Editorial

D.A. Karras

Department of Automation,
Chalkis Institute of Technology,
Chalkis, Greece
E-mail: dakarras@teihal.gr
E-mail: dakarras@ieee.org

G.C. Giakos

Department of Electrical and Computer Engineering,
The University of Akron,
Akron, OH 44333, USA
E-mail: giakos@msn.com
E-mail: giakos@uakron.edu

Biographical notes: Dimitrios A. Karras received his Diploma and MSc Degree in Electrical Engineering from the National Technical University of Athens (NTUA), Greece in 1985 and a PhD Degree in Electrical and Computer Engineering, from the NTUA in 1995, with honours. Since 2004 he has been with the Chalkis Institute of Technology, Automation Department, Greece as Professor in Digital Systems and Signal Processing as well as with the Hellenic Open University as Visiting Professor in Communication Systems. He has published more than 50 journal papers in pattern recognition, image/signal processing, neural networks and bioinformatics and more than 140 research papers in international conferences. His research interests span pattern recognition and neural networks, image and signal processing and systems, biomedical systems, communications, networking and security. He has served as program committee member, program and general chair in many international workshops and conferences in signal, image and automation systems. He is Editor-in-Chief of the *International Journal of SISE*.

George C. Giakos is a Faculty in the Department of Electrical and Computer Engineering, and Biomedical Engineering, at the University of Akron, OH, USA. In addition, he is the Director of Imaging Technologies and Surveillance Technologies, Molecular Nanophotonics, and Applied Nanosciences Laboratories. His research is articulated in the design of imaging systems, ladars and surveillance sensor platforms for the Department of Defense and Homeland Security, multispectral polarimetry, exploration of molecular pathways and signatures for early detection of disease. His research group was the first in the USA to pioneer the characterisation of the detection and imaging characteristics of Cadmium Zinc Telluride for flat-panel radiography applications. His research has been rewarded with fifteen (15) US Patents and more than 150 peer-review articles. He is the recipient of a Distinguished Faculty Fellow Award, from the Office of Naval Research. He received numerous prestigious research awards from AFRL, NRL, and NASA.

The issue 4, V2, 2009 of the *International Journal of Signal and Imaging Systems Engineering* (IJSISE) covers significant issues in the design and implementation of signal and image processing systems but also, in systems modelling based on control systems techniques. It contains seven interesting regular papers.

The first paper by Pande and Mittal thoroughly investigates the so called BAYesian WAVElet-based Image Estimation. The authors implement a simple but interesting Bayesian theory in order to obtain optimal thresholds in image denoising algorithms. The proposed methodology attempts to solve the problems associated with the thresholding algorithms in such applications due to the usually involved subjective way of determining the corresponding thresholds.

The second paper by Yazdi et al. illustrates an important new approach based on a mixture of the RLS and LMS algorithms, the so called RLMS. The optimum weights of the mixture are derived and it is shown that the MMSE of the proposed system is reduced compared to those of the RLS and LMS algorithms. Then, the RLMS algorithm is employed for active noise cancellation to form the FX-RLMS algorithm. The FX-RLMS needs the calculation of a step size for mixing the results of RLS and LMS

algorithm. The best step size is shown to be related to frequency range of noise frequency which is estimated by MUSIC algorithm.

In the sequel, the paper by Zaki and Youssef presents and evaluates three different approaches to track moving objects from moving camera image sequences using active contour models. The first approach is region-based and makes use of cumulative histograms, while the other two approaches are boundary-based and they exploit both b-spline, and wavelet representations, respectively.

The fourth paper by Chitrakala and Manjula proposes a unified approach for the extraction of text from heterogeneous and hybrid textual images. The strength of this technique lies in producing small number of features at less running time for the extraction of text from heterogeneous images in various priority levels. The suggested feature selection algorithm is evaluated with three common Machine Learning (ML) algorithms and effectiveness of the feature selection algorithm is shown by comparing with three feature selection methods. The proposed text extraction system is robust to several variations. A qualitative analysis proves the encouraging performance of the studied text extraction system in comparison with the edge, CC and texture based text extraction algorithms.

Next, the paper by Shaaban presents a fast digital signal processing technique for numerical analysis of individual signals from CdZnTe compound semiconductor detectors. Using Maxi-Mini Distance Algorithm, a parametric approach has been developed for classifying waveforms into a set of clusters each having a similar signal shape with a corresponding pulse height spectrum. A corrected total pulse height spectrum has been obtained by applying a normalisation factor for the full energy peak for each cluster with improvements in the energy spectrum characteristics.

The paper by Bhattacharyya et al. addresses the problem of conventional FFT/IFFT problem in high speed applications. It is claimed that when the number of data points is the power of four it is wise to use Radix-4 algorithm instead of using the conventional Radix-2 algorithm. To this end a 16 point Radix-4 IFFT algorithm is taken into consideration which offers fewer multiplications than the processors using Radix-2. A new and simple architecture of this IFFT algorithm is presented. It includes pipelining and parallelism together. The whole Radix-4 CORDIC based Radix-4 IFFT architecture is implemented on a FPGA device with the accuracy of up to 32 bit precision at operating frequency of 55 MHz aiming at being suitable for real time applications.

Finally, the paper by Krishna et al. investigates models for single, coupled, L and T type on-chip global interconnect lines. Generalised models for different interconnect geometries are formed by distributed RLGC parameters using state space approach. Interconnect delay for a single interconnect line is estimated using suggested model and is compared with other ones. It is found that the error in the estimation of the delay is less in the authors' models. The proposed models are generic in nature and can be used to characterise any interconnect structure. Further, the state matrices for any length of interconnect can be obtained by considering suitable number of RLGC segments.

We hope that the current issue, addressing so many different interesting topics, will be again exciting for all readers. All authors and reviewers have done their best in order to increase the quality of the papers presented here. We think that our journal reports valuable research and if you think so too, dear reader, then, please disseminate its information and suggest it to your librarians. Our efforts will always focus on improving quality and indexing of this journal to meet authors, reviewers and readers expectations. Your comments, suggestions for enhancements and high quality research reports are what we always seek in order to improve quality for the benefit of all of us.