Preface

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Biographical notes: Bratislav D. Milovanović received the Dipl.-Ing., MSc, and PhD degrees from the University of Niš, Serbia, in 1972, 1975 and 1979, respectively. He was promoted to full Professor in 1990. He was the Dean of the Faculty of Electronic Engineering from 1994 to 1998. His research interests include microwaves, computational electromagnetics and neural networks. He has published over 500 scientific papers in scientific journals and conference proceedings. He is general chairman of the TELSIKS conference, a full member of the Academy of Engineering Sciences of Serbia, a president of the National MTT Society and president of the IEEE MTT Chapter of Serbia and Montenegro.

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It is our great pleasure to present a special issue of the *International Journal of Reasoning-based Intelligent Systems* dedicated to the *Jubilee International Conference on Telecommunications in Modern Satellite, Cable and Broadcasting Services* – TELSIKS 2011.

The TELSIKS conference is a highly competent scientific and professional biennial meeting which offers engineers, researchers and scientists a good opportunity to present their recent achievements in the field of modern telecommunications and related fields. This Conference was founded by Professor Bratislav Milovanović, and the first TELSIKS conference was held 19 years ago (October 1993). Today, TELSIKS is a leading scientific conference in the field of modern telecommunications in Central and Southeastern Europe.

The Jubilee 10th TELSIKS 2011 conference was held from 5 to 8 October 2011, at the Faculty of Electronic Engineering, University of Niš, Serbia. The Conference was organised jointly by the Faculty of Electronic Engineering Niš and the National Society for Microwave Technique, Technologies and Systems, Serbia. TELSIKS 2011 was organised under the technical co-sponsorship of the IEEE Microwave Theory and Technique Society (MTT-S), the IEEE Antennas and Propagation Society (AP-S) and IEEE Region 8. As in previous TELSIKS Conferences, many authors from institutions all over the world submitted papers. This year, 162 papers were accepted for oral (103 papers) or poster (59 papers) presentation within the conference sessions.

This special issue is composed of 8 scientific papers. These papers are extended versions of 8 papers that the TELSIKS Technical Program Committee chose from a large number of high-quality papers presented at the TELSIKS 2011 Conference.

The first three papers in this issue are in the field of signal processing. The authors of the first paper, Ljiljana Milić from the University of Belgrade, Serbia, Miroslav Lutovac from Singidunum University, Serbia, and Jelena Ćertić from the University of Belgrade, Serbia, propose a novel approach for constructing the first-order differentiator. The novelty of this paper is the usage of an approximately linear-phase IIR half-band filter, based on the parallel connection of an all-pass sub-filter and pure delay. The proposed design approach provides computational savings and exhibits a significantly smaller overall delay compared with the corresponding solution based on FIR filters only. In the second paper, a research team from the University of Belgrade – Ana Gavrovska, Milorad Paskaš, Vladimir Kovačević and Irini Reljin – sought to develop an algorithm for providing better insight into renal scintigraphy scans using sparse transforms such as the discrete wavelet transform and isocontours, with the ultimate aim of better

supporting clinical decision during the evaluation process of renal lesions and parenchym damage like renal scars. An approach for improving renal 99mTc-DMSA (Technetium-99m Dimercaptosuccinic acid) scan analysis and regions of interest is presented from the aspect of visual inspection and relevant morphology information retrieval. In the third paper, effects of noise and distortion in measurement of room impulse response by a swept sine technique are investigated, with an emphasis on the reduction of negative effects of transient noise. The authors of this paper - Dejan Ćirić from the University of Niš, Serbia, Aleksandar Pantić from Knauf Insulation d.o.o., Serbia, and Dragana Radulović from the University of Niš, Serbia, propose and analyse several procedures for transient noise effect reduction.

The second group of three papers contain research results from the field of information systems and Web technologies. The authors of the first paper – Marko Dimitrijević from the University of Niš, Serbia, Jelena Milojković from the University of Niš, Serbia, Slobodan Bojanić from Universidad Politecnica de Madrid, Spain, Octavio Nieto-Taladriz from Universidad Politecnica de Madrid, Spain and Vančo Litovski from the University of Niš, Serbia – have made an attempt to summarise the state of the art in the interaction between ICT that has become ubiquitous and electrical power production and distribution. These authors have tried to merge their own results (LEDA laboratory of the University of Niš) with ones available in the literature in order to give as complete a picture of the subject as possible. The second paper, whose authors are Natalija Stojanović and Dragan Stojanović from the University of Niš, Serbia, is devoted to applications of high-performance computing (HPC) techniques in processing of geospatial data in GIS (Geographic Information Systems). The authors of this paper evaluate two parallel/distributed architectures and programming models: MPI (Message Passing Interface) over a network of workstations (NoW) and CUDA (Compute Unified Device Architecture) on a GPU in well-known problems in GIS: map matching and slope computations. The last paper in this group presents a systematic approach to mobile telemetry and ubiquitous access to measurement data. The authors of this paper – Ivaylo Atanasov and Evelina Pencheva from the Technical University of Sofia, Bulgaria – suggest a scalable functional architecture for mobile telemetry and secured open service access to datasets. Their focus is on identification of generic functions of mobile telemetry and abstraction in the form of Application Programming Interfaces.

The last two papers in this special issue are in the filed of telecommunications. Milan Simić from RMIT University, Australia, in the penultimate article, deals with the design of new efficient code that maximises channel utilisation. In this paper, comprehensive (d,k) sequences are presented, complemented with the design of a new, efficient, Run Length Limited (RLL) code. Proposed coding techniques have a better efficiency than many other currently used codes for high density optical recording and transmission. The last paper in this issue – whose authors are Tijana Dimitrijević, Jugoslav Joković and Bratislav Milovanović from the University of Niš, Serbia – explores the effectiveness of the TLM method based on a cylindrical grid for the purpose of analysing a cavity with circular cross-section and coaxial load. In order to consider the advantages of the cylindrical over rectangular TLM grid, a coaxial inner load with different dielectric properties and dimensions has been used. Obtained numerical results have been verified and compared with corresponding analytic and measured results.

We would like to thank all authors of the papers published in this special issue. We would also like to thank the TELSIKS 2011 session chairs and members of the TELSIKS Technical Program Committee (TPC) who had a difficult task in making an appropriate selection of TELSIKS papers for this special issue. Finally, we believe that the papers published in this issue will attract the attention of a wide reading audience of *IJRIS* journal and motivate researchers, especially young ones, to investigate new ideas and present their results in future *IJRIS* issues.