
Editorial

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Biographical notes: Dimitrios A. Karras received his Diploma and MSc in Electrical Engineering from the National Technical University of Athens (NTUA), Greece, in 1985 and a PhD 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 a Professor in Digital Systems and Signal Processing as well as with the Hellenic Open University as a 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 programme committee member, programme and general chair in many international workshops and conferences in signal, image and automation systems. He is Editor-in-Chief of *International Journal of SISE*.

George C. Giakos is a Professor 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 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. He is an IEEE Fellow.

The second issue of 2010 of *International Journal of Signal and Imaging Systems Engineering* (IJSISE) contains seven regular papers, covering important issues in the analysis of dielectric structures, in the analysis of human activity through colour segmentation, in content-based image retrieval, in image watermarking and automatic contrast enhancement as well as in speech enhancement.

In the first paper by G. Bozza, M. Brignone, M. Pastorino, M. Piana and A. Randazzo, a new approach for the detection of cracks and defects inside dielectric structures is presented. The proposed algorithm is based on the Linear Sampling Method, a technique able to find the external shape of unknown objects starting from far-field

measurements of the scattered electric field. More specifically, the authors attempt a modification of the efficient No-Sampling Linear Sampling Method to provide a reconstruction of the positions and shapes of defects located inside a known structure. The effectiveness of the approach is successfully assessed by means of numerical simulations.

The second paper, by Gian Luigi Gragnani, presents an analytical approach to shape reconstruction of dielectric scatterers. A closed-form singular value decomposition of the scattering integral operator is derived to determine the radiating components of the equivalent source. This solution is used to compute the scattered electric field in closed

form and can be used to reconstruct the shape of the body, which is under test. The complete solution takes into account the non-radiating sources too. Several numerical simulations show the capabilities of the proposed solution in terms of accuracy and computational time.

The third regular paper by K. Srinivasan, K. Porkumaran and G. Sainarayanan gives a new approach for identifying the human body parts like head, hands and legs for activity analysis in Video Surveillance applications. Most of the existing skin colour segmentation algorithms are implemented to detect human faces whereas the present research has been conducted to show the effectiveness of using different colour space algorithms for identifying the elements of the human body. Here, 11 activities have been considered for various videos. The experiments and comparative measures have been applied for individual colour space models as well as for combined colour models.

Next, the paper by Anil Balaji Gonde, R.P. Maheshwari and R. Balasubramanian proposes a novel fusion approach to content-based image retrieval. In the proposed method, two types of features are used for image retrieval, i.e., colour histogram as a global feature and block bit plane as a local feature. For similarity measurement, a specific distance $d1$, suggested by some of the authors, is used for colour histogram features and block bit planes are compared bit by bit using Hamming distance. Finally, the overall similarity is computed as a weighted combination of global and local features. Particle swarm optimisation is used for optimisation of these weights. The retrieval results demonstrate significant improvement in precision and average recall rate compared with the current state-of-the-art methods.

The paper by S. Poonkuntran, R.S. Rajesh and P. Eswaran proposes a new reversible, imperceptible, semi-fragile watermarking scheme for the authentication of digital fundus images. The proposed scheme generates the watermark dynamically using chaotic systems techniques and it is embedded using integer transform in reversible way. It precisely locates the tampering areas in the images. Moreover, it detects the watermark in complete blind approach, where the knowledge of both original image and watermark has not been used for extraction.

The sixth regular paper by R. Lakshmanan, M.S. Nair, M. Wilsy and R. Tatavarti introduces an automatic method for Selective Grey Level Grouping, which enables automatic contrast enhancement of an image based on the principle of transforming the skewed histogram of the original image into a uniform histogram. Extended experiments show method's applicability and efficiency in a wide variety of images.

Finally, the paper by T. Mourad, S. Lotfi, A. Sabeur and C. Adnane investigates speech enhancement using Bionic Wavelet Transform (BWT) and recurrent neural network. Indeed, it describes a new technique, which removes additive background noise from noisy speech. This technique can be divided into two stages: the application of BWT to the speech signals and the application of an Elman neural network to find an optimal thresholding set to remove related noise wavelet coefficients. Simulation shows good performance of the proposed technique in comparison with many other methods.

We hope again that this issue, covering so many different methodologies and applications of signal and imaging systems, will be of value for all readers and the research community. We thank especially all authors as well as all reviewers and our publisher for their support.

Now, two years after its commencing, some statistics might be of value for both readers and prospective authors of this journal. We receive around 60 good-quality research papers per year for review and the acceptance rate is at the moment 40–50%. In the coming years, we expect more submissions and higher rejection rates towards increasing journal's impact in the research community. Now, the journal is indexed by Google Scholar, Inspec, Scirus and Scopus and is, also, included in the Ranked journal list 2010 for Excellence in Research for Australia (ERA), Australian Research Council.

Our efforts are continuously focused on improving quality and especially indexing of this journal in the near future. Your high-quality research papers, but also, your advertisement to your colleagues and librarians of your institutions are always necessary to meet our targets and improve this journal.