Editorial

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Biographical notes: Bratislav D. Milovanović received his Diploma thesis and PhD in Telecommunications from University of Niš, Faculty of Electronic Engineering, 1972 and 1979, respectively. He is currently Professor at the Department of Telecommunications, University of Niš, Faculty of Electronic Engineering. His current research focuses on numerical electromagnetics, microwave technique, antennas and propagation EM waves and neural networks. He published over 500 scientific papers in scientific journals and conference proceedings. He is general chairman of international IEEE TELSIKS conference and co-chairman of ICEST conference.

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It is our great pleasure to present a special issue of *International Journal of Reasoning-based Intelligent Systems* dedicated to the *XLVI International Scientific Conference on Information, Communication and Energy Systems and Technologies – ICEST 2011*. According to the research areas covered by the presented papers, the title of this special issue is *Progress in Information, Communication and Energy Systems*.

ICEST 2011 conference was held from 29 June to 1 July 2011, at the Faculty of Electronic Engineering, University of Niš, Serbia. The conference is, for the tenth time, jointly organised by the Faculty of Electronic Engineering, Niš, Serbia; the Faculty of Telecommunications, Sofia, Bulgaria, and the Faculty of Technical Sciences, Bitola, Macedonia. This is the fourth time that this big Balkan event took place in Niš. As in the previous ICEST conferences, many authors from institutions all over the Europe submitted their papers. This year, 270 papers have been accepted for oral (142 papers) or poster (128 papers) presentation within the conference sessions.

In this issue, there are 11 scientific papers. These papers are extended versions of 11 papers that the ICEST Technical Program Committee chose among a large number of high-quality papers presented at ICEST 2011 Conference.

The first three papers in this issue are in the field of signal processing. The first paper, whose authors are Rumen P. Mironov and Roumen K. Kountchev from Technical University of Sofia, Bulgaria, is devoted to applications of Complex Hadamard Transform in the area of multi-dimensional digital signal processing. A new method for audio watermarking in the phase spectrum of audio signals and new method for spectrum optimisation of truncated orthogonal transforms are presented. The authors of the second paper are Vlastimir Pavlović from University of Niš, Serbia, Maja Lutovac and Miroslav Lutovac from State University of Novi Pazar, Serbia. This paper presents the automated design of active RC and programmable filters based on approximating function which is derived using Legendre orthogonal polynomial. In the third paper an efficient approach for direct counting of polynomial coefficients of rational scattering parameter functions in the z-domain for planar microstrip structure utilising opened and short-circuited stubs is described. The author of this paper, Biljana Stošić from University of Niš, Serbia, has used wave digital networks in this efficient approach.

The second group of following three papers is from the field of electronics. The first paper, whose authors are Goran Jovanović, Mile Stojčev and Tatjana Nikolić from University

of Niš, Serbia, presents relatively simple and low-cost programmable jitter generator which can be used for jitter tolerance test and jitter transfer function measurement in communication systems. This jitter generator is implemented using digital circuits based on chip from FPGA family, and appropriate software. The authors of the next paper in the group, Bojan Jovanović and Milun Jevtić from University of Niš, Serbia, present some widely used techniques for static and dynamic power minimisation in modern VLSI circuits. Along with the overview of power minimisation techniques, as an example, the circuit of binary divider was introduced and implemented in various families FPGAs to demonstrate technological influence as well as placement and routing influence on total power consumption. The research team with the Technical University of Sofia, Bulgaria Georgi Kunov, Elissaveta Gadjeva and Deyan Zhelev wrote the last paper in this group that refers to the efficient conversion of solar energy in electrical energy using photovoltaic panels. In this paper, boost converter system working at hysteresis MPPT (maximum power point tracking mode) of operation is proposed. A computer model of this system is developed and simulated.

The next two papers contain research results from field of telecommunications. Bojan Bakmaz and Miodrag Bakmaz from University of Belgrade, Serbia, wrote the first paper in the group that deals with problems of traffic parameters analytical determination in the systems with overflow traffic which have the possibility of changing serving intensity. This paper investigates specific traffic model with two Poisson traffics in primary group, whereupon the rejected calls of one of them are directed to the alternative group channels with ordered selecting. Case of two channels in secondary group is analysed and comparison to the model with unique serving intensity in alternative group is carried out. The authors of the second paper, Marija Miljić and Zoran Stanković, from University of Niš, Serbia, Ivan Milovanović from University of Niš, Serbia, and Aleksandar Nešić from IMTEL Institute, Belgrade, Serbia, present a novel efficient procedure for printed pentagonal dipole modelling based on artificial neural networks. A software module based on multilayer perceptron network is design to fast calculate pentagonal dipole resonant frequency versus its dimension and substrate dielectric constant.

The ninth paper in this issue is devoted to the applications of mathematical tools such as convolution and related operators of correlation and autocorrelation in realisation of powerful computer systems. The authors of this paper, Dušan Gajić, Radomir Stanković and Miloš Radmanović from University of Niš, Serbia, present method for computing the dyadic correlation and autocorrelation functions on graphics processing units. The proposed algorithms are based on the convolution and the Wiener-Khinchin theorems and implemented using the Open Computing Language.

The last two papers are in the field of power transmission and distribution system. The research team from University of Niš, Serbia, Lidija Korunović, Marko Vucković, Miodrag Stojanović and Dragan Tasić, present some typical daily load curves formed by averaging data collected by the system for remote energy meter reading in time period longer than two years. Data from nearly 7000 energy meters at low voltage consumers are processed, statistically reliable daily load curves are obtained and their characteristics are listed. The last paper in this issue, whose authors are Krum Gerasimov, Yulian Rangelov, Konstantin Gerasimov and Yoncho Kamenov from Technical University of Varna, Bulgaria, proposes a methodology for calculation of optimal settings of the system stabilisers type PSS2A which is the most widely used type of stabiliser in the electric power system (EPS) of Bulgaria. Proposed methodology differs from the other well-known in that it includes also setting the input and torsional filters and that the optimality criterion is based on H_∞-norm as a generalised assessment of the quality of transient processes in the whole EPS.

We would like to thank to all authors of the papers published in this special issue. We also like to thank ICEST 2011 sessions chairs and members of ICEST Technical Program Committee (TPC) who had a difficult task to make appropriate selection of ICEST papers for this special issue. Finally, we are convinced that the scientific results presented in these papers will help the readers of this journal, especially young researchers, in the successful implementation of the new idea in their investigations and also to motivate them to write high-quality papers which will be published in future *IJRIS* issues.