Editorial

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Biographical notes: Ahmad Azar has received his MSc in System Dynamics in 2006 and PhD in Adaptive Neuro-Fuzzy Systems from the Faculty of Engineering, Cairo University (Egypt), in 2009. He is currently the Editor-in-Chief of *International Journal of System Dynamics Applications (IJSDA)* published by IGI Global, USA. He currently serves as the Editor of a lot of international journals. His biography was selected to appear in the 27th Edition of Who's Who in the World, Marquis Who's Who, USA, 2010. His current research focuses on the soft computing techniques and intelligent control systems.

The fourth issue for 2011 of the *International Journal of Signal and Imaging Systems Engineering* (*IJSISE*) comprises a special issue on the topic of 'Image and Data Compression Applications'. It contains seven papers.

The first paper by El-said et al. investigates a novel adaptive lossy compression technique, Least Probable Coefficients Approximation (LPCA) technique, to achieve better performance and simpler implementation than JPEG at low bitrate.

The second paper by Gupta and Londhe studies a novel improved low-complexity compression methodology called 'Near Lossless Image Compression (NLIC)'. This algorithm is a hybrid method, which includes DCT, a lossy compression technique, and JPEG encoding using entropy-based Huffman coding, a lossless compression technique.

In the sequel, the paper by Aparna and David presents the simulation results of the video-coding method based on the principle of distributed source coding using Golay codes. In this technique, the side information is improved by performing a very coarse motion search at the encoder and transmitting the position of the side information block as the hash information to the decoder, which will help the decoder to perform motion estimation.

The fourth paper by Bhadauria and Dewal involves an adaptive denoising approach, which fuses the images denoised by total variation, curvelet-based method and edge information. Edge information is extracted from the noise residue of TV method by processing it through curvelet transform. The denoising abilities of the proposed method are evaluated on standard Lena image as well as on brain CT images. Experimental results show that the proposed approach reduces the staircase effect caused by the total variation method and also reduces fuzzy edges induced by curvelet transform in the homogeneous areas of the image. This proposed adaptive-fusion-based approach gives superior results not only for noise suppression but also for edge preservation.

The next paper by Rathod et al. proposed a research experimentation, which has been established in Central Foundry Forge Plant (CFFP) of Bharat Heavy Electrical Ltd. India (BHEL). BHEL is manufacturing steel castings for steam, hydro and nuclear turbines. These castings are subjected to severe operating conditions such as high temperature and pressure and corrosive atmosphere. The proposed image segmentation techniques are introduced to detect and assess the weld flaws from the weldments and calculate the features such as length, width, area, perimeter, major axis length, minor axis length, orientation and resolution. The proposed algorithm is faster and achieves favourable results when compared with the state-of-the-art approaches. Computing time is optimised and the algorithm is simpler to implement. The results are validated with standard Non-Destructive Testing (NDT) methods.

Jidesh and George in the sixth paper investigate a shock term along with the Gauss-curvature-driven diffusion term to enhance the edges while smoothing-out the noise. This technique will preserve some important structures and enhance them while denoising the image. The experiments clearly demonstrate the efficiency of the method.

Finally, Arif and Anand, in the last paper of IJSISE V4, N4, propose the results of compression using Run-Length Encoding (RLE) scheme applied on various standard speech signals of International Phonetic Alphabet (IPA) database. First of all, these speech signals have been compressed without any noise being added then they have been compressed after adding some noise to them. By doing so, it has been observed that the RLE scheme gives high CR for noisy speech signal when compared with the original non-noisy speech signal. Furthermore, it is also seen that the obtained CR is the highest for most of the signals when the half amount of the minimum value of the speech signal is treated as the noise signal added on the original speech signal. The performance of RLE scheme on the standard speech signal as well as noisy speech signal is compared with the compression by Huffman coding of the same signals. The result obtained is clear that the RLE scheme gives high CR when compared with CR obtained by Huffman coding.

As a Guest Editor, I hope that the papers in this issue will stimulate further research in image and data

compression, because I believe that the best is yet to come. We hope that this issue, covering so many different aspects, will be of value for all readers. We express our appreciation to the Editor-in-Chief of *Int. J. Signal and Imaging Systems Engineering*, Prof. Dimitrios A. Karras.

We thank all authors and reviewers for their invaluable work and we are sure that the increasing interest for this journal will attract many more important research papers.

We think that the quality has reached a certain level but we should not be satisfied with only this fact. Our efforts will focus on improving quality and especially indexing of this journal in the near future. To this end, we emphasise again that we need your help by submitting high-quality research papers citing works already published in this journal. Your high-quality comments and research reports are always more than welcome and very helpful to meet our targets.