificial Organs J., Vol. 29, no. 3, 2005, pp. 233-238.
24. HU, Y., SAWAN, M., "An Integrated Power Recovery Module Dedicated to Implantable Devices", Springer Analog ICs & Signal Processing J., Vol. 42, no. 3, 2005, pp. 171-181.
25. E. Artyomov, O. Yadid-Pecht, "Modified High-Order Neural Network for invariant pattern recognition", Pattern Recognition Letters, Volume 26, pp. 843-851, May 2005.
26. E. Artyomov, Y. Rivenson, G. Levi, O. Yadid-Pecht, "Morton (Z) Scan Based Real-Time Variable Resolution CMOS Image Sensor", IEEE Transactions on Circuits and Systems for Video Technology, Volume 15, Issue 7, pp. 947 – 952, July 2005.
27. A. Fish, A. Belenky and O. Yadid-Pecht, "Wide Dynamic Range Snapshot APS for Ultra Low-Power Applications, IEEE TCAS II, Vol. 52, no. 11, pp. 729-733, Nov. 2005.
28. A. Fish and O. Yadid-Pecht, "Bottleneck Problem Solution using Biological Models of Attention in High Resolution Tracking Sensors", International Journal on Information Theory and Applications, December 2005.
29. D. Grois, I. Shcherback, T. Danov, O. Yadid-Pecht, "Theoretical Approach to CMOS APS PSF and MTF Modeling - Evaluation," accepted to IEEE Sensors journal, March 2005.
30. J. L. Gonzalez-Guillaumin, D. Sadowski, O. Yadid-Pecht, , K. V. I. S. Kaler, M. P. Mintchev, "Multi-channel Pressure, Bolus Transit, and pH Esophageal Catheter", accepted to IEEE Sensors journal.
31. E. Artyomov, A. Fish, O. Yadid-Pecht, "Image sensors for security and medical applications", accepted to International Journal on Information Theory and Applications.

32. A. Fish, S. Hamami and O. Yadid-Pecht, "CMOS Image Sensors with Self-Powered Generation Capability", accepted to IEEE Transactions on Circuits and Systems II, March 2006.
33. R. Segal, I. Shcherback, O. Yadid-Pecht, "CMOS Image Sensors two dimensional MTF for anisotropic resolution characterization", accepted to IEEE Transactions on Sensors, March 2006.
34. A. Fish, L. Sudakov-Boresha and O. Yadid-Pecht, "Low-power Tracking Image Sensor based on biological models of attention", accepted to the International Journal on Information Theory and Applications.
35. S. Hamami, L. Fleshel and O. Yadid-Pecht, "CMOS APS Imager employing 3.3V 12 bit 6.3 MS/s pipelined ADC", accepted to Sensors and Actuators, April 2006.
36. A. Fish, V. Milrud and O. Yadid-Pecht, "High Speed and High Precision Current Winner-take-all Circuit", invited for The Neuromorphic Engineer Journal.
37. I.C. Baykal, G.A. Jullien, "On The Use of Hash Functions as Preprocessing Algorithms to Detect Defects on Repeating Definite Textures", Machine Vision and Applications Journal (accepted March 2, 2006) 26 pages.
38. P. Mokrian, G.A. Jullien, M. Ahmadi, "On the Reduction of Interconnect Effects in Deep Submicron Implementations of Digital Multiplication Architectures", J. Circuits, Systems and Computers, accepted 14, Sept. 2005, (in print - 25 pages).
39. K. Walus, A. Budiman, G.A. Jullien, "Impurity Charging in Semiconductor QCA", Nanotechnology, 16, 2005, pp. 2525-2529.
40. I. Amer, W. Badawy, G.A. Jullien, "A Proposed Hardware Reference Model for Spatial Transformation and Quantization in H.264 (5/6)", Journal of Visual Communication and Image Representation (JVCI) (M/S JVCI155, accepted June 7, 2005).
41. M. Alam, W. Badawy, G. A. Jullien, "A New Time Distributed DCT Architecture for MPEG-4 Hardware Reference Model", IEEE Trans. on CAS for Video Technology, Vol. 15, No. 5, May 2005, pp. 726-730.
42. K. A. Wahid, V. S. Dimitrov and G. A. Jullien, "VLSI Implementation of Daubechies Wavelet Transform using Algebraic Integers", Journal of Circuits, Systems and Computers, Special issue on VLSI Architectures for Multimedia Applications, Vol. 13, No. 6, pp. 1-20, March 2005.
43. R. Muscedere, V. Dimitrov, G.A. Jullien, W.C. Miller, "A Low-power 2-Digit Multi-Dimensional Logarithmic Number System Filterbank Architecture for a Digital Hearing Aid", Special Issue on DSP in Hearing Aids and Cochlear Implants, EURASIP Journal on Applied Signal Processing, V. 2005, 18, Oct. 2005, pp. 3015-3025.
44. R. Muscedere, V.S. Dimitrov, G.A. Jullien, W.C. Miller, "Efficient Techniques For Binary to Multi-Digit Multi-Dimensional Logarithmic Number System Conversion using Range Addressable Look-Up Tables", IEEE Transactions on Computers (Special issue on Computer Arithmetic), Vol. 54, No. 3, pp. 257-271, March 2005.
45. M. Alam, W. Badawy, V.S. Dimitrov, G.A. Jullien, "Efficient Direct 2-D Architectures for Lifted Biorthogonal DWT", Journal of VLSI Signal Processing, vol. 40, 335-342, July, 2005.
46. K.S. Chong, B.H. Gwee, and J.S. Chang, "A 16-Channel Low Power Non-Uniform Spaced Filter Bank Core for Digital Hearing Aids", IEEE Transactions on Circuits and Systems II: Brief Express, 2006.
47. B.H. Gwee, J.S. Chang and V. Adrian, "A Micropower Low Distortion Digital Class D Amplifier based on an Algorithmic Pulse Width Modulator", IEEE Trans. Circuits and Systems I: Fundamental Theory and Applications (Regular Paper), vol. 52, no. 10, pp. 1-16, Oct 2005.
48. K.S. Chong, B.H. Gwee, and J.S. Chang, "A Micropower Low-Voltage Low Power Multiplier with Reduced Spurious Switching", IEEE Trans. VLSI Systems (Regular Paper), vol. 13, no. 2, pp. 255-265, Feb 2005.

49. M. Sivaprakasam, W. Liu, G. Wang, J. D. Weiland, and M. S. Humayun, "Architecture Tradeoffs in High Density Microstimulators for Retinal Prosthesis," *IEEE Transactions on Circuits and Systems – I, Special Issue on Biomedical Circuits and Systems (Special Issue on Biomedical Circuits and Systems)*, vol. 52, December 2005.
50. G. Wang, W. Liu, M. Sivaprakasam, G. A. Kendir, "Design and Analysis of an Adaptive Transcutaneous Power Telemetry for Biomedical Implants," vol. 52, pp. 2109 - 2117, *IEEE Transactions on Circuits and Systems – I*, Oct. 2005.
51. W. Liu, M. Sivaprakasam, G. Wang, M. Zhou, J. Granacki, J. LaCoss, and J. Wills, "Microelectronics Design for Implantable Wireless Biomimetic Microelectronic Systems," *IEEE Engineering in Medicine and Biology Magazine*, vol. 24, no. 5, pp. 66 – 74, Sept-Oct. 2005.
52. G. A. Kendir, W. Liu, G. Wang, M. Sivaprakasam, R. Bashirullah, M. Humayun, J. Weiland, "An Optimal Design Methodology for Inductive Power Link with Class-E Amplifier," vol. 52, pp. 857 - 866, *IEEE Transactions on Circuits and Systems – I*, May 2005.

3.2. Conference proceedings

1. R. Philipp and R. Etienne-Cummings, "A Single Chip Stereo Imager" *ISSCC'06 Digest of Technical Papers*, Vol. 49, Feb 2006.
2. R. Philipp and R. Etienne-Cummings, "Second Generation Single-Chip Imager," *accepted for IEEE ISCAS 2006*, Kos, Greece, May 2006.
3. F. Tenore, J. Vogelstein, R. Etienne-Cummings, G. Cauwenberghs and P. Hasler, "A Floating-Gate Programmable Array of Silicon Neurons for Central Pattern Generating Networks," *accepted for IEEE ISCAS 2006*, Kos, Greece, May 2006.
4. M. Chi, U. Mallik, E. Choi, M. Clapp, G. Cauwenberghs and R. Etienne-Cummings, "CMOS Pixel-Level ADC with Change Detection," *accepted for IEEE ISCAS 2006*, Kos, Greece, May 2006.
5. N. Ekekwe, R. Etienne-Cummings and P. Kazanzides, "A Configurable VLSI Chip for DC Motor Control for Compact, Low-Current Robotic Systems," *accepted for IEEE ISCAS 2006*, Kos, Greece, May 2006.
6. J. Vogelstein, R. Etienne-Cummings and A. Cohen, "Dynamic Control of Spinal Locomotion Circuits," *accepted for IEEE ISCAS 2006*, Kos, Greece, May 2006.
7. S. Mehta and R. Etienne-Cummings, "Normal Flow Measurement Visual Motion Sensor" *accepted for IEEE ISCAS 2006*, Kos, Greece, May 2006.
8. V. Gruev, R. Philipp and R. Etienne-Cummings, "General Image Processing Chip in 3D Integration," *accepted for IEEE ISCAS 2006*, Kos, Greece, May 2006.
9. A. Lewis, F. Tenore and R. Etienne-Cummings, "CPG Design using Inhibitory Networks," *Int. Conf. Robotics and Automation*, Barcelona, Spain, 2005.
10. R. Etienne-Cummings, "Neuromorphic Vision Systems," *Workshop on Neuromorphic Systems, IJCNN'05*, Montreal, Canada, August 2005.
11. R. Vogelstein, N. Thakor, R. Etienne-Cummings, and A. Cohen, "Electrical Stimulation of a Spinal Central Pattern Generator for Locomotion," *Proc. 2nd International IEEE EMBS Conference on Neural Engineering*. Arlington, VA, March 2005.
12. GOSSELIN, B., SAWAN, M., "A Low-Power Bioamplifier With a New Active DC Rejection Scheme", *IEEE-ISCAS*, Kos, Greece, May 2006.
13. NADERI, A., SAWAN, M., SAVARIA, Y., "A Novel 2-GHz Band-pass Delta Modulator Dedicated to Wireless Receivers", *IEEE-ISCAS*, Kos, Greece, May 2006.
14. DENG, S., SAWAN, M., "A High Data Rate QPSK Demodulator for Inductively Powered Electronics Implants", *IEEE-ISCAS*, Kos, Greece, May 2006.
15. DESILETS, T., SAWAN, M., BELLEMARE, F., "Wireless Esophageal Catheter Dedicated to Respiratory Diseases Diagnostic", *IEEE-ISCAS*, Kos, Greece, May 2006.

16. DUMORTIER, C., GOSSELIN, B., SAWAN, M., "Wavelet Transforms Dedicated to Compress Recorded ENGs from Multichannel Implants: Comparative Architectural Study", IEEE-ISCAS, Kos, Greece, May 2006.
17. HASHEMI, S., SAWAN, M., SAVARIA, Y., "A Power Planning Model for Bioelectronics Devices", IEEE-ISCAS, Kos, Greece, May 2006.
18. HUANG, Z., SAWAN, M., SAVARIA, Y., "High-Voltage Operational Amplifier Based on Dual Floating-Gate Transistors", IEEE-ISCAS, Kos, Greece, May 2006.
19. LIN, K.-Y., TSANG, T., SAWAN, M., EL-GAMAL, M., "Radio-Triggered Solar And Rf Power Scavenging And Management For Ultra Low Power Wireless Medical Applications", IEEE-ISCAS, Kos, Greece, May 2006.
20. GHAFAR-ZADEH, E., SAWAN, M., THERRIAULT, D., "Direct-write CMOS based Lab-on-chip", NSTI Nanotech, Boston, USA, May 2006.
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