

Guest Editorial: Special Issue on Signal Processing – Selected Papers from the TSP 2010 Conference

Dear readers,

It affords us great pleasure to introduce you to the collection of papers submitted by young scientists and Ph.D. students for the 33rd International Conference on Telecommunication and Signal Processing held on 17-20 August, 2010, in Baden near Vienna, Austria. The aim of this annual conference is to bring together both novice and experienced scientists and developers from different branches of telecommunication technology and signal processing, to establish new contacts, find new colleagues and collect new ideas from the fields of their interest. If we look at the contributions from the geographical point of view, we can see that they were submitted by researchers and academics from 13 different countries on three continents. The growing number of submitted papers and attendance assures us that in spite of the huge number of conferences in this area such a support for young academics, researchers and developers is still required and provides significant competitive advantages. The broad-ranged topics of the TSP 2010 covered network technologies, telecommunication systems, network services, analog and digital signal processing, audio, speech and language processing, biomedical signal processing, image and video signal processing, and teaching methods at universities. From the 105 papers accepted for presentation at the conference and published in the Proceedings, 12 papers focusing on different aspects of signal processing had been selected for this Special Issue, and the corresponding authors were invited to submit an extended version of their article. We have received 10 papers and after a careful assessment by international reviewers, 6 extended papers have been accepted for publishing in this Special Issue.

The first two papers are devoted to first-order voltage-mode (VM) all-pass filters (APFs) that feature high-input and low-output impedances, which are desired for easy cascading in VM operations. The first paper, written by *M. A. Ibrahim et al.* presents two filters with variable gain using a single or two differential difference current conveyors. The main advantage of the second filter proposed is that it can provide a very high gain without requiring large spread values for the resistances. In addition, two oscillator circuits with a minimum number of active and passive elements are given in order to demonstrate the feasibility of proposed APFs. In the second paper, *Herencsar et al.* compare two novel realizations of VM APFs composed of a single universal voltage conveyor (UVC), single capacitor, and two grounded resistors. The NMOS transistor-based realization of the electronic resistor with symmetrical power supplies ensures easy electronic tuning of the circuits presented. Moreover, the filter structures proposed provide both inverting and non-inverting outputs at the same configuration simultaneously due to a unique internal structure of the UVC.

The third paper, presented by *Koton et al.*, deals with new versatile precision full-wave rectifiers of minimal configuration using current and/or voltage conveyors and two diodes. To analyze the behavior of the functional blocks, the frequency-dependent RMS error and DC transient values are evaluated for different input voltage amplitudes. Experimental results showed that the feasibility of the conveyor based rectifiers is superior to the corresponding opamp based topology.

The fourth paper, written by *Kubankova and Kubanek*, describes a new method of modulation classification, which is based on a decision-theory approach and spectrum analysis. This approach differs from the previously published ones mainly in the higher number of recognizable modulations, in requiring no knowledge of the parameters of the signal received, and in functionality under low SNR.

In the fifth paper, *Aydemir and Kayikcioglu* propose a method for improving the speed and classification accuracy of BCI electrocorticogram signal for distinguishing tongue/finger imagery movements. The approach presented was successfully applied to the BCI Competition 2005 Data Set I and achieved a classification accuracy of 94 % on the test data. Moreover, the algorithm yielded the best performance compared to those of other studies which were used with the same data set.

The last paper, written by *Burget et al.*, deals with the detection of emotions and identification of a dominant emotion in short text messages written in Czech. Headlines were extracted from Czech newspapers and Fear, Joy, Anger, Disgust, Sadness, and Surprise emotions were detected. Several learning algorithms were assessed and compared according to their accuracy of emotion detection and classification of news headlines. The best results were achieved using the Support Vector Machine method with a linear kernel, where the presence of the dominant emotion or emotions was analyzed.

We hope that you - readers - will find the above mentioned papers interesting, inspiring and motivating for further research. Please enjoy the time spent during the reading. Finally, we would like to thank all the anonymous reviewers who spent much of their precious time reviewing the papers. Their timely reviews and comments greatly helped us in selecting of the best papers for this Special Issue. We also thank all authors who have submitted their papers for this issue. Special thanks go to the Editor-In-Chief, Assoc. Prof. Tomas Kratochvil, for his valuable support and for his assistance in the preparation of this volume. Thanks.

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