Analog Integr Circ Sig Process (2016) 89:641–643
DOI 10.1007/s10470-016-0849-3

GUEST EDITORIAL

Introduction to the special issue on selected papers from the ELECO'2015 conference

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Received: 20 August 2016 / Accepted: 25 August 2016 / Published online: 7 September 2016

Welcome to the Special Issue on Selected Papers from the ELECO 2015 Conference!, the ninth International Conference on Electrical and Electronics Engineering, held 26–28 November 2015, in Bursa-Turkey.

ELECO conferences go back to 1986, when it was initially organized as national ELMEKSEM Electromechanical Conference by the Chamber of Electrical Engineers (EMO) Bursa Branch and upon that success repeated in 1988 and 1993 and 1997. The Bursa Branch has further gone on to organize a series of Electrical and Electronics Engineering Conferences in Bursa. ELECO conferences are organized at international level in odd numbered years and as national conferences in even numbered years, such as ELECO 2015 is the ninth international conference which participants coming from various countries, presenting papers from the wide spectrum of electrical and electronics engineering.

ELECO 2015 is jointly organized by Istanbul Technical University (ITU), Istanbul; Uludag University, Bursa; and the Chamber of Turkish Electrical Engineers (EMO) Bursa Branch. The IEEE Region 8, IEEE Circuits and Systems (CAS) Turkey Section and The Scientific and Technological Research Council of Turkey are co-sponsors of ELECO 2015. We are grateful to them for their contributions.

Taking the broad scope of the technical program, it is probably the largest electrical and electronics engineering conference ever held in Turkey. The scope of the conference covers topics ranging over electric power systems, electrical machines and drives, power electronics, high voltage techniques, electrical materials, electronics, circuits and systems, signal processing, electromagnetics, antennas and propagation, microwave theory, communication systems, mechatronics, control theory, control applications, automation systems, robotics and intelligent control systems.

235 papers have been submitted for presentation and 138 papers have been accepted. If we look at the contributions with respect to geographical point of view, it is seen that ELECO 2015 contributions are coming from 17 different countries.

Selected papers from previous international ELECO Conferences were invited to be published in extended form in special ELECO issues of international journals, under peer review. Four special ELECO issues appeared in the journal Analog Integrated Circuits and Signal Processing containing selected papers from ELECO 2001, ELECO 2007, ELECO 2011 and ELECO 2013. Furthermore, four special ELECO issues appeared in the journal TJEECS: Turkish Journal of Electrical Engineering and Computer Sciences where selected papers from ELECO 2003, 2005, 2007 and 2009 were published in extended form, respectively.

This Special Issue on Selected Papers from ELECO 2015 contains extended versions of fifteen papers presented at the conference, chosen among twenty-one recipients of the call for the papers for this special issue. All papers had to undergo the usual ALOG review process before they were finally accepted for this special issue.

The paper by Atilla Uygur, Bilgin Metin, H. Hakan Kuntman, Oguzhan Cicekoglu entitled "Current Mode MOSFET-only third order Butterworth low pass filter with

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DTMOS tuning technique" was presented in ELECO 2015 conference. In the extended version, the authors present an active-only filter configuration which provides a dynamic threshold voltage MOS (DTMOS) based tuning capability.

In the paper entitled "Electronically tunable memristor emulator circuit", by Hasan Sözen, Uğur Çam, a memristor emulator circuit which is built with off-the-shelf electronic devices is presented. The proper operation of the circuit is verified via experimental test results.

The paper by Çağatay Aydın, Doğu Çağdaş Atilla, Ramazan Köprü, Sedat Kılınç, Cahit Karakuş, Sıddık Yarman, entitled "A design technique of 50 Ω terminated bandpass matching network and its implementation to a Y-shaped monopole antenna matching" presents a procedure for the design of a transformerless bandpass matching network. The procedure relies on the 'Real Frequency Direct Computational Technique' and an implementation example illustrating its usefulness is provided in the paper.

The paper by Ersin Alaybeyoğlu, H. Hakan Kuntman entitled "CMOS implementations of VDTA based frequency agile filters for encrypted communications" presents a new VDTA topology. The application of VDTA to an effective communication system realization is also provided.

The paper by Jawdat Y. Abu-Taha, Metin Yazgı entitled "Improving the bandwidth of the transimpedance amplifier based on CS stages in cascode configuration using impedance matching techniques" proposes a matching technique to improve the bandwidth of multi-GHz frequency range transimpedance amplifier.

In the paper entitled "A new frequency agile filter structure employing CDTA for positioning systems and secure communications" by Ersin Alaybeyoğlu, H. Hakan Kuntman, a new CDTA topology and its application to the realization of frequency agile filter are presented.

The paper by Jan Jerabek, Roman Sotner, Norbert Herencsar, Josef Polak, Jan Dvorak, Jaroslav Koton entitled "Dual-parameter control of the pole frequency in case of universal filter with MCDU elements" presents a general active component, Modified Current Differencing Unit and illustrates its usefulness in the realization of filters with extended tuning range.

In the paper by Şuayb Çağrı Yener, Atilla Uygur, H. Hakan Kuntman entitled "Ultra low-voltage ultra low-power memristor based band-pass filter design and its application to EEG signal processing", the authors present ultra low-voltage, ultra low-power DTMOS-based memristor circuit.

The paper by Hadi Ghasemzadeh Momen, Metin Yazgi, Ramazan Kopru and Ali Naderi Saatlo entitled "Design of a new low loss fully CMOS tunable floating active inductor" proposes a new tunable floating active inductor based on a modified tunable grounded active inductor. The regulated cascade stage used in the structure allows reduction in the parasitic series resistance of the active inductor, thus significant Q-factor enhancement is achieved.

The paper by Hacer Yıldız, Ali Toker, Selcuk Kılınç, Serdar Özoğuz entitled "Low frequency active only filters with small chip area" presents two techniques which lead to a substantial reduction in the chip area occupied by the active-only filters.

In the paper by Özgür Erdener, Serdar Özoğuz entitled "A new neuron and synapse model suitable for low power VLSI implementation", a modified neuron model for low power and compact VLSI implementation is presented. Owing to the model and using subthreshold CMOS design techniques, effective low-power CMOS neuron and synapse circuits are obtained. The feasibilities of the circuits are verified in the paper.

The paper entitled "DC-gain enhanced folded cascode Op-amp using a new positive feedback method" by Majid E. Farsani and Noushin Ghaderi, presents a new operational amplifier topology with improved open-loop gain owing to the use of local positive feedback.

The paper by Aslihan Kartci, Roman Sotner, Jan Jerabek, Norbert Herencsar, Jiri Petrzela entitled "Phase shift keying modulator design employing electronically controllable all-pass sections" presents two techniques for the realization of phase shift keying modulator circuits. Both techniques use the available delays in oscillators built around the first-order all-pass sections; hence allow simpler implementations.

In the paper submitted by Cem Göknar, Merih Yıldız, Shahram Minaei entitled "Metamutator applications: a quadrature MOS only oscillator and transconductance/transimpedance amplifiers", a CMOS implementation of a recently introduced building block, i.e. metamutator- a versatile mutative 4-port is presented. In this paper, a quadrature MOS only oscillator and a transconductance/transimpedance amplifier built around this building block which illustrates the versatility of the metamutator are presented.

The paper by Noushin Ghaderin, Zahra Dorost Ghol and Sayedeh Rahil Fatemi, entitled "A CMOS 7 Gb/s, 4-PAM and 4-PWM, serial link transceiver" proposes a new multilevel of amplitude and pulse width modulation structure for a 7 Gb/s serial link transceiver built on a 0.18 μm CMOS process.

The guest editors are thankful to Editor-in-Chief, Prof. Mohammed Ismail, for his encouragement and strong support during the preparation of the special issue.

We also thank to the staff at the Journal Editorial Office for their assistance in producing this volume. We hope you very much enjoy reading this special ELECO'2015 issue of Analog Integrated Circuits and Signal Processing.

Prof. Serdar Ozoguz was born in Istanbul, Turkey. He received his B.Sc. and M.Sc. in Electronics Engineering from Istanbul Technical University in 1991, 1993 and 2000 respectively. Since 2009, he is working as a full professor in Istanbul Technical University. He is currently a full professor in electronics, teaching graduate and undergraduate courses. He is also the co-author of 150 papers published in scientific reviews or conference proceedings. His research interests include analog circuit design, chaotic circuits and chaos applications.

Prof. Oguzhan Cicekoglu received the B.Sc. and M.Sc. degrees from Bogazici University and the Ph.D. degree from Istanbul Technical University all in Electrical and Electronics Engineering in 1985, 1988 and 1996 respectively. He served as lecturer at the School of Advanced Vocational Studies Electronics Prog. of Bogazici University where he held various administrative positions between 1993 and 1999. He has also given lectures at the Turkish Air Force Academy. He was with the Biomedical Engineering Institute of the Bogazici University between 1999 and 2001. Then he joined the Electrical and Electronics Engineering Department of the same University where he later became a full professor. Between 2007 and 2010 he was the Dean of Engineering at Corlu Engineering Faculty of Namik Kemal University, Turkey. During his period, four new undergraduate programs and several M.Sc. level programs are started. After returning to Bogazici University for a period, he serves now since May 2013 as the Dean of Engineering Faculty at Turkish-German University located in Istanbul. Oguzhan Cicekoglu served in organizing and technical committees of many national and international conferences. He was the guest co-editor of three previous Special Issues of the Analog Integrated Circuits and Signal Processing Journal. One of the publications he co-authored in IEEE Transactions on Circuits and Sytems II-Analog and Digital Signal Processing is among the top cited papers listed in IEEE Circuits and Systems Society web page. He received the Research Excellence Award of Bogazici University Foundation in 2004. He served as the co-chair of Amplifiers and Comparators track in 50th IEEE Midwest-Newcas Joint Conference which is held in Montreal-Canada as a track chair in the 52th IEEE Midwest Symposium held in Cancun-Mexico. His current research interests include analog circuits, active filters, analog signal processing applications and current-mode circuits. He is the author or co-author of about 150 papers published in scientific journals or conference proceedings and conducts review in numerous journals including Analog Integrated Circuits and Signal Processing, IEEE CAS-I, IEEE CAS-II, International Journal of Electronics, International Journal of Circuit Theory and Applications, IEE Proceedings Pt.G, ETRI Journal and several others. Oguzhan Cicekoglu is a member of the IEEE and is the Associate Editor of International Journal of Electronics.

Prof. H. Hakan Kuntman received his B.Sc., M.Sc. and Ph.D. degrees from Istanbul Technical University in 1974, 1977 and 1982, respectively. In 1974 he joined the Electronics and Communication Engineering Department of Istanbul Technical University. Since 1993 he is a professor of electronics in the same department. His research interest includes design of electronic circuits, modeling of electron devices and electronic systems, active filters, design of analog IC topologies. Dr. Kuntman has authored many publications on modelling and simulation of electron devices and electronic circuits for computer-aided design, analog VLSI design and active circuit design. He is the author or the co-author of 115 journal papers published or accepted for publishing in international journals, 170 conference papers presented or accepted for presentation in international conferences, 158 Turkish conference papers presented in national conferences and 10 books related to the above mentioned areas. Furthermore he advised and completed the work of 14 Ph.D. students and 43 M.Sc students. Dr. Kuntman is a member of the Chamber of Turkish Electrical Engineers (EMO).