

Guest Editorial

Special Issue on ISCAS 2008

WELCOME to this Special Issue, a collection of selected papers presented at the 2008 IEEE International Symposium on Circuits and Systems (ISCAS 2008), held in Seattle, WA, May 18–21, 2008.

The technical quality of ISCAS, the flagship conference of the IEEE Circuits and Systems (CAS) Society, has been steadily increasing since 2004, evidenced in part by a steady decrease in its acceptance rate—which reached 48% in 2007 and 46% in both 2008 and 2009—while the number of delegates, in addition to the speakers, has also been increasing. To acknowledge this positive trend and to make accessible to the whole CAS community the best technical contributions presented at the conference, two different initiatives were launched.

First, two invited contributions by outstanding authors from academia and industry, namely, by Prof. Behzad Razavi (UCLA) and Bryan Casper and Frank O'Mahony (Intel), were prepared based on the extremely successful tutorials they delivered at ISCAS2008. These manuscript were published in the January 2009 issue of the IEEE TRANSACTIONS ON CIRCUITS AND SYSTEMS—I: REGULAR PAPERS (TCAS-I) and were extremely well received by the readership, as proven by the very large numbers of hits on the IEEEExplore site that these papers had in February and March 2009.

Second, the authors of several high-quality technical contributions presented at ISCAS were invited to submit follow-up papers to TCAS-I. The selection was made from a short list of contributions that were most appreciated during the ISCAS review process, as well as those manuscripts that received the Best Student Paper Award. Among the 45 contributions that were invited, 42 were submitted, and at the end of the review process, 20 were accepted to form this current Special Issue. These papers present the latest advancement in the areas of *Analog and Mixed-Mode Circuits and Systems*, *Digital Circuits and Systems* and *VLSI and Circuits and Systems for Communications*.

We are confident that this Special Issue on selected contributions from ISCAS2008 will be highly appreciated by our readership and will become a tradition both for ISCAS and for our journal.

To conclude, we would like to thank all of the authors for their contributions and all of the reviewers for their fast and thorough work which ensured timely publication of the manuscripts.

Happy reading!

ANTHONY CHAN CARUSONE, *Guest Editor*
Edward S. Rogers Sr. Department of Electrical and Computer Engineering
University of Toronto
Toronto, ON M5S 3G4 Canada

YEHEA ISMAIL, *Guest Editor*
Department of Electrical Engineering and Computer Science
School of Engineering and Applied Science
Northwestern University
Evanston, IL 60208-3118 USA

UN-KU MOON, *Guest Editor*
School of Electrical Engineering and Computer Science
Oregon State University
Corvallis, OR 97331-5501 USA

HANSPETER SCHMID, *Guest Editor*
Institute of Microelectronics (IME)
University of Applied Sciences North-Western Switzerland
CH 5210 Windisch, Switzerland

WOUTER A. SERDIJN, *Guest Editor*

Electronics Research Laboratory
Faculty of Electrical Engineering, Mathematics and Computer Science
Delft University of Technology
2628 CD Delft, The Netherlands

GIANLUCA SETTI, *Guest Editor*

Department of Engineering (ENDIF)
University of Ferrara
44100 Ferrara, Italy
Advanced Research Center for Electronic Systems (ARCES)
University of Bologna
40125 Bologna, Italy



Anthony Chan Carusone (S'96–M'02–SM'08) received the B.A.Sc. and Ph.D. degrees from the University of Toronto, Toronto, ON, Canada, in 1997 and 2002 respectively.

Since 2001, he has been with the Department of Electrical and Computer Engineering, University of Toronto, where he is currently an Associate Professor. In 2008, he was a Visiting Researcher with the University of Pavia, Pavia, Italy and later with the Circuits Research Laboratory, Intel Corporation, Hillsboro, OR.

Dr. Carusone is a member and past chair of the Analog Signal Processing Technical Committee for the IEEE Circuits and Systems (CAS) Society, a member and past chair of the Wireline Communications subcommittee of the Custom Integrated Circuits Conference, and an appointed member of both the Administrative Committee of the IEEE Solid-State Circuits Society and the Board of Governors of the IEEE CAS Society. He has served as a Guest Editor for both the IEEE JOURNAL OF SOLID-STATE CIRCUITS and the IEEE TRANSACTIONS ON CIRCUITS AND SYSTEMS—I: REGULAR PAPERS. Since 2006, he has served on the editorial board of the IEEE TRANSACTIONS ON CIRCUITS

AND SYSTEMS—II: EXPRESS BRIEFS, for which he is currently Editor-in-Chief. While at the University of Toronto, he was the recipient of the Governor-General's Silver Medal. As coauthor, he was the recipient of the Best Paper Award at the 2005 Compound Semiconductor Integrated Circuits Symposium and the Best Student Paper Awards at both the 2007 and 2008 Custom Integrated Circuits Conferences.



Yehea Ismail (M'00) was born in Giza, Egypt, on November 16, 1971. He received the B.Sc. degree in electronics and communications engineering (with distinction and honors) and the M.S. degree in electronics (with distinction) from Cairo University, Giza, in 1993 and 1996, respectively, and the M.S. degree in electrical engineering and the Ph.D. degree from the University of Rochester, Rochester, NY, in 1998 and 2000, respectively.

As one of the top students of his class when he completed the B.S. degree, he was appointed a Teacher Assistant with the Department of Electrical and Computer Engineering, Cairo University, in August 1993. He was with IBM Microelectronics from 1997 to 1999. He is currently with the Department of Electrical Engineering and Computer Science, Northwestern University, Evanston, IL. He has coauthored more than 100 technical papers, a book, and several book chapters. His primary research interests include interconnect, noise, innovative circuit simulation, and related circuit-level issues in high-performance VLSI circuits.

Prof. Ismail is the Chair of the IEEE Circuits and Systems (CAS) Society VLSI Technical Committee, is an Associate Editor of the IEEE TRANSACTIONS ON VERY LARGE SCALE INTEGRATION (VLSI) SYSTEMS, was a member of the editorial board of the IEEE TRANSACTIONS ON CIRCUITS AND SYSTEMS—I: FUNDAMENTAL THEORY AND APPLICATIONS, and was a Guest Editor for a Special Issue of the IEEE TRANSACTIONS ON VERY LARGE SCALE INTEGRATION (VLSI) SYSTEMS on "On-Chip Inductance in High Speed Integrated Circuits." He has also chaired several conferences. He was the recipient of the 2002 IEEE CAS Society Outstanding Young Author Award, the National Science Foundation Career Award in 2002, and the Best Teacher Award from the Department of Electrical Engineering and Computer Science, Northwestern University, in 2003.



Un-Ku Moon (S'92–M'94–SM'99–F'09) received the B.S. degree from the University of Washington, Seattle, in 1987, the M.Eng. degree from Cornell University, Ithaca, NY, in 1989, and the Ph.D. degree from the University of Illinois at Urbana-Champaign, Urbana, in 1994.

He has been with the School of Electrical Engineering and Computer Science, Oregon State University, Corvallis, since 1998, where he is currently a Professor. Before joining Oregon State University, he was with Bell Laboratories from 1988 to 1989 and from 1994 to 1998.

Dr. Moon has served as an Associate Editor of the IEEE JOURNAL OF SOLID-STATE CIRCUITS and the IEEE TRANSACTIONS ON CIRCUITS AND SYSTEMS—II: ANALOG AND DIGITAL SIGNAL PROCESSING, as the Editor-in-Chief of the IEEE TRANSACTIONS ON CIRCUITS AND SYSTEMS—II: EXPRESS BRIEFS, and a member on the Technical Program Committee of the IEEE Custom Integrated Circuits Conference. He also served on the IEEE Solid-State Circuits Society (SSCS) Administrative Committee (AdCom) and the IEEE Circuits and Systems Society (CAS-S) Board of Governors (BoG) as the SSCS representative to CAS-S. He currently serves as the Deputy Ed-

itor-in-Chief of the IEEE TRANSACTIONS ON CIRCUITS AND SYSTEMS—II: EXPRESS BRIEFS and on the Technical Program Committee of the IEEE International Solid-State Circuits Conference, the IEEE VLSI Circuits Symposium, and the Analog Signal Processing Technical Committee of the Circuits and Systems Society.



Hanspeter Schmid received the Diploma in electrical engineering, the postgraduate degree in information technologies, and the Doctor of Technical Sciences degree from the Swiss Federal Institute of Technology (ETH Zürich), Switzerland, in 1994, 1999, and 2000, respectively.

He joined the Signal and Information Processing Laboratory, ETH Zürich as a Teaching Assistant in 1994 and became a Research Assistant and Junior Lecturer in the field of analog integrated filters. From 2000 to 2005, he was an Analog-IC designer with Bernafon AG, Switzerland, where he was part of a design team who developed a new IC platform for hearing aids. There, he worked on audio low-noise amplifiers and voltage regulators in particular and on full-system signal integrity in general. He is currently a Research Fellow with the Institute of Microelectronics, University of Applied Sciences Northwestern Switzerland (IME/FHNW) and a Senior Lecturer with ETH Zürich. His main research interests are fast low-power circuits (mainly for sensor electronics), signal integrity in analog signal processing, and sigma-delta conversion.

Dr. Schmid presently is the Chair of the Analog Signal Processing Technical Committee of the IEEE Circuits and Systems (CAS) Society, an Associate Editor of the IEEE TRANSACTIONS ON CIRCUITS AND SYSTEMS—I: REGULAR PAPERS, and the Chair of the Switzerland IEEE Chapter on Circuits and Systems/Electron Devices, and he serves as a reviewer for several journals and conferences.



Wouter A. Serdijn (M'98–SM'08) was born in Zoetermeer ("Sweet Lake City"), The Netherlands, in 1966. He received the M.Sc. and Ph.D. degrees from Delft University of Technology, Delft, The Netherlands, in 1989 and 1994, respectively.

His research interests include low-voltage, ultralow-power, high-frequency, and dynamic-translinear analog integrated circuits along with circuits for RF and UWB wireless communications, cochlear implants, portable, wearable, implantable, and injectable ExG recorders and pacemakers. He is coeditor and coauthor of the books *Ultra Low-Power Biomedical Signal Processing: An Analog Wavelet Filter Approach for Pacemakers* (Springer, 2009), *Circuits and Systems for Future Generations of Wireless Communications* (Springer, 2009), *Power Aware Architecting for Data Dominated Applications* (Springer, 2007), *Adaptive Low-Power Circuits for Wireless Communications* (Springer, 2006), *Research Perspectives on Dynamic Translinear and Log-Domain Circuits* (Kluwer, 2000), *Dynamic Translinear and Log-Domain Circuits* (Kluwer, 1998), and *Low-Voltage Low-Power Analog Integrated Circuits* (Kluwer, 1995). He has authored

and coauthored six book chapters and more than 200 publications and presentations. He teaches analog electronics, analog signal processing, micropower analog IC design, and electronic design techniques.

Dr. Serdijn has served as an Associate Editor for the IEEE TRANSACTIONS ON CIRCUITS AND SYSTEMS—I: REGULAR PAPERS (2004–2005) and the IEEE TRANSACTIONS ON CIRCUITS AND SYSTEMS—II: EXPRESS BRIEFS (2002–2003; 2006–2007), as tutorial session cochair for ISCAS2003, as Analog Signal Processing Track Co-Chair for ISCAS2004 and ISCAS2005, as chair of the Analog Signal Processing Technical Committee of the IEEE Circuits and Systems (CAS) Society, as Analog Signal Processing Track Co-Chair for ICECS2004, as Technical Program Committee member for the 2004 International Workshop on Biomedical Circuits and Systems, as International Program Committee member for IASTED CSS2005 and CSS2006, as Technical Program

Committee member for APCCAS2006, as Technical Program Committee member for the IEEE Biomedical Circuits and Systems Conference (BioCAS2006, BioCAS2007 and BioCAS2008), as Special-Session Co-Chair for ISCAS2007, and as a member of the CAS Long Term Strategy Committee and currently serves as a member of the Board of Governors (BoG) of the CAS Society (second term), a member of the Conference Division of the CAS BoG, as Deputy Editor-in-Chief for the IEEE TRANSACTIONS ON CIRCUITS AND SYSTEMS—I: REGULAR PAPERS, as International Program Committee member of the 2009 International Conference on Biomedical Electronics and Devices, and as Special Session Co-Chair for ISCAS2009. Recently, he was elected the Special Session Co-Chair for ICECS2009, Technical Program Committee member for ICUWB2009 and Technical Program Chair for ISCAS2010. He was the recipient of the Electrical Engineering Best Teacher Award in 2001 and 2004.



Gianluca Setti (S'89–M'91–SM'02–F'06) received the Dr.Eng. degree (with honors) in electronic engineering and the Ph.D. degree in electronic engineering and computer science from the University of Bologna, Bologna, in 1992 and in 1997, respectively, for his contribution to the study of neural networks and chaotic systems.

From May 1994 to July 1995, he was with the Laboratory of Nonlinear Systems (LANOS), Swiss Federal Institute of Technology (EPFL), Lausanne, Switzerland, as a Visiting Researcher. Since 1997, he has been with the School of Engineering, University of Ferrara, Ferrara, Italy, where he is currently a Professor of Circuit Theory and Analog Electronics. He has held several visiting positions, including Visiting Professor/Scientist, with EPFL (2002, 2005), the University of California at San Diego (2004), IBM T. J. Watson Laboratories (2004, 2007), and the University of Washington, Seattle (2008), and he is a permanent faculty member of ARCES, University of Bologna. His research interests include nonlinear circuits, recurrent neural networks, implementation and application of chaotic circuits and systems, statistical signal processing, electromagnetic compat-

ibility, wireless communications, and sensor networks. He is coeditor of the book *Chaotic Electronics in Telecommunications* (CRC, 2000) and *Circuits and Systems for Future Generation of Wireless Communications* (Springer, 2009).

Dr. Setti was the recipient of the 1998 Caianiello Prize for the best Italian Ph.D. dissertation on neural networks, and he was corecipient of the 2004 IEEE Circuits and Systems (CAS) Society Darlington Award, as well as the Best Paper Award at ECCTD2005 and the Best Student Paper Award at EMCZurich2005. He served as an Associate Editor for the IEEE TRANSACTIONS ON CIRCUITS AND SYSTEMS—II: ANALOG AND DIGITAL SIGNAL PROCESSING (1999–2002 and 2002–2004) and for the IEEE TRANSACTIONS ON CIRCUITS AND SYSTEMS—II: EXPRESS BRIEFS (2004–2006), the Deputy Editor-in-Chief for the *IEEE Circuits and Systems Magazine* (2004–2007), and as the Editor-in-Chief for the IEEE TRANSACTIONS ON CIRCUITS AND SYSTEMS—II: EXPRESS BRIEFS (2006–2007). Since January 2008, he has also been serving as the Editor-in-Chief for the IEEE TRANSACTIONS ON CIRCUITS AND SYSTEMS—I: REGULAR PAPERS. He was the 2004 Chair of the Technical Committee on Nonlinear Circuits and Systems of the IEEE CAS Society, a Distinguished Lecturer (2004–2005), and a member of the Board of Governors (2005–2008) and is currently serving as the 2009 President-Elect of the same society. He was also the Technical Program Co-Chair of NDES2000 (Catania) the Track Chair for Nonlinear Circuits and Systems of ISCAS2004 (Vancouver), the Special Sessions Co-Chair of ISCAS2005 (Kobe) and ISCAS2006 (Kos), the Technical Program Co-Chair of ISCAS2007 (New Orleans) and ISCAS2008 (Seattle), as well as the General Co-Chair of NOLTA2006 (Bologna). He was also one of the guest editors of the May 2002 special issue of the PROCEEDINGS OF THE IEEE on “Applications of Nonlinear Dynamics to Electronic and Information Engineering.”