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- Research interests:** Sensors; electron devices and integrated circuits. Algorithms and VLSI architectures for sensory information processing microsystems. Physics of information processing.
- Education:** Ph.D. Electrical Engineering and Computer Science, The Johns Hopkins University, Baltimore, Maryland USA, 1986.
M.Sc. Electrical Engineering and Computer Science, The Johns Hopkins University, Baltimore, Maryland USA, 1982.
Diploma in Electrical Engineering, HTI, Nicosia Cyprus, 1978.
- Professional Experience:** *Professor* of Electrical and Computer Engineering, joint appointments in Computer Science, (1997 – now), Whitaker Biomedical Engineering Institute (2003 – now); *Honorary Professor*, Universidad Nacional del Sur Bahia Blanca, Argentina (2010-now)
University Professor of Electrical and Computer Engineering University of Cyprus (2009-now)
Founding Director Computer Engineering Program, 1999 – 2002; The Johns Hopkins University;
Visiting Professor of Machine Intelligence and Systems Engineering, Tohoku University, Japan, Summer 2001;
Visiting Professor of Computation and Neural Systems, California Institute of Technology, Spring 1998;
Visiting Associate Professor of Computation and Neural Systems, California Institute of Technology, 1995 - 1996;
Associate Professor of Electrical and Computer Engineering The Johns Hopkins University, 1993 - 1997;
Assistant Professor of Electrical and Computer Engineering, The Johns Hopkins University, 1989 - 1992;
Member Professional Staff, Applied Physics Laboratory, The Johns Hopkins University, 1986 - 1995.
Associate Research Scientist, Department of Electrical and Computer Engineering, The Johns Hopkins University, 1988.
Post-Doctoral Fellow, Department of Electrical and Computer Engineering, The Johns Hopkins University, 1987.
- Awards and Honors:** Fellow IEEE, 2006.
Distinguished Lecturer
2006-now, IEEE Electron Devices Society Distinguished Lecturer
2001-2002, 2007-2008 IEEE Circuits and Systems Society
IEEE Circuits and Systems Society Transactions of Biomedical Circuits and Systems Best Paper Award, 2010
IEEE Circuits and Systems Society Darlington Best Paper Award, 2000.
Best Student Paper Award, MWSCAS 2000.
Myril B. Reed Best Paper Award, MWSCAS 1997.
Best Student Paper Award, IJCNN 1997.
Myril B. Reed Best Paper Award, MWSCAS 1995.
1991 R.W. Hart Prize, JHU Applied Physics Laboratory.
1989 R.W. Hart Prize, JHU Applied Physics Laboratory.

Professional Activities:

Board of Governors IEEE Circuits and Systems Society (2001-2004)
Associate Editor: *Neural Networks* (1999-now)
Guest Associate Editor: *IEEE Neural Networks* (2002).
IEEE Circuits and System Part II: Analog and Digital Signal Processing (1999-2001), *IEEE Neural Networks* (1993-1995).
Guest Associate Editor: *Analog Integrated Circuits* (2001).
Reviewer: *Nature*, *SCIENCE*, *IEEE Proceedings*,
IEEE Journal of Solid-State Circuits, Sensors and Actuators,
Analog Integrated Circuits and Signal Processing,
MIT press, *Neural Computation*, *IEEE Press*.
Proposal Reviewer: *National Science Foundation*, *European Commission*,
Swiss National Science Foundation, *Taiwan National Research Council*,
Australian Research Council, *Italian Science Council*, *German Science Council*.
Member: IEEE Circuits and Systems Technical Committees on
Analog Signal Processing, *Neural Networks*, *Nanotechnology and Gigascale systems* (chair 2003), *BioCAS*.
IEEE Electron Devices and Solid-State Circuits Council Baltimore chapter
(member executive committee 2000, vice-chair 2001,2002, chair 2003,2004).
Fellow: *Institute of Electrical and Electronics Engineers (IEEE)*.

Teaching Experience:

Undergraduate courses:

525.101 Electrical Engineering Circuits and Signals (Fall 84)
520.346 Electrical Engineering Laboratory (Fall 86)
520.325-326 Integrated Electronics
(Fall 89,90,91,96,97,98; Spring 90,91,92,93,94)
520.348/448 Electronics Design Laboratory (Spring 87,93,94,95,02)
525.428-429 VLSI Technology and Applications (Fall 87,88; Spring 88,89)
520/580.490 Microfabrication Laboratory
(Fall 94,96,98,99,00,02,03,04,05,06,07,08,09,10,11,12,13,14)
520/530.487 Introduction to MEMS (Spring 03,04, Summer 08)
520.216 Introduction to VLSI (Spring 09,10,11,12,13,14,15)
520.211/212 ECE Engineering Team Project (Fall/Spring 09,10,11)

Graduate courses:

580.676 Topics in Biomedical Sensors (Spring 90,92,93,94)
520.691 Optoelectronic VLSI (Fall 99,04)
520/580.725 Medical Microsystems (Spring 00,03)
520.735 Sensory Information Processing (Spring 01,04,08,11)
520.761-762 Seminar on Large Scale Analog Computation
(Fall 89,90,93,96,01,02,08,09,10; Spring 90,91,02,11)
525.764-765 Analog VLSI and Neural Systems
(Fall 88,89,91,93,94; Spring 89,90,92,94)
520.771-772 Advanced Integrated Circuits (Fall 92,97,00,07,08,09,10,11,12;
Spring 92,98,99,07)
520.773 Advanced Topics in Fabrication and Microengineering
(Fall 02,03,04,05,06,07,08,09,10,11,12,13,14)
520.776 Advanced Topics in Speech Science and Technology (Spring 97)

Research Group:

Philippe O. Pouliquen (U.S.A)
Assistant Research Professor

Guillaume Garreau (U.S.A)
Postdoctoral Fellow

Tomas Figliolia (Argentina)
5th year Ph.D.

Dan Mendat (U.S.A)
5th year Ph.D.

Sanni Kayode (U.S.A)
4th year Ph.D.

Chia-hsun Chiang (Taiwan)
3rd year Ph.D.

Gaspar Tognetti (U.S.A)
3rd year Ph.D.

Kate Fischl (U.S.A)
2nd year Ph.D.

Visiting Scholars and Faculty:

Dr. Pedro Julian	Universitat de Sud, Bahia Blanca, Argentina, Postdoctoral Fellow, 2002-2003 and Fall 2004; Fullbright Scholar, Visiting Assistant Professor, May-August 2009, Visiting Professor, December 2014 - 2015
Dr. Sylvain Saighi	Universite Bordeaux 1, France, Fullbright Scholar, Visiting Professor, February – July 2011
Dr. Andrew Cassidy	Johns Hopkins University, Postdoctoral Fellow, 2010.
Dr. Zaven Kalayjian	Johns Hopkins University, Postdoctoral Fellow, 2009-2010
Dr. Miriam Adlerstein	Johns Hopkins University, Postdoctoral Fellow, 2009.
Dr. Kim Strohhahn	JHU/APL, Assistant Research Professor, 2005-2012.
Dr. Mark Martin	JHU/APL, Assistant Research Professor, 2005-2010.
Dr. Julio Georgiou	Imperial College, U.K., Postdoctoral Fellow, 2004-2005.
Mr. Pablo Mandolesi	Universitat de Sud, Bahia Blanca, Argentina, Visiting Scholar, 2002-2003.
Dr. Hiroyuki Kurino	Tohoku University, Japan, Visiting Assistant Professor, 2000-2001.
Dr. Bernabe Linares-Barranco	Centro Nacional de Microelectrónica, Post-doctoral Fellow, Spain, 1997-1998.
Mr. Hitoshi Miwa	Hitachi Ltd./DDC, Visiting Scholar, Japan, 1993-1994.

Ph.D. Dissertation Advisor:

Thomas Murray (U.S.A)
Ph.D. Dissertation title:

Human action recognition from active acoustics: physics modeling for representation learning and inference using generative probabilistic graphical models, February 2015.
Signals Systems Corporation, Landover, MD.

Recep Ozgun (Turkey)
Ph.D. Dissertation title:

Experimental Investigation of New Materials and Fabrication Methods for Organic Semiconductor Devices and Circuits, July 2013.
IMEC, Belgium.

Haolang Zhou (PRC)
Ph.D. Dissertation title:

An investigation of linear projection methods: multiple projections and semi-supervised learning, September 2011.
Nuance, New York, NY.

Andrew Cassidy (U.S.A)
Ph.D. Dissertation title:

Three topics in single-chip parallel computing: theoretical foundations, speech recognition, and the silicon cortex, September 2010.
IBM, Austin, TX.

Ed Choi (Australia)
Ph.D. Dissertation title:

The Silicon chip: a versatile micro-scale platform for micro- and nano-scale systems, October 2008.
MAXIM integrated circuits, Sunnyvale, CA.

Zhaonian Zhang (PRC)
Ph.D. Dissertation title:

A micro-Doppler sonar for acoustic surveillance in sensor networks, August 2008.
Post-doctoral Fellow, UCSF Medical Center, CA.

Miriam Adlerstein (U.S.A)
Wolman Fellow
APL Fellowship
Ph.D. Dissertation title:

Seeing the light: design and characterization of photodetectors with internal gain fabricated in standard CMOS technologies, June 2008.
Institute for Defense Analysis, Princeton, NJ.

Jennifer Blain (U.S.A)
NSF Graduate Fellowship
Ph.D. Dissertation title:

Hybrid integration of silicon/silicone microsystems: a closed-loop, autonomous micro-incubator system, September 2006.
Assistant Professor, Arizona State University, AZ.

Francisco Tejada (U.S.A)
APL Fellowship
Ph.D. Dissertation title:

Silicon on insulator CMOS and microelectromechanicals systems: mechanical devices, sensing techniques and system electronics, August 2006.
Post-doctoral Fellow, Johns Hopkins University, MD (Andreou Lab).

Arun Sripati (India)
Ph.D. Dissertation title:

Neural representation of spatial information in the primate somatosensory system, July 2005.
Assistant Professor, Centre for Neuroscience, Indian Institute of Science, India.

Eugenio Culurciello (Italy)

- Ph.D. Dissertation title: *Ultra thin silicon on sapphire CMOS circuits*, October 2004.
Assistant Professor, Yale University, CN.
- David H. Goldberg (U.S.A)
Wolman Fellow
Ph.D. Dissertation title: *Efficient spike computation and communication in biological and engineered systems*, December 2003.
IBM, Yorktown Heights, NY.
- Alyssa B. Apsel (U.S.A)
Wolman Fellow
Ph.D. Dissertation title: *Optoelectronic receivers in silicon on sapphire CMOS: architecture and design for efficient parallel interconnects*, August 2002.
Associate Professor, Cornell University, NY.
- Pamela A. Abshire (U.S.A)
NSF Graduate Fellowship
Ph.D. Dissertation title: *Sensory information processing under physical constraints*, October 2001.
Associate Professor, University of Maryland College Park, MD.
- Mark N. Martin (U.S.A)
APL Fellowship
Ph.D. Dissertation title: *Mixed analog-digital design of low-power, space-qualified, integrated circuits in standard CMOS processes*, January 2000.
Johns Hopkins University Applied Physics Laboratory, MD.
- Zaven K. Kalayjian (U.S.A)
Ph.D. Dissertation title: *VLSeYE: Optoelectronic vision and image processing*, October 1999.
Army Research Laboratories, Adelphi MD.
- Nagendra Kumar (India)
Ph.D. Dissertation title: *Investigation of silicon auditory models and generalization of linear discriminant analysis for improved speech recognition*, February 1997.
IBM, Yorktown Heights.
- Philippe O. Pouliquen (U.S.A)
Ph.D. Dissertation title: *Low power architectures for associative processing in analog VLSI*, October 1996.
Adjunct Assistant Research Professor,
Johns Hopkins University, Baltimore MD.
- Richard C. Meitzler (U.S.A)
APL Fellowship
Ph.D. Dissertation title: *Analog VLSI for focal plane processing: devices, circuits, and architectural considerations*, March 1996.
Johns Hopkins University Applied Physics Laboratory, MD.
- Paul M. Furth (U.S.A)
Ph.D. Dissertation title: *On the design of optimal continuous-time filter banks in subthreshold CMOS*, October 1995.
Associate Professor, New Mexico State University, Las Cruces NM.
- Kewei Yang (PRC)
Ph.D. Dissertation title: *Investigation of MOSFET and floating gate MOSFET device models and circuits for analog VLSI*, October 1994.
Co-founder HotRail; now Conexant, CA.
- Weimin Liu (PRC)

Ph.D. Dissertation title: *An analog cochlear model: signal representation and VLSI realization*, September 1992.
Globespan, Middletown NJ.

M.S. Thesis Reader:

Xiang Ren (Taiwan)
M.S.E. Thesis title: *Design and fabrication of a microrobot*, May 2010.

Johnny Sang (U.S.A)
M.S.E. Thesis title: *Characterization of devices in three-dimensional silicon-on-insulator CMOS for microelectromechanical systems*, May 2010.

Thiago V.S. Teixeira (Brazil)
M.S.E. Thesis title: *Address-event imaging algorithms and their TinyOS implementation for wireless sensor networks*, May 2005.

La Vida Cooper (U.S.A)
M.S.E. Thesis title: *Devices and circuits for a biotelemetry system in silicon on sapphire CMOS*, May 2005.

Robert Winsor (U.S.A)
M.S.E. Thesis title: *Hybrid, silicon-dioxide/SU-8 optical waveguides using silicon micromachining*, May 2004.

Alexandra Heron (U.S.A)
M.S.E. Thesis title: *Dual process imager design and architecture for retinal implant systems*, May 2001.

Wesley P. Millard (U.S.A)
M.S.E. Thesis title: *A single chip S-band spacecraft receiver designed using silicon on sapphire technology*, January 2001.
JHU Applied Physics Laboratory, Laurel MD.

Wolfgang Himmelbauer (Austria)
M.S.E. Thesis title: *Investigation of a zero-crossing-based auditory model for digit recognition and its implementation in analog VLSI*, October 1997.
Maxim Corporation, San Jose CA.

Teresa Serrano-Gotarredona (Spain)
Fulbright Fellowship
M.S.E. Thesis title: *VLSI implementation of a pseudo-Gabor filter for edge extraction*, October 1997. CNMM, Spain.

Marc H. Cohen (U.S.A)
M.S.E. Thesis title: *Analog VLSI implementation of an auto-adaptive network for real-time separation of independent signal sources*, May 1991.
Postdoctoral Fellow – ARL Adelphi.

Kwabena A. Boahen (Ghana)
M.S.E. Thesis title: *Design of a bidirectional associative memory chip*, May 1990.
Associate Professor, Stanford University.

Ph.D. Dissertation committees outside Johns Hopkins University:

Martin Di Federico	Universitat del Sur, Bahia Blanca, Argentina, 2011; advisor Pablo Mandolesi
Pablo Mandolesi	Universitat del Sur, Bahia Blanca, Argentina, 2007; advisor Pedro Julian
Michael Ben Venditti	McGill University, Canada, 2003; advisor Prof. David Plant
Francesc Serra-Graells	Universitat Autonoma de Barcelona, Spain, 2001; advisor Prof. Jose L. Huertas
Raymond Jian-Wei Wang	The University of Sydney, Australia, 1998; advisor: Prof. Marwan A. Jabri.
Teresa Serrano-Gotarredona	University of Sevilla, Spain, 1997; advisor: Prof. Angel Rodriguez.
Paul Hasler	California Institute of Technology, 1997; advisor: Prof. Carver Mead.
Vladimir Brajovic	Carnegie Mellon University, 1996; advisor: Prof. Takeo Kanade.
Richard Coggins	The University of Sydney, Australia; 1996, advisor: Prof. Marwan A. Jabri.

Visiting Students:

Nick Pashalidis	University of Thrace, Greece, 1991-1992; Prof. Sarris Group.
Chiu-Hung Cheng	National Tsiao Tung University, Taiwan, 2001; Prof. Chung-Yu Wu Lab.
Yu-Chuan Shih	National Tsiao Tung University, Taiwan, 2001; Prof. Chung-Yu Wu Lab.
Rumi Chunara	Caltech, SURF Fellowship (July – September 2003)

Refereed Journal Articles:

K. D. Fischl and A. G. Andreou, "Spike propagation path planning on IBM TrueNorth neurosynaptic system," *IET Electronics Letters*, pp. 1–2, Jun. 2017.

J. H. Seo, H. Bakhshae, G. Garreau, C. Zhu, A. G. Andreou, W. R. Thompson, and R. Mittal, "A method for the computational modeling of the physics of heart murmurs," *Journal of Computational Physics*, vol. 336, pp. 546–568, May 2017.

T. Figliolia and A. G. Andreou, "Reconfigurable Stochastic Computation Architecture for Bayesian Online Change Point Detection," *Microprocessors and Microsystems*, pp. 1–27, Feb. 2017.

T. S. Murray, D. R. Mendat, K. Sanni, P. O. Pouliquen, and A. G. Andreou, "Bio-inspired Human Action Recognition With A micro-Doppler Sonar System," *IEEE Access*, pp. 1–16, 2017.

J. T. Vogelstein, K. Amunts, A. G. Andreou, D. Angelaki, G. Ascoli, C. Bargmann, R. Burns, C. Cali, F. Chance, M. Chun, G. Church, H. Cline, T. P. Coleman, S. de La Rochefoucauld, W. Denk, A. B. Elgoyhen, R. E. Cummings, A. Evans, K. Harris, M. Hausser, S. Hill, S. Inverso, C. Jackson, V. Jain, R. Kass, B. Kasthuri, G. Kiar, K. Kording, S. Koushika, J. Krakauer, S. Landis, J. Layton, Q. Luo, A. Marblestone, D. Markowitz, J. McArthur, B. Mensh, M. Milham, P. Mitra, P. Neskovic, M. Nicolelis, R. O'Brien, A. Oliva, G. Orban, H. Peng, A. Picchini-Schaffer, M. Picciotto, J.-B. Poline, M.-M. Poo, A. Pouget, S. Raghavachari, J. Roskams, T. J. Sejnowski, F. Sommer, N. Spruston, L. Swanson, A. Toga, R. J. Vogelstein, R. Yuste, A. Zador, R. Haganir, and M. Miller, "Grand Challenges for Global Brain Sciences," *arXiv.org*, vol. q-bio.NC. 23-Aug-2016.

H. Korth, K. Strohbren, F. Tejada, A. G. Andreou, J. Kitching, S. Knappe, S. J. Lehtonen, S. M. London, and M. Kafel, "Miniature atomic scalar magnetometer for space based on the rubidium isotope (87)Rb," *J Geophys Res Space Phys*, vol. 121, no. 8, pp. 7870–7880, Aug. 2016.

K. N. Hageman, Z. K. Kalayjian, F. Tejada, B. Chiang, M. A. Rahman, G. Y. Fridman, C. Dai, P. O. Pouliquen, J. Georgiou, C. C. Della Santina, and A. G. Andreou, "A CMOS Neural Interface for a Multichannel Vestibular Prosthesis," *IEEE Trans Biomed Circuits Syst*, vol. 10, no. 2, pp. 269–279, Apr. 2016.

T. Figliolia, T. S. Murray, and A. G. Andreou, "Acoustic micro-Doppler signal processing with a foveated electronic cochlea," *IET Electronics Letters*, vol. 51, no. 2, pp. 132–134, Jan. 2015.

L. Shestopalova, T. M. Bohm, A. Bendixen, A. G. Andreou, J. Georgiou, B. Hajdu, S. L. Denham, and I. Winkler, "Do audio-visual motion cues promote segregation of auditory streams?," *Auditory Cognitive Neuroscience*, pp. 1–33, Mar. 2014.

T. J. Dawidzyk, J. F. M. Hardigee, G. L. Johns, R. Özgün, O. Alley, A. G. Andreou, N. Markovic, and H. E. Katz, "Visualizing and quantifying charge distributions correlated to threshold voltage shifts in lateral organic transistors," *ACS Nano*, pp. 1–29, Jan. 2014.

T. S. Murray, P. O. Pouliquen, and A. G. Andreou, "Design of a configurable clipping sequence generator for high speed parallel samplers," *IET Electronics Letters*, vol. 49, no. 14, pp. 875–876, Jul. 2013.

A.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*, vol. 45, pp. 4–26, Jun. 2013.

F. C. Morabito, A. G. Andreou, and E. Chicca, "Neuromorphic engineering: from neural systems to brain-like engineered systems," *Neural Networks*, vol. 45, pp. 1–3, May 2013.

T. S. Murray, P. O. Pouliquen, and A. G. Andreou, "8-channel 20kHz to 200MHz Nyquist and compressive sampler in 0.5um CMOS," *IET Electronics Letters*, vol. 49, no. 1, pp. 23–25, Jan. 2013.

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," *Int J Neural Syst*, vol. 23, no. 5, pp. 1350021–1 1350021–15, 2013.

- T. M. Bohm, L. Shestopalova, A. Bendixen, A. G. Andreou, J. Georgiou, G. Garreau, P. O. Pouliquen, A. S. Cassidy, S. L. Denham, and I. Winkler, "The role of perceived source location in auditory stream segregation: Separation affects sound organization, common fate does not," *Learning and Perception*, pp. 1–40, 2013.
- T. S. Murray, P. O. Pouliquen, and A. G. Andreou, "Design of a parallel sampling encoder for analog to information (A2I) converters: theory, architecture, and CMOS implementation," *MDPI Electronics*, vol. 2, pp. 57–79, 2013.
- A. S. Cassidy and A. G. Andreou, "Beyond Amdahl's Law: an objective function that links multiprocessor performance gains to delay and energy," *IEEE Trans Comput*, vol. 61, no. 8, pp. 1110–1126, Aug. 2012.
- T. S. Murray, P. O. Pouliquen, and A. G. Andreou, "An 8-Channel 20kHz to 200MHz Nyquist and Compressive Sampler in 0.5um CMOS," *IET Electronics Letters*, 2012.
- T. J. Dawidczyk, G. L. Johns, R. Özgün, O. Alley, A. G. Andreou, N. Markovic, and H. E. Katz, "Kelvin probe microscopic visualization of charge storage at polystyrene interfaces with pentacene and gold," *Appl Phys Lett*, vol. 100, no. 7, p. 073305, 2012.
- A. G. Andreou, "Johns Hopkins on the chip: microsystems and cognitive machines for sustainable, affordable, personalized medicine and health care (Invited Paper)," *IET Electronics Letters*, pp. s34–s37, Dec. 2011.
- J. Georgiou and A. G. Andreou, "Guest Editorial—Special Issue on Selected Papers From BioCAS 2010," *IEEE Trans Biomed Circuits Syst*, vol. 5, no. 5, pp. 401–402, 2011.
- B.M. Dhar, R. Özgün, T. Dawidczyk, A.G. Andreou and H.E. Katz "Threshold voltage shifting for memory and tuning in printed transistor circuits", *Materials Science & Engineering R*, pp. 1-32, 2010.
- B.M. Dhar, R. Özgün, B.J. Jung, H.E. Katz and A.G. Andreou, "Optimum bias of CMOS organic field effect transistor inverter through threshold adjustment of both p- and n-type devices," *IEE Electronics Letters*, vol. 46 (19) pp. 1335-1336, 2010 (Selected as paper of the month September 2010).
- B. J. Jung, K. Lee, J. Sun, A. G. Andreou, and H. E. Katz, "Air-Operable, High-Mobility Organic Transistors with Semifluorinated Side Chains and Unsubstituted Naphthalenetetracarboxylic Diimide Cores: High Mobility and Environmental and Bias Stress Stability from the Perfluorooctylpropyl Side Chain," *Adv Funct Mater*, vol. 20, no. 17, pp. 2930–2944, Jul. 2010.
- C.G. Rizk, P.O. Pouliquen and A.G. Andreou, "Flexible Readout and Integration Sensor (FRIS): new class of imaging sensor arrays optimized for air and missile defense," *Johns Hopkins University APL Technical Digest*, Vol. 28, No. 3, pp. 252-253, 2010.
- H. Korth, K. Strohhenn, F. Tejada, A.G. Andreou, S. McVeigh, J. Kitching and S. Knappe, "Chip-scale absolute scalar magnetometer for space applications," *Johns Hopkins University APL Technical Digest*, Vol. 28, No. 3, pp. 248-249, 2010.
- M.A. Marwick and A.G. Andreou, "A photo-battery fabricated in silicon on sapphire CMOS," *IEE Electronics Letters*, Vol. 44, No. 12, pp. 766-767, 2008.
- M.A. Marwick and A.G. Andreou, "Single photon avalanche photodetector with integrated quenching fabricated in TSMC 0.18um 1.8V CMOS process," *IEE Electronics Letters*, Vol. 44, No. 10, pp. 643-644, 2008.
- B.N. Pal, J. Sun, B. Jung, E. Choi, A.G. Andreou and H.E. Katz, "Pentacene-Zinc oxide vertical diode with compatible grains and 15-MHz rectification," *Advanced Materials*, Vol. 20, No. 5, pp. 1023-1028, 2008.
- M.Di Federico, P.S. Mandolesi, P. Julian and A.G. Andreou, "Experimental results of simplicial CNN digital pixel processor," *IEE Electronics Letters*, Vol. 44, No. 1, pp. 27-29, January 2008.
- D.H. Goldberg, and A.G. Andreou, "Distortion of neural signals by spike coding," *Neural Computation*, Vol. 19 , No. 10, pp. 2797-2839, October 2007.
- J. Georgiou and A.G. Andreou, "Address-data event representation for communication in multichip neuromorphic system architectures," *IEE Electronics Letters*, Vol. 43, No. 14, pp. 767-769, July 2007.

- E. Culurciello, P.O. Pouliquen and A.G. Andreou, "A digital isolation amplifier in silicon-on-sapphire CMOS," *IEE Electronics Letters*, Vol. 43, No. 8, pp. 451-452, April 2007.
- J. Blain Christen and A.G. Andreou, "Design, fabrication and testing of a hybrid CMOS/PDMS microsystem for cell culture and incubation," *IEEE Transactions on Biomedical Circuits and Systems*, Vol.1, No. 1, pp. 2-14, April 2007 (Invited Paper, 2010 TBioCAS Best Paper Award).
- Z. Zhang, P.O. Pouliquen, A. Waxman and A.G. Andreou, "Acoustic micro-Doppler radar for human gait imaging," *Journal of the Acoustical Society of America Express Letters*, Vol. 121, No. 3, pp. 110-113, March 2007.
- E. Culurciello and A.G. Andreou, "Capacitive inter-chip data and power transfer for 3D VLSI," *IEEE Transactions on Circuits and Systems: Part II: Express Briefs*, Vol. 53, No. 12, pp. 1348-1352, December 2006.
- D.H. Goldberg, A.G. Andreou, P. Julian, P.O. Pouliquen, L. Riddle and R. Rosasco, "Algorithm and VLSI implementation of a wake-up subsystem for an acoustic surveillance sensor network," *ACM Transactions on Sensor Networks*, Vol. 2, No. 4, pp. 594-611, November 2006.
- P. Julian, F.N. Martin Pichio and A.G. Andreou, "Experimental results for cascadable micropower time delay estimator," *IEE Electronics Letters*, Vol. 42, No. 21, pp. 1218-1219, October 2006.
- E. Culurciello and A.G. Andreou, "An 8-bit, 800uW, 1.23MS/s successive approximation ADC in SOI CMOS," *IEEE Transactions on Circuits and Systems: Part II: Express Briefs*, Vol. 53, No. 9, pp. 858-861, September 2006.
- G. Marcus, K. Strohhahn, S. Jaskulek, A.G. Andreou, E. Culurciello, "A monolithic isolation amplifier in silicon-on-insulator CMOS: testing and applications," *Analog Integrated Circuits and Signal Processing*, Vol. 49, pp. 63-70, 2006.
- E. Culurciello and A.G. Andreou, "CMOS image sensors for sensor networks," *Analog Integrated Circuits and Signal Processing*, Vol. 49, pp. 39-51, 2006.
- P. Julian, A.G. Andreou, and D.H. Goldberg, "A low power correlation-derivative CMOS VLSI circuit for bearing estimation," *IEEE Transactions on Very Large Scale Integration Systems*, Vol. 14, No. 2, pp. 207-212, February 2006.
- J. Georgiou and A.G. Andreou, "High-speed address-encoding arbiter architecture," *IEE Electronics Letters*, Vol. 42, No. 3, pp. 170-171, February 2006.
- E. Culurciello, P.O. Pouliquen and A.G. Andreou, "Isolation charge pump fabricated in silicon on sapphire CMOS technology," *IEE Electronics Letters*, Vol. 41, No. 10, pp. 29-30, May 2005.
- E. Culurciello, P.O. Pouliquen, A.G. Andreou, K. Strohhahn, and S. Jaskulek, "Monolithic digital galvanic isolation buffer fabricated in silicon on sapphire CMOS," *IEE Electronics Letters*, Vol. 41, No. 9, pp. 21-22, April 2005.
- A.B. Apsel and A.G. Andreou, "A low power Silicon on Sapphire CMOS optoelectronic receiver using low and high threshold devices," *IEEE Transactions on Circuits and Systems: Part I: Regular Papers*, Vol. 52, No. 2, pp. 253-261, February 2005.
- A.B. Apsel, Z. Fu and A.G. Andreou, "A 2.5 mW SOS CMOS optical receiver for chip-to-chip interconnects," *IEEE Journal of Lightwave Technology*, Vol. 22, No. 9, pp. 2149-2157, September 2004.
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- K. Yang, R.C. Meitzler and A.G. Andreou, "A model for MOS effective channel mobility with emphasis in subthreshold and transition region," *Proceedings of the 1994 International Symposium on Circuits and Systems*, Vol. 1, pp. 431-434, London, June, 1994.
- K. Yang and A.G. Andreou, "The multiple input floating gate MOS differential amplifier: An analog computational building block," *Proceedings of the 1994 International Symposium on Circuits and Systems*, Vol. 5, pp. 37-40, London, June, 1994.
- H. Miwa, K. Yang, P.O. Poulighen, N. Kumar and A.G. Andreou, "Storage enhancement techniques for digital memory based, analog computational engines," *Proceedings of the 1994 International Symposium on Circuits and Systems*, Vol. 5, pp. 45-48, London, June, 1994.
- P.M. Furth, N. Kumar, A. G. Andreou and M.H. Goldstein, Jr., "Experiments with the Hopkins Electronic EAR" *Proceedings of the Fourteenth Annual Speech Research Symposium*, pp. 183-189, Baltimore MD, May 1994.
- T.G. Edwards and A.G. Andreou, "VLSI phase-locking architectures for feature linking in multiple target tracking systems," *Advances in Neural Information Processing Systems*, Volume 6, pp. 866-873, Morgan Kaufmann Publishers, San Mateo, CA, 1994.
- N. Kumar, P.O. Poulighen and A.G. Andreou, "Device mismatch limitations on the performance of a Hamming distance classifier," *1993 IEEE International Workshop on Defect and Fault Tolerance in VLSI Systems*, edited by Y. Savaria and R. Stefanelli, IEEE Computer Society Press, pp. 327-334, Los-Alamitos, CA, 1993.

A.G. Andreou and W. Liu, "BiCMOS circuits for silicon cochleas," *Circuit Theory and Design 1993, Proceedings of the 1993 European Conference on Circuit Theory and Design*, Davos, Switzerland, H. Dedieu editor, pp. 503-508, Elsevier Science Publishers B.V., 1993.

P.M. Furth and A.G. Andreou, "A high-drive low-power BiCMOS buffer using compound PMOS/NPN transistors," *Proceedings of the 36th Midwest Symposium on Circuits and Systems*, pp. 1369-1372, Detroit, Michigan, August 1993.

K. Yang and A.G. Andreou, "Multiple input floating-gate MOS differential amplifiers and applications for analog computation," *Proceedings of the 36th Midwest Symposium on Circuits and Systems*, pp. 1212-1216, Detroit, Michigan, August 1993.

P.O. Pouliquen, A.G. Andreou, K. Strohhahn and R.E. Jenkins, "An associative memory integrated system for character recognition," *Proceedings of the 36th Midwest Symposium on Circuits and Systems*, pp. 762-765, Detroit, Michigan, August 1993 (invited session).

N. Kumar, P.O. Pouliquen and A.G. Andreou, "Device mismatch limitations on the performance of an associative memory system," *Proceedings of the 36th Midwest Symposium on Circuits and Systems*, pp. 570-573, Detroit, Michigan, August 1993.

R.C. Meitzler, A.G. Andreou, K. Strohhahn and R.E. Jenkins, "A sampled-data motion chip," *Proceedings of the 36th Midwest Symposium on Circuits and Systems*, pp. 288-291, Detroit, Michigan, August 1993.

K. Yang and A.G. Andreou, "Subthreshold analysis of floating gate MOSFET's" *Proceedings of the 10th Biennial University Industry Microelectronics Symposium*, pp. 141-144, Research Triangle Park, North Carolina, May 1993.

R.C. Meitzler and A.G. Andreou, "On the simulation of analog VLSI systems operating in subthreshold and transition regions," *Proceedings of the 10th Biennial University Industry Microelectronics Symposium*, pp. 145-149, Research Triangle Park, North Carolina, May 1993.

A.G. Andreou, "Analog VLSI Neuromorphic Systems," *Proceedings of the 1993 International Symposium on Circuits and Systems*, pp. 1471-1474, Chicago, May, 1993, (invited session).

K. Strohhahn, D.M. Rust, A.G. Andreou and R.E. Jenkins, "A biologically inspired image position sensor," in *Real Time and Post-Facto Image Correction*, *Proceedings of the 13th Sacramento Peak Summer Workshop*, Sunspot, NM, 1992.

W. Liu, A.G. Andreou and M.H. Goldstein, "An analog cochlear model for multiresolution speech analysis," *Advances in Neural Information Processing Systems, Volume 5*, pp. 666-673, Morgan Kaufmann Publishers, San Mateo, 1993.

P. Furth and A.G. Andreou, "On fault probabilities and yield models for analog VLSI neural networks," *1992 IEEE International Workshop on Defect and Fault Tolerance in VLSI Systems*, edited by D.M. Walker and F. Lombardi, IEEE Computer Society Press, pp. 167-175, Los-Alamitos, CA, 1992.

W. Liu, M.H. Goldstein and A.G. Andreou, "Multiresolution speech analysis with an analog cochlear model," pp. 433-436, *Proceedings of the IEEE-SP International Symp. on Time-Freq. and Time-Scale Analysis, Victoria, BC, October 1992*.

K.A. Boahen and A.G. Andreou, "A contrast sensitive silicon retina with reciprocal synapses," *Advances in Neural Information Processing Systems, Volume 4*, pp. 764-772, Morgan Kaufmann Publishers, San Mateo, 1992. (Reprinted in: *Analog Vision Chips*, C. Koch editor, IEEE Press, 1993.)

M.H. Cohen, P.O. Pouliquen and A.G. Andreou, "Silicon implementation of the Herault-Jutten neural network model for the separation of independent signal sources," *Advances in Neural Information Processing Systems, Volume 4*, pp. 805-812, Morgan Kaufmann Publishers, San Mateo, 1992.

A.G. Andreou, "Current-mode techniques for analog VLSI: technology and defect tolerance issues," *1991 International Workshop on Defect and Fault Tolerance in VLSI Systems*, edited by W. Maly and D.M. Walker, IEEE Computer Society Press, pp. 28-31, Los Alamitos, CA, 1991.

A. Pavasovic, A.G. Andreou and C.R. Westgate, "Characterization of CMOS process variations by measuring subthreshold current," *Nondestructive Characterization of Materials IV*, edited by R.E. Green and C.O. Ruud, Plenum Press, New York, 1991.

M.H. Cohen, P.O. Pouliquen and A.G. Andreou, "An auto-adaptive synthetic neural network for real time separation of independent signal sources," *Proceedings of the 1991 International Joint Conference on Neural Networks*, pp. 211-214, Seattle, July 1991.

W. Liu, A.G. Andreou and M.H. Goldstein, "An analog integrated speech front-end based on the auditory periphery," *Proceedings of the 1991 International Joint Conference on Neural Networks*, pp. 861-864, Seattle, July 1991.

M.H. Cohen, P.O. Pouliquen and A.G. Andreou, "Silicon implementation of an auto-adaptive network for the real-time separation of independent signals," *Proceedings of the 1991 International Symposium on Circuits and Systems*, pp. 2971-2974, Singapore, June 1991.

S.G. Ayyar, A.G. Andreou and C.R. Westgate, "A physical GaAs MESFET model implemented in SPICE," *Proceedings of the 1991 International Symposium on Circuits and Systems*, pp. 2729-2732, Singapore, June 1991.

P.O. Pouliquen, K.A. Boahen and A.G. Andreou, "A Gray-Code MOS current-mode analog-to-digital converter design," *Proceedings of the 1991 International Symposium on Circuits and Systems*, pp. 1924-1927, Singapore, June 1991.

A.G. Andreou, K. Strohbehn and R.E. Jenkins, "Silicon retina for motion computation," *Proceedings of the 1991 International Symposium on Circuits and Systems*, pp. 1373-1376, Singapore, June 1991 (invited session).

W. Liu, A.G. Andreou and M.H. Goldstein, "Analog speech processor based on the auditory periphery," *121st Meeting of the Acoustical Society of America*, Abstract in *J. Acoust. Soc. Am.*, Vol. 89, page 1937, No.4, Pt. 2, April 1991.

A.G. Andreou and M.H. Cohen, "Unsupervised learning on silicon for real time separation of independent signal sources," *Neural Networks for Computing (Abstract)*, Snowbird, April 1991.

M.H. Cohen, P.O. Pouliquen and A.G. Andreou, "Silicon VLSI implementation of an auto-adaptive network for the real-time separation of independent signal sources," *Proceedings of the 25th Annual Conference on Information Sciences and Systems*, pp. 856-861, Baltimore, March 1991.

W. Liu, A.G. Andreou and M.H. Goldstein, "Analog VLSI implementation of an auditory periphery model," *Proceedings of the 25th Annual Conference on Information Sciences and Systems*, pp. 630-635, Baltimore, March 1991.

V. Kantabutra and A.G. Andreou, "On a general design principle for low-power, digital VLSI circuits," *Proceedings of the 25th Annual Conference on Information Sciences and Systems*, pp. 254-260, Baltimore, March 1991.

A.G. Andreou and K.A. Boahen, "Modeling inner and outer plexiform retinal processing using non-linear, coupled resistive networks," *Proceedings of the 1991 SPIE/SPSE Symposium, Volume 1453 Human Vision, Visual Processing and Digital Display II*, pp. 270-281, San Jose, February 1991.

A.G. Andreou and K. Strohbehn, "Analog VLSI implementation of the Hassenstein-Reichardt-Poggio models for vision computation," *Proceedings of the 1990 International Conference on Systems, Man, and Cybernetics*, pp. 707-710, Los Angeles, November 1990, (invited session).

A.G. Andreou, "Synthetic neural systems using current-mode circuits," *Proceedings of the 1990 IEEE International Symposium on Circuits and Systems*, pp. 2428-2432, New Orleans, May 1990 (invited session).

A.G. Andreou and K.A. Boahen, "Signal representations and scaling issues in analog VLSI: case study of the Bidirectional Associative Memory model," *Neural Networks for Computing (Abstract)*, Snowbird, April 1990.

S.G. Ayyar, A.G. Andreou and C.R. Westgate, "A physical SPICE model for GaAs MESFET's," *Proceedings of the 1990 IEEE VLSI Test Symposium*, Atlantic City, April 1990.

- W. Liu, A.G. Andreou and M.H. Goldstein, "Speech preprocessing using analog VLSI," *119th Meeting of the Acoustical Society of America*, Abstract in *J. Acoust. Soc. Am. Suppl. 1*, Vol. 87, page S109, Spring 1990.
- A.G. Andreou and S. Kontogiorgis, "Fault tolerance in analog VLSI: case study of a focal plane processor," *Defect and Fault Tolerance in VLSI Systems*, Vol. 2, edited by C.H. Stapper, V.K. Jain and G. Saucier, Plenum Press, New York, pp. 227-240, 1990.
- K.A. Boahen, A.G. Andreou, P.O. Pouliquen and A. Pavasovic, "Architectures for associative memories using current-mode analog MOS circuits," *Advanced Research in VLSI*, edited by C.L. Seitz, MIT Press, Cambridge, pp. 175-193, 1989.
- A.G. Andreou, "Electronic receptors for tactile/haptic sensing," *Advances in Neural Information Processing Systems*, Vol. 1, edited by D.S. Touretzky, Morgan Kaufmann Publishers, San Mateo, pp. 785-792, 1989.
- A.G. Andreou, "In-situ characterization of carrier mobility in field effect transistors," *Review of Progress in Quantitative Nondestructive Evaluation 8B*, edited by D.O. Thompson and D.E. Chimenti, Plenum Press, New York, pp. 1247-1254, 1989.
- S.A. Kontogiorgis and A.G. Andreou, "Performance and fault tolerance of a focal-plane sensory system in analog VLSI," *Transducers 89, Proceedings of the 5th International Conference on Solid-State Sensors and Actuators*, pp. 181-182, Montreux, June 1989.
- S.A. Kontogiorgis and A.G. Andreou, "A spatial mean and median filter in analog VLSI," *Proceedings of the 23rd Annual Conference on Information Sciences and Systems*, pp. 447-452, Baltimore, March 1989.
- K. Strohhahn and A.G. Andreou, "A bit-serial VLSI receptive field accumulator," *Proceedings of the 1989 Custom Integrated Circuits Conference*, pp. 12.5.1-12.5.6, San Diego, May 1989.
- A.G. Andreou, K. Strohhahn and R.E. Jenkins, "A hardware implementation of the Reichardt motion detector," *Neural Networks for Computing (Abstract)*, Snowbird, April 1989.
- D.M. Mechtel, A.G. Andreou, D.N. Christodoulides, J. Wagner, C.R. Westgate, C.H. Palmer, T.O. Poehler, "Sub-bandgap laser probing of GaAs devices and circuits," *Review of Progress in Quantitative Nondestructive Evaluation 7B*, edited by D.O. Thompson and D.E. Chimenti, Plenum Press, New York, pp. 1133-1140, 1988.
- A.G. Andreou, "Neural architectures for smart memories in analog VLSI," *Proceedings of the 1988 IEEE International Symposium on Intelligent Control*, pp. 671-676, Arlington, August 1988.
- A. Pavasovic, A.G. Andreou and C.R. Westgate, "An investigation of minimum-size, nano-power MOS current mirrors for use in analog VLSI systems," *Proceedings of the 31st Midwest Symposium on Circuits and Systems*, pp. 421-424, St. Louis, August 1988.
- A.G. Andreou, C.R. Westgate and M.J. Thoma, "In-situ mobility profiling of short channel field effect transistors using the Hall-current technique," *44th Annual Device Research Conference*, Abstract in *IEEE Transactions on Electron Devices*, Vol. ED-33, No. 11, page 1850, November 1986.
- A.L. Newman, W.D. Stanbro, K.W. Hunter and A.G. Andreou, "Development of an antibody modulated planar capacitive sensor," *Proceedings of the IEEE Conference on Synthetic Microstructures in Biological Research*, Arlie, March 1986.
- A.G. Andreou and C.R. Westgate, "The magnetosensitivity and the spatial resolution of lateral bipolar magnetotransistors," *Proceedings of the 1984 IEEE Solid-State Sensors Conference (Abstract)*, Hilton Head Island, June 1984.
- A.G. Andreou and C.R. Westgate, "A.C. characterization and modeling of lateral bipolar magnetotransistors," *Proceedings of the IEEE International Electron Devices Meeting*, pp. 564-567, San Francisco, December 1984 (student paper).

Invited Book Reviews and Editorial Articles:

A.G. Andreou, T. Sejnowski, B. Dally, T. Abel “The future of computing, from extreme to green,” The Kavli Foundation, <http://www.kavlifoundation.org/science-spotlights/future-computing-extreme-green>, August 2010.

A.G. Andreou, P.J. Chung, G. Yang, S. Wong, “Special Issue on Advances in Life Science Systems and Applications: Guest Editorial,” *IEEE Transactions on Circuits and Systems: Part I: Regular Papers*, Vol. 53, No. 11, pp. 2345-2347, November 2006.

B. Linares-Barranco, A.G. Andreou, G. Indiveri, T. Shibata, Guest Editorial; Special Issue on Neural Networks Hardware Implementations, *IEEE Transactions on Neural Networks*, Vol. 14, No. 5, pp. 976-978, September 2003.

A. Rodriguez-Vazquez, T. Roska, A.G. Andreou, Guest Editorial; Special Issue on Bio-inspired Processors and Cellular Neural Networks for Vision, *IEEE Transactions on Circuits and Systems, Part I: Fundamental Theory and Applications*, Vol. 46, No. 2, pp. 226-228, February 1999.

C.A. Mead and M. Ismail eds., Analog VLSI Implementation of Neural Systems; book review in *IEEE Transactions on Neural Networks*, Vol. 4, No. 2, pp. 370-371, March 1993.

News and Views, editorial article in *Nature*, Vol. 354, No. 6354, pp. 501, 19/26 December 1991.

C.A. Mead, Analog VLSI and Neural Systems; book review in *IEEE Transactions on Neural Networks*, Vol. 1, No. 1, pp. 149-150, March 1990; reprinted in *Proceedings of the IEEE*, Vol. 78, No. 11, pp. 1765-1766, November 1990.

Invited Talks:

IEEE CAS Distinguished Lecturer: Bio-inspired Architectures for Cognitive Computing and Applications in Health Care and Personalized Medicine

Porto Alegre, Brazil, IEEE CAS Chapter, March 2016.

San Jose IEEE CAS Chapter, April 2016.

St. John's Newfoundland CA, IEEE CAS Chapter, September 2016.

MIT Lincoln Labs, October 2016.

IEEE Latin American Circuits and Systems Conference, Plenary Talk, Florianopolis, Brazil

Invited speaker at Cognitive Dynamical Systems workshop, Salk Institute, January 2011.

Invited tutorial speaker at IEEE Biomedical Circuits and Systems Conferences (BioCAS2011), Pafos, November 2010

Invited speaker at Kavli workshop on Extreme Green Computing, Tromso, and the Kavli awards ceremony in Oslo, September 2010.

Invited speaker at DARPA workshop on Computational Sensing, Washington, May 2010.

Invited speaker at Kavli workshop on Future Computers-Real Problems, Costa-Rica, January 2009.

Invited speaker at EU FACETS Workshop, Heidelberg, December 2008.

Plenary speaker at 2008 IEEE International Silicon on Insulator Conference, New York, October 2008

Plenary speaker at 2008 Argentine School of Micro-Nanoelectronics, Technology and Applications, Sept. 2008

Plenary speaker at IEEE International Conference Electronic Circuits and Systems, Morocco, December 2007

Plenary speaker at BrainIT2006 Conference, Kitakyushu, Japan, September 2006.

Plenary speaker at Conference Microsystems and Applications, Montreal, Canada, June 2006.

NSF sponsored workshop on Neuromorphic Engineering, Telluride, Colorado, July 2004.

Neuromorphic Engineering Workshop, INI, Zurich, March 2004

IEEE CAS BOG Meeting, San Jose, November 2003

Workshop in Theoretical Neuroscience, Cold Spring Harbor, July 2003

NSF sponsored workshop on Neuromorphic Engineering, Telluride, Colorado, July 2002

IEEE Workshop on High Speed Interconnects within Digital Systems, Santa Fe, May 2002

IEEE Solid State Circuits Conference, System or Circuit Innovation? Panelist, San Francisco, February 2002

IEEE Solid State Circuits Workshop on Low Power Circuits, Washington D.C., October 2001

Summer Symposium on Neural Computation and Neuroinformatics, Trieste, Italy, August 2001

DARPA workshop Silicon on Sapphire CMOS optoelectronics, USC, California, June 2001

NSF sponsored workshop on Neuromorphic Engineering, Telluride, Colorado, July 2000

IEEE ICECS99, Pafos, Cyprus, September 1999.

NSF sponsored workshop on Neuromorphic Engineering, Telluride, Colorado, July 1999

Microneuron99, Granada, Spain, April 1999.

NSF sponsored workshop on Neuromorphic Engineering, Telluride, Colorado, July 1998.

Rank Prize Fund, Windermere, England, October 1997.

First International Workshop on Design of Mixed Mode Integrated Circuits, Cancun, Mexico, July 1997.

NSF sponsored workshop on Neuromorphic Engineering, Telluride, Colorado, June 1997.

1996 JASON summer study group, La Jolla, California, July 1996.

NSF sponsored workshop on Neuromorphic Engineering, Telluride, Colorado, June 1996.

IEEE International Symposium on Circuits and Systems, Atlanta, May 1996.

Workshop on Neuromorphic VLSI -NIPS95-, Vail, Colorado, December 1995.

Workshop on Low Power Analog and Digital VLSI, Taipei, Taiwan, July 1995.

IEEE International Symposium on Circuits and Systems, Seattle, June 1995.

1994 International Conference on Neural Networks, Tampa, Florida, July 1994.

IEEE International Symposium on Circuits and Systems, London, June 1994.

1994 FASEB Research Conference: Visual Processing, Vermont, June 1994.

1993 European Conference on Circuit Theory and Design, Davos, Switzerland, Sept. 1993.

36th Midwest Symposium on Circuits and Systems, Detroit, August 1993.

IEEE International Symposium on Circuits and Systems, Chicago, May 1993.

IIZUKA-92, Fukuoka, Japan, July 1992.

IJCNN-92, Baltimore, June 1992.

IEEE International Symposium on Circuits and Systems, San Diego, May 1992.

Neural Networks for Physicists Workshop, Theoretical Physics Institute, Minnesota, Aug. 1991.

IEEE International Symposium on Circuits and Systems, Singapore, June 1991.

34th Symposium on Circuits and Systems, Monterey, May 1991.

IEEE International Conference on Systems, Man and Cybernetics, Los Angeles, November 1990.

IEEE International Symposium on Circuits and Systems, New Orleans, May 1990.

Colloquia and Seminars:

2010	Irvine Sensors	3D CMOS Microsystems
2008	University of Maryland Baltimore County	3D SOI-CMOS Microsystems
2007	University of Maryland College Park	Microsystems engineering at the interface of biology physics and chemistry (Distinguished Lecturer Series)
	University of Texas Arlington	“”
2006	Tamagawa University (Japan)	Silicon brains in 3D SOI-CMOS
2004	Cornell University	Eyes and Ears for Sensor Networks
	Stanford University	Eyes for Sensor Networks Systems
	University of Cyprus	Sensory microsystems: from nano to micro and macro
2003	Boston University	Sensory microsystems engineering: taking hints from Nature
2002	MIT Lincoln Laboratories	Performance limits of silicon and biological photoreceptors.
	University of Bahia Blanca (Argentina)	Sensory microsystems: from nano to micro and macro. (Distinguished Lecturer Series)
	University of Bogota (Colombia)	“”
	INAOE, Puebla, (Mexico)	“”
2001	Univ. of Maryland College Park	Sensory microsystems engineering: taking hints from Nature
	Tohoku University (Japan)	“”
	University of Barcelona (Spain)	“”
	University of Rio de Janeiro (Brazil)	
	University of Buenos Aires (Argentina)	
2000	University of Notre Dame	Biomimetic microsystems engineering
1999	Boston University	Neuromorphic VLSI for audition and vision
	University of Bahia Blanca (Argentina)	“”
	University of Florianopolis (Brazil)	“”
	Johns Hopkins University	Inaugural Professorial Lecture
1998	Johns Hopkins University APL	Optoelectronic VLSI microsystems
1997	Boston University	Neural models and VLSI architectures
1996	Neuroinformatics Inst. (Zurich)	Silicon retinas for polarization vision
	Univ. California Los Angeles	Vocal tract normalization for ASR
	Univ. Southern California	Neuromorphic sensory microsystems
	University of Nevada Reno	Analog VLSI for sensory communication
	Rockwell-Thousand Oaks	On analog VLSI and neural systems
	MOSIS, ISI	Silicon retinas for visible and infrared
	Carnegie Mellon University	A second generation silicon retina
1995	AT&T Bell Laboratories	Neuromorphic VLSI for sensory systems
	Boston University	A second generation silicon retina
	Hitachi DDC (Japan)	Modeling MOS transistors in subthreshold
	Texas A&M University	Architectures for VLSI speech processing
1994	JHU Physics Department	Computing with neural nets: a retina model
	George Washington University	A second generation silicon retina
	Navy Research Laboratory	“”
	University of Pennsylvania	“”
	University of Pennsylvania	Separation of sources using the HJ network
1993	Medtronic Corporation	Analog VLSI signal processing
	University of Chicago	Analog VLSI and neural systems
1992	National Security Agency	Speech signal separation in analog VLSI
	Villanova University	
	Hitachi DDC (Japan)	Subthreshold techniques for analog VLSI

	Nissan Research Center (Japan)	Signal separation using analog VLSI technology
1991	JHU Biomedical Engineering SUNY at New Paltz	Modeling retinal processing in analog VLSI
	Westinghouse Corporation University of Utah	Vision computation in analog VLSI A silicon model of the retina in aVLSI
1990	IBM Thomas J. Watson Martin Marietta Corporation	Analog VLSI adaptive signal processing Vision computation in analog VLSI
1989	JHU Electrical Engineering University of British Columbia California Institute of Technology	Synthetic sensory systems in analog VLSI Integrated biosensors Hall effect mobility measurements
1987	Imperial College (U.K.)	Hall effect mobility measurements
1986	National Bureau of Standards	Hall effect measurements in GaAs FET's
1985	Landis and Gyr (Switzerland)	Integrated magnetic field sensors

Grants and Contracts:

1988-1994	JHU Applied Physics Laboratory; Independent Research and Development Program, Annual funding approximately \$100,000; Co-PI with R.E. Jenkins.
1990	JHU/APL, MSX S-Band receiver, \$41,390; Co-PI with C.R. Westgate.
1990-1993	National Science Foundation, Research Initiation Award, Fault tolerance in analog VLSI focal plane processors, \$70,000; PI.
1991-1992	Martin Marietta Career Development Award, Signal processing in analog VLSI, \$25,000; PI.
1991-1992	JHU/APL, Pattern classification in analog VLSI, \$79,264; PI.
1992-1993	JHU/APL, RAM design in GaAs technology, \$20,598; PI.
1992-1994	National Security Agency, Analog VLSI techniques for speech analysis, \$106,413; PI with M.H. Goldstein.
1992-1996	National Security Agency, Center for speech processing, \$2,780,238; Co-PI with M.H. Goldstein.
1993	JHU/APL, Analog VLSI research, \$22,092; PI.
1993-1995	Hitachi Ltd./DDC, Contribution for VLSI research program, \$30,000; PI.
1993	National Science Foundation, Research Experience for Undergraduates, \$6,250; PI.
1993-1996	National Science Foundation, Analog computation and VLSI architectures for contraction mappings, \$220,554; PI with F. Pineda (APL).
1993-1994	JHU Homewood/APL Collaborative Research Program, with Marty Fraeman (APL) \$18,500; PI.
1994	Undergraduate Teaching Kenan Award, \$3,000; Co-PI with N. Sheppard.
1994-1995	Martin Marietta Corporation, Algorithms for processing auditory representations, \$50,000; PI.
1995-1999	ARL Microelectronics Research Collaboration Program (MRCP), Quartz microsensor arrays, \$38,482; PI.
1996	Undergraduate Teaching Kenan Award, \$1,740; Co-PI with N. Sheppard.
1994-1997	Nissan Corporation, Contribution for VLSI research program, \$30,000; PI.
1997	Sanders - Lockheed Martin Company, Algorithms for auditory feature reduction, \$50,000; PI with G. Meyer.
1997-1998	National Science Foundation Caltech Center on Neuromorphic Engineering Neuromorphic speech processing, \$40,000; PI.
1997-1998	JHU/APL, Analog VLSI research, \$30,495; PI.
1997	JHU/APL, VLSI chip program, \$8,600; PI.
1995-1999	ARL Microelectronics Research Collaboration Program (MRCP), Optoelectronic VLSI for vision processing, \$236,774; PI with G. Cauwenberghs.
1999	JHU/APL, Novel erasure sensor technology, \$7,000; PI.
1999	JHU/APL, ATD ultra low-power oscillator, \$7,380; PI.
1999-2000	ARL MICRA program; SOS Optoelectronic VLSI, \$73,000; PI
1999-2000	JHU/APL, SOS CMOS Isolation Amplifier, \$25,396; PI
2000	JHU/APL, SOS CMOS Optoelectronic VLSI, \$20,476; PI
1994-1999	Army NVCSD, Smart focal plane arrays, \$338,000; PI with G. Cauwenberghs.
1995-2001	ONR Multidisciplinary University Research Initiative with Boston University, Algorithms and architectures for VLSI neuromorphic systems, \$1,028,444; PI with G. Cauwenberghs.
2000-2001	JHU/APL, MISFET in standard CMOS, \$25,000;
2001-2002	MOSIS UTSi fabrication support through DARPA, approx. \$60,000; PI.
1999-2002	ARL MICRA program; SOS Optoelectronic VLSI, \$118,000; PI
2001-2002	Battelle Research Triangle, Ultra-thin silicon (UTSi) circuits, \$63,635; PI.
2002-2003	JHU undergraduate teaching Kenan grant, \$5,000; PI.
2000-2004	Army NVCSD, Smart focal arrays, \$212,175; PI.
2002-2003	JHU/APL, Silicon on sapphire MEMS, \$42,853; PI.
2000-2004	DARPA, Acoustic microsensors, with University of Maryland, approx. \$230,000 of \$598,723; Co-PI with G. Cauwenberghs and R. Etienne-Cummings.
2001-2004	National Science Foundation, Microscale adaptive optical wavefront correction, approx. \$90,000 of \$300,000; Co-PI with G. Cauwenberghs and R. Etienne-Cummings.
2003-2004	JHU/APL, NASA ATD Program, Isolation amplifier in SOS, \$45,990; PI.
2001-2004	National Science Foundation, A comparative study of information processing in biological and bio-inspired systems: performance criteria, resources tradeoffs and fundamental limits, \$ 400,758; PI.

2002-2005	National Science Foundation, Cell clinics on a chip, with University of Maryland at College Park, approximately \$108,000 of \$ 300,000; Co-PI.
2006-2008	JHU/APL (IRAD), High performance analog circuits in SOS-CMOS, \$47,516; PI.
2003-2005	National Institutes of Health, Integrated electronics for neurotransmitter sensor array, approximately \$60,000 of \$477,152; Co-PI with N. Thakor, G. Cauwenberghs, S. David and P. Passeraub.
2006-2008	Honeywell/BAE consortium (MASINT), Decentralized-fusion, on-demand activation, awareness sensor network, \$74,367; PI. with G. Cauwenberghs
2004-2006	National Science Foundation (DIA), Acoustic target identification and localization, approximately \$160,000 of \$275,904; Co-PI with G. Cauwenberghs, J. West and C. Diehl (APL).
2005-2007	ONR Multidisciplinary University Research Initiative, Modular VLSI communication network architectures for neo-cortical processing, with Boston University, \$298,308; PI.
2004-2007	National Institutes of Health, Contact fluorescence imaging, approximately \$576,534 of \$1,095,495; Co-PI with L. Tung.
2007-2008	WSE/APL Partnership, A Hybrid Chip for Low Power Event-Driven Imaging and Early Vision Processing, \$65, 000 of \$130,000; Co-PI with R. Meitzler and P. Burlina (APL).
2006-2008	Missile Defense Agency, subcontract from JHU/APL, Asynchronous event based imagers \$318,700; PI.
2006-2009	ONR, subcontract from JHU/APL, Optically transduced gyroscope, approximately \$195,000; PI.
2008	JHU/WSE Kenan Grant, \$5,000.
2007-2010	Department of Energy, New energy efficient circuits with organic semiconductors and dielectrics with stored electric fields, approximately \$336,000 of \$676,107; Co-PI with H. Katz (Materials Science).
2009-2010	JHU/WSE, Analog to information converter architectures for radar receivers, \$99,709; PI with Keir C. Lauritzen (JHU/APL).
2009-2010	DARPA subcontract from Irvine Sensors, SmartSCOPES seedling, \$59,000, PI.

Grants and Contracts (active and pending):

2011-2013	Department of Energy, Charging and Polarization of Organic Semiconductors in Energy-Efficient Circuits and Energy Capture Modules: Synthesis, Electronics and Spectroscopy, approximately \$240,000 of \$824,850; Co-PI with H. Katz (Materials Science).
2008-2011	JHU/APL, Chip-scale atomic magnetometer, approximately \$110,000, PI.
2008-2012	NIH subcontract from Naval Academy, CMOS Micro-dosimeter detector and array design, approximately \$180,000; PI.
2008-2013	ONR MURI, approximately \$1.2M for 5 years out of \$7.5M, Co-PI.
2009-2011	NIH subcontract from SOM, Vestibular Implant (ARRA supplement), approximately, \$60,000, Co-PI with Charlie DelaSantina (SOM).

2009-2011	JHU/APL, Flexible Readout Integrated Circuit, ~\$90,125, PI.
2011-2016	NSF IGERT: Very Large-scale Multilingual Human Language Technology: Empirical, Analytical and Computational Foundations, \$3,198,454 (pending).
2011-2015	NASA PIDDP, Chip-scale absolute scalar magnetometer, ~\$250,000, Co-PI with K. Strohbehn and K. Haje, JHU/APL (pending).
2011-2012	ONR, Fluidic lens arrays, ~\$130,000, PI (pending).