

Guest Editorial

Special Section on Intelligent Video Systems and Analytics

INTELLIGENT video systems and analytics technology have been substantially driven and demanded by recent advanced electronics technology, industrial applications, and the booming market. This Special Section highlights the state-of-the-art and future challenges via the eleven selected papers. The first two papers contribute to video systems architecture and real-time classification/recognition application. Wang *et al.* develop an application-oriented service share model, enabling various computer vision algorithms integrated into a workable system with high scalability. Kafai and Bhanu demonstrate a robust and complete video-based vehicle classification system based on the rear-side view. Si *et al.* integrate a set of novel algorithms to effectively enhance the overall performance of iris recognition systems. This Special Section also presents recent efforts on solving classic video problems. Chen *et al.* improve background subtraction algorithm based on the combination of segmented regions and pixel descriptors to accommodate the conditions of different objects. Tsai *et al.* present a dissimilarity measure based on the optical-flow technique for surface defect detection. Tan *et al.* combine smoothen 2D histogram and Gaussian model for automatic skin detection in color images to achieve lower computational cost with improved recognition accuracy. Zhang *et al.* propose a method extended from fuzzy genetic algorithm to boost the computing efficiency of covariance matching, its performance is significantly superior to its counterparts using exhaustive search. Jin *et al.* present real-time face detection using cascades of boosted classifiers. The last three papers give priority to the fast-growing topics of 3D gesture recognition and 3D reconstruction. Cao *et al.* identify key poses by utilizing manifold learning technique to recover the geometric structure of descriptors in a lower dimensional manifold space. Tran and Trivedi present a 3D gesture recognition approach for human computer interactivity based on marker-less upper body pose tracking with 90% average classification accuracy. Nielsen *et al.* demonstrate an automated technique on thinning of peach blossoms on perpendicular V-architecture trees via a correlation-based stereo mapping.

This Special Section is timely and has achieved its aim with profound responses in booming research and technology transfer in intelligent video/camera systems and analytics, it has been successfully completed with cross-disciplinary efforts. We would like to, first of all, thank all the authors who have submitted papers to this Special Section for their contribution and support in intelligent video systems and analytics. Second, we are truly grateful for the efforts and patience of the reviewers whose expertise guarantee the outstanding quality of the TRANSACTIONS issue. Finally, we would like to call for participation and contribution to maximize the impact and quality of this TRANSACTIONS.

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He is a Professor of Intelligent Systems at Portsmouth University, U.K. He previously held research appointments at the University of London and the University of Aberdeen, U.K., and project leader appointments in large-scale industrial control and system integration industry. He is interested in approximate computation, pattern recognition, intelligent video analytics, cognitive robotics and

their applications with an emphasis on approaches that could make contribution to the intelligent connection of perception to action using contextual information. He has published numerous peer-reviewed international journals and conference papers. Prof. Liu is a Fellow of IET. He has received four Best Paper Awards.



ShengYong Chen (M'01–SM'10) received the Ph.D. degree in computer vision from City University of Hong Kong, Hong Kong, in 2003.

He is has been a Professor at the Zhejiang University of Technology since 2004. He received a fellowship from the Alexander von Humboldt Foundation of Germany and worked at University of Hamburg, Germany; he also worked as a Visiting Professor at Imperial College, London, U.K. His research interests include computer vision, 3D modeling, and image processing. Some selected

publications and other details can be found at <http://www.syichen.com.nu>. He has published over 100 scientific papers in international journals and conferences. Prof. Chen was awarded as the Champion in the 2003 IEEE Region 10 Student Paper Competition, and was nominated as a finalist candidate for the 2004 Hong Kong Young Scientist Award.



Naoyuki Kubota received the B.Sc. degree from Osaka Kyoiku University, Osaka, Japan, in 1992, the M.E. degree from Hokkaido University, Hokkaido, Japan, in 1994, and the D.E. degree from Nagoya University, Japan, in 1997.

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