Guest editorial: special issue on new trends in multimedia processing

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The 2nd International Conference on Image and Signal Processing (CISP'09) was held during October 17–19, 2009 in Tianjin, China. Tianjin is a financial and commercial center in Northern China. At this dynamic city with a long and splendid history, CISP'09 turned out to be a big success. The conference attracted a total of 2,030 submissions from over 30 countries and regions. After rigorous reviews, 1,092 high-quality papers were accepted and included in the CISP'09 proceedings. Then, the program committee of the conference identified about 30 best papers for this special issue, all of which are related to multimedia research. The authors of the selected papers were asked to submit substantially expanded versions of their conference papers to the special issue. After a standard review of the expanded papers, 17 of them were accepted and included in this special issue. These papers cover a wide range of topics related to multimedia tools and applications. They should represent the state of the art research in the multimedia area, as evidenced by their brief description below.

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- *S.P. Sun*, *Y.J. Chou*, and *Y.H. Chiu* propose a multimedia 3D clinical planning system that simulates internal fixation surgeries for calcaneal collapse, by using full-scale computer-assisted engineering techniques in the design and development of preoperative planning modules.
- *S. He*, *C. Xing*, and *P. Zhao* suggest a frame interpolation algorithm for applications of low-bit-rate video coding.
- *R. Liu*, *X. Zhou*, *N. Wang*, and *M. Zhang* propose an eye tracking algorithm and an automatic focusing technique for acquiring clear eye images by an eye-gaze tracking system.
- *J. Hou*, *J. Qian*, *W. Zhang*, *Z. Zhao*, and *P. Pan* present a novel adaptively updating target extraction algorithm for fire detection in large space structures.
- *X. Su*, *L. Ji*, and *X. Li* propose an algorithm of low complexity and fast speed for H.264/AVC intra prediction.
- *F. Zhang*, and *Q. Zhu* propose a new calibration method of single viewpoint constraint for catadioptric omni-directional vision.
- *Y. Xiang*, *L. Feng*, *S. Xie*, and *Z. Zhou* propose an efficient spatio-temporal boundary matching algorithm for video error concealment.
- *X. Jiang*, *T. Sun*, and *S. Wang* propose a novel visual feature representation for automatic video content classification, which is shown to be effective in differentiating among various video contents.
- *H. Song*, and *M. Shen* propose a novel algorithm for real-time target tracking, by incorporating target corner detection into the optical flow algorithm.
- *Y. Zou*, *G. Shi*, *H. Shi*, and *H. Zhao* present a state-of-the-art traffic incident detection system for automatic traffic incident detection at urban road intersections.
- *M. Shi*, *R. Fu*, *Y. Guo*, *B. Xu*, and *S. Bai* propose an approach for developing an automated fabric defect detection system using local contrast deviation.
- *Y. Shan*, and *J. Liu* employ several new cross-channel compensation techniques to develop a novel dynamic Gaussian selection algorithm for tackling the speaker recognition problem.
- *J. Zhang*, *Q. Chen*, *Q. Sun*, *H. Sun*, and *D. Xia* propose an improved Harris-Laplace feature detector with a high repeatability for local feature detection in object recognition and object tracking.
- *X. Lu*, *S. Matsuda*, *M. Unoki*, and *S. Nakamura* propose a novel noise reduction algorithm for automatic speech recognition.
- *L. Mao*, *Y. Fan*, *H. Wang*, and *G. Lv* propose a novel algorithm for image watermark identification using fractal and neural networks.
- *H. Zhang*, *X. Tian*, and *Y. Chen* study a visual attention model in order to accurately analyze the spatio-temporal saliency based on intensity, texture, and motion features.
- *B. Luo*, *Y. Wang*, and *Y. Liu* investigate head pose tracking for a flight cockpit system using sensor fusion.

Peihua Qiu received a B.S. degree in mathematics and an M.S. degree in statistics from Fudan University, Shanghai, China, an M.S. degree in statistics from University of Georgia, Athens, GA, USA, and a Ph.D. degree in statistics from University of Wisconsin, Madison, WI, USA. From 1996 to 1998, he was with the Biostatistics Center at the Ohio State University, where he worked on biostatistical research and consulting. He was an assistant professor during 1998–2002, an associate professor during 2002–2007, and has been a full professor since 2007, all in the School of Statistics at the University of Minnesota, Minneapolis, MN, USA. He is a fellow of American Statistical Association, and an elected member of the International Statistical Institute. Currently, he serves as the associate editors of the *Journal of the American Statistical Association* and *Technometrics*. His research interests include curve and surface estimation from noisy data, image segmentation, image denoising, image deblurring, image registration, statistical process control, survival analysis, and longitudinal data analysis.

Ka Fai Cedric Yiu received his M.Sc. from University of Dundee and University of London, and D.Phil. from University of Oxford. Over the century, he had worked closely with the industry on different projects in University of Oxford and University College of London. He started his lecturing career in the University of Hong Kong. He is currently working in the Hong Kong Polytechnic University. He serves on the program committee of the conference ASAP for several years and has served on the organizing committee of a number of conferences including FPT02, LSCM06, FERM08. He has also organized a number of special sessions in conferences including ICOTA7, CISP08, ISCE2009, EURO2009. He has published over 40 journal publications and given over 30 conference presentations. He was invited speaker for several international conferences. He holds a U.S. patent in signal processing. His current research interests include optimization and optimal control, signal processing, sensor array processing, FPGA and algorithm designs.

Lipo Wang My research interest includes computational intelligence and chaos, with applications to data mining, bioinformatics, multimedia, and optimization. I am author or co-author of over 75 journal publications, 15 book chapters, and 110 conference presentations. I hold a U.S. patent in neural networks. I have authored two monographs and edited 15 books. I was keynote/panel speaker for several international conferences.

I am Associate Editor of *IEEE Transactions on Knowledge and Data Engineering* and Area Editor of the *Soft Computing* journal, as well as Editorial Board Member of 19 additional international journals. I was Associate Editor of *IEEE Transactions on Neural Networks* and *IEEE Transactions on Evolutionary Computation* for many years. I am elected to the AdCom (2010–2012) of the IEEE Computational Intelligence Society (CIS) and served as IEEE CIS Vice President for Technical Activities (2006–2007) and Chair of Emergent Technologies Technical Committee (2004–2005). I was President of the Asia-Pacific Neural Network Assembly (APNNA) in 2002/2003 and received the 2007 APNNA Excellent Service Award. I was Founding Chair of both the IEEE Computational Intelligence Singapore Chapter and IEEE Engineering in Medicine and Biology Singapore Chapter. I serve/served as IJCNN 2010 Technical Co-Chair, CEC 2007 Program Co-Chair, IJCNN 2006 Program Chair, as well as on the steering/advisory/organizing/program committees of over 160 international conferences.