Journal of Computers

Special Issue on Image and Video Processing

FOREWORD

Image and video processing have become two important research areas in computer science and information engineering. This special issue, including 6 papers, covers several research topics in image and video processing.

The first paper, entitled "A Robust Visual Surveillance System Based on an Omnidirectional Vision Sensor," used an omnidirectional video camera and implemented some basic functions for smart living and elderly care. For motion detection, a foreground object model is first detected, the CamShift algorithm is used for object tracking, and an optical flow approach is cooperated to detect small changes of moving objects. Finally, the object model for fall detection and abnormal behavior analysis is developed. The second paper, entitled "Ringing Artifacts Reduction Using Adaptive Morphological Filter for JPEG2000," proposed a new filter for ringing artifacts to enhance the processed image quality. At the encoder, the compressed image is partitioned by DFQP (DWT Feature Quad-tree Partition) and morphological operations are employed to select the optimal structure element, which is entropy-coded and transmitted to the decoder. At the decoder, using the morphological filter with the optimal structure element, the high-quality filtered image is obtained. The third paper, entitled "Comparisons of Stereoscopic Viewing Devices in Digital Dental Stereoradiography," presented a brief overview of the applications of stereoscopic viewing in various medical fields and dental application was selected for performance evaluation using the proposed viewing apparatus. A viewing system based on one compact mirror and two flat-panel LCD monitors to achieve high resolution of digital dental stereoradiography is proposed and its effectiveness is evaluated. The fourth paper, entitled "A Street Scene Surveillance System for Moving Object Detection, Tracking and Classification," presented a vision system for street scene surveillance. In addition to the capabilities of detection and tracking of moving objects, it is also able to recognize and classify the targets based on the walking rhythm. The classification results are further used for event analysis and video retrieval of interested scenes. The fifth paper, entitled "Resolution Enhancement Scheme Based on Iterative Back-Projection Technique for Image Sequences," proposed an adaptive resolution enhancement scheme based on iterative back-projection. After obtaining initial estimates for each low-resolution shifted image, reconstructed high-resolution images are derived by using a modified iterative back-projection scheme and then fused to be a high-resolution one. Finally, post-processing is utilized to reduce the blocking artifacts within the reconstructed high-resolution images.

Finally, I would like to thank all paper contributors, reviewers, and all those who helped in producing this special issue.

Jin-Jang Leou, Guest Editor

Professor
Department of Computer Science and Information Engineering
National Chung Cheng University
Chiayi 621, Taiwan, ROC
E-mail: jjleou@cs.ccu.edu.tw
Tel: +886-5-2720411 ext. 33105