

Visual Communications and Image Processing 2007

Chang Wen Chen
Dan Schonfeld
Jiebo Luo
Chairs/Editors

30 January–1 February 2007
San Jose, California, USA

Sponsored and Published by
IS&T—The Society for Imaging Science and Technology
SPIE—The International Society for Optical Engineering

SPIE Vol. 6508
Part One of Two Parts

The papers included in this volume were part of the technical conference cited on the cover and title page. Papers were selected and subject to review by the editors and conference program committee. Some conference presentations may not be available for publication. The papers published in these proceedings reflect the work and thoughts of the authors and are published herein as submitted. The publisher is not responsible for the validity of the information or for any outcomes resulting from reliance thereon.

Please use the following format to cite material from this book:

Author(s), "Title of Paper," in *Visual Communications and Image Processing 2007*, edited by Chang Wen Chen, Dan Schonfeld, Jiebo Luo, Proceedings of SPIE-IS&T Electronic Imaging, SPIE Vol. 6508, Article CID Number (2007).

ISSN 0277-786X
ISBN 9780819466211

Copublished by

SPIE—The International Society for Optical Engineering

P.O. Box 10, Bellingham, Washington 98227-0010 USA

Telephone 1 360/676-3290 (Pacific Time) · Fax 1 360/647-1445

<http://www.spie.org>

and

IS&T—The Society for Imaging Science and Technology

7003 Kilworth Lane, Springfield, Virginia, 22151 USA

Telephone 1 703/642-9090 (Eastern Time) · Fax 1 703/642-9094

<http://www.imaging.org>

Copyright © 2007, The Society of Photo-Optical Instrumentation Engineers and The Society for Imaging Science and Technology.

Copying of material in this book for internal or personal use, or for the internal or personal use of specific clients, beyond the fair use provisions granted by the U.S. Copyright Law is authorized by SPIE and IS&T subject to payment of copying fees. The Transactional Reporting Service base fee for this volume is \$18.00 per article (or portion thereof), which should be paid directly to the Copyright Clearance Center (CCC), 222 Rosewood Drive, Danvers, MA 01923. Payment may also be made electronically through CCC Online at <http://www.copyright.com>. Other copying for republication, resale, advertising or promotion, or any form of systematic or multiple reproduction of any material in this book is prohibited except with permission in writing from the publisher. The CCC fee code is 0277-786X/07/\$18.00.

Printed in the United States of America.

Contents

Part One

xiii	<i>Conference Committee</i>
xvii	<i>Introduction</i>

SESSION 1 VIDEO CODING I

650802	Real-time video coding under power constraint based on H.264 codec [6508-01] L. Su, Y. Lu, F. Wu, S. Li, Microsoft Research Asia (China); W. Gao, Graduate School, Chinese Academy of Sciences (China)
650803	A low bit-rate video coding approach using modified adaptive warping and long-term spatial memory [6508-02] Y. Chen, Purdue Univ. (USA); C. Lettsome, Georgia Institute of Technology (USA); M. Smith, E. Delp, Purdue Univ. (USA)
650804	Rate-prediction structure complexity analysis for multi-view video coding using hybrid genetic algorithms [6508-03] Y. Liu, Q. Dai, Z. You, W. Xu, Tsinghua Univ. (China)
650805	Comparison of standard-based H.264 error-resilience techniques and multiple-description coding for robust MIMO-enabled video transmission [6508-04] M. Tesanovic, D. R. Bull, D. Agrafiotis, A. Doufexi, Univ. of Bristol (United Kingdom)
650806	Spatial and temporal models for texture-based video coding [6508-05] F. Zhu, K. K. Ng, G. Abdollahian, E. J. Delp, Purdue Univ. (USA)
650807	Content-adaptive motion estimation for efficient video compression [6508-06] L. Liu, Purdue Univ. (USA); Y. Liu, Hewlett-Packard Labs. (USA); E. J. Delp, Purdue Univ. (USA)

Pagination: Proceedings of SPIE follow an e-First publication model, with papers published first online and then in print and on CD-ROM. Papers are published as they are submitted and meet publication criteria. A unique, consistent, permanent citation identifier (CID) number is assigned to each article at the time of the first publication. Utilization of CIDs allows articles to be fully citable as soon they are published online, and connects the same identifier to all online, print, and electronic versions of the publication.

SPIE uses a six-digit CID article numbering system in which:

- The first four digits correspond to the SPIE volume number.
- The last two digits indicate publication order within the volume using a Base 36 numbering system employing both numerals and letters. These two-number sets start with 00, 01, 02, 03, 04, 05, 06, 07, 08, 09, 0A, 0B ... 0Z, followed by 10-1Z, 20-2Z, etc.

The CID number appears on each page of the manuscript. The complete citation is used on the first page, and an abbreviated version on subsequent pages.

SESSION 2 IMAGE AND VIDEO ANALYSIS

- 650808 **Feature point tracking combining the Interacting Multiple Model filter and an efficient assignment algorithm** [6508-07]
D. Marimon, Y. Abdeljaoued, B. Palacios, T. Ebrahimi, Swiss Federal Institute of Technology (Switzerland)
- 650809 **Trajectory-based ball detection and tracking with aid of homography in broadcast tennis video** [6508-08]
X. Yu, Institute for Infocomm Research (Singapore); N. Jiang, National Univ. of Singapore (Singapore); E. L. Ang, Nanyang Technological Univ. (Singapore)
- 65080A **A robustified hidden Markov model for visual tracking with subspace representation** [6508-09]
J. Gai, R. L. Stevenson, Univ. of Notre Dame (USA)
- 65080B **Optimal multiple sprite generation based on physical camera parameter estimation** [6508-10]
M. Kunter, A. Krutz, Technische Univ. Berlin (Germany); M. Mandal, Univ. of Alberta (Canada); T. Sikora, Technische Univ. Berlin (Germany)
- 65080C **Geometrical image filtering with connected operators and image inpainting** [6508-11]
M. Dimiccoli, P. Salembier, Technical Univ. of Catalonia (Spain)
- 65080D **Maximum-entropy expectation-maximization algorithm for image processing and sensor networks** [6508-12]
H. Hong, D. Schonfeld, Univ. of Illinois at Chicago (USA)

SESSION 3 SPECIAL SESSION: THE MATHEMATICS OF IMAGING

- 65080E **Mathematical aspects of shape analysis for object recognition (Invited Paper)** [6508-13]
D. G. Arnold, Air Force Research Lab. (USA); P. F. Stiller, Texas A&M Univ. (USA)
- 65080F **Challenges in 3DTV image processing (Invited Paper)** [6508-14]
A. Redert, R.-P. Berretty, C. Varekamp, B. van Geest, J. Bruijns, R. Braspenning, Philips Research (Netherlands); Q. Wei, Philips Consumer Electronics Lab. (Netherlands)
- 65080G **The algebra and statistics of generalized principal component analysis (Invited Paper)** [6508-15]
S. Rao, Univ. of Illinois at Urbana-Champaign (USA); H. Derksen, Univ. of Michigan (USA); R. Fossum, Y. Ma, A. Wagner, Univ. of Illinois at Urbana-Champaign (USA); A. Yang, Univ. of California at Berkeley (USA)
- 65080H **Segmentation of multivariate mixed data via lossy coding and compression (Invited Paper)** [6508-16]
H. Derksen, Univ. of Michigan (USA); Y. Ma, Univ. of Illinois at Urbana Champaign (USA); W. Hong, Texas Instruments (USA); J. Wright, Univ. of Illinois at Urbana Champaign (USA)
- 65080I **Integral invariants for 3D curves: an inductive approach (Invited Paper)** [6508-17]
S. Feng, I. A. Kogan, H. Krim, North Carolina State Univ. (USA)

65080J **Variable elimination for 3D from 2D (Invited Paper)** [6508-18]
J. Zhang, M. Boutin, D. G. Aliaga, Purdue Univ. (USA)

SESSION 4 SPECIAL SESSION: COLLABORATIVE OBJECT TRACKING

65080K **Bayesian distributed articulated object tracking using multiple collaborative trackers (Invited Paper)** [6508-19]
W. Qu, Motorola Labs. (USA); D. Schonfeld, Univ. of Illinois (USA)

65080L **Tracking people in mixed modality systems (Invited Paper)** [6508-21]
Y. Ivanov, MERL (USA); A. Sorokin, UIUC (USA); C. Wren, MERL (USA); I. Kaur, MIT (USA)

65080M **Multiple hypothesis shape tracking using particle filtering and Hough-based observation models (Invited Paper)** [6508-21]
A. Dore, M. Asadi, C. S. Regazzoni, Univ. degli Studi di Genova (Italy)

65080N **Collaborative tracking of objects in EPTZ cameras (Invited Paper)** [6508-22]
F. Bashir, F. Porikli, Mitsubishi Electric Research Labs. (USA)

65080O **Particle filter-based camera tracker fusing marker and feature point cues (Invited Paper)** [6508-23]
D. Marimon, Y. Maret, Y. Abdeljaoued, T. Ebrahimi, Swiss Federal Institute of Technology (Switzerland)

SESSION 5 DISTRIBUTED VIDEO CODING

65080P **Robust distributed multi-view video compression for wireless camera networks** [6508-24]
C. Yeo, K. Ramchandran, Univ. of California, Berkeley (USA)

65080Q **Hybrid key/Wyner-Ziv frames with flexible macroblock ordering for improved low delay distributed video coding** [6508-25]
D. Agrafiotis, P. Ferré, D. R. Bull, Univ. of Bristol (United Kingdom)

65080R **Distributed video coding based on constrained rate adaptive low density parity check codes** [6508-26]
R. K. Liu, Beijing Univ. of Aeronautics and Astronautics (China); G. G. Hua, C. W. Chen, Florida Institute of Technology (USA)

65080S **Unequal error protection using Wyner-Ziv coding for error resilience** [6508-27]
L. Liang, Purdue Univ. (USA); P. Salama, Indiana Univ.-Purdue Univ., Indianapolis (USA); E. J. Delp, Purdue Univ. (USA)

65080T **Generalized in-scale motion compensation framework for spatial scalable video coding** [6508-28]
R. Xiong, Institute of Computing Technology (China); J. Xu, F. Wu, S. Li, Microsoft Research Asia (China)

65080U **Fast prediction algorithm of adaptive GOP structure for SVC** [6508-29]
Y.-H. Chen, C.-H. Lin, C.-Y. Chen, L.-G. Chen, National Taiwan Univ. (Taiwan)

SESSION 6 WAVELET REPRESENTATION AND CODING

- 65080V **Scalable direction representation for image compression with direction-adaptive discrete wavelet transform** [6508-30]
T. Xu, C.-L. Chang, B. Girod, Stanford Univ. (USA)
- 65080W **Video coding with fully separable wavelet and wavelet packet transforms** [6508-31]
M. Trocan, B. Pesquet-Popescu, GET-École Nationale Supérieure des Télécommunications (France)
- 65080X **The edge driven oriented wavelet transform: an anisotropic multidirectional representation with oriented lifting scheme** [6508-32]
G. Jeannic, V. Ricordel, D. Barba, Ecole Polytechnique de l'Univ. de Nantes (France)

SESSION 7 IMAGE REGISTRATION AND RECOGNITION

- 65080Y **Multimodal image registration based on edges and junctions** [6508-33]
Y. Li, R. L. Stevenson, Univ. of Notre Dame (USA)
- 65080Z **Automatic target segmentation in color dental images** [6508-108]
J. Luo, M. Bolin, Eastman Kodak Co. (USA)
- 650810 **Comparison of compression algorithms' impact on fingerprint and face recognition accuracy** [6508-35]
A. Mascher-Kampfer, H. Stögner, Carinthia Tech Institute (Austria); A. Uhl, Carinthia Tech Institute (Austria) and Salzburg Univ. (Austria)

SESSION 8 SPECIAL SESSION: NEXT-GENERATION VIDEO CODING TECHNOLOGIES

- 650811 **Film grain noise modeling in advanced video coding (Invited Paper)** [6508-36]
B. T. Oh, C.-C. J. Kuo, Univ. of Southern California (USA); S. Sun, S. Lei, Sharp Lab. of America (USA)
- 650812 **Advances in hybrid video coding (Invited Paper)** [6508-36]
T. Wedi, S. Wittmann, T. Palfner, B. Schuur, F. Knicker, Panasonic R&D Ctr. Germany (Germany)
- 650813 **Next generation video coding for mobile applications: industry requirements and technologies (Invited Paper)** [6508-38]
M. Budagavi, M. Zhou, Texas Instruments Inc. (USA)
- 650814 **Adaptive filtering for cross-view prediction in multi-view video coding (Invited Paper)** [6508-39]
P. Lai, Thomson Corporate Research (USA) and Univ. of Southern California (USA); Y. Su, P. Yin, C. Gomila, Thomson Corporate Research (USA); A. Ortega, Univ. of Southern California (USA)
- 650815 **RD-optimized competition scheme for efficient motion prediction (Invited Paper)** [6508-40]
J. Jung, Orange-France Telecom R&D (France); G. Laroche, Orange-France Telecom R&D (France) and École Nationale Supérieure des Télécommunications Paris (France); B. Pesquet, École Nationale Supérieure des Télécommunications Paris (France)

650816 **High-definition video coding with super-macroblocks (Invited Paper)** [6508-41]
S. Ma, C.-C. J. Kuo, Univ. of Southern California (USA)

SESSION 9 MEDIA COMMUNICATION AND NETWORKING

650817 **Cross-layer optimization for wireless video communication** [6508-42]
D. Wu, Univ. of Florida (USA); Z. He, Univ. of Missouri, Columbia (USA)

650818 **A more aggressive prefetching scheme for streaming media delivery over the Internet**
[6508-43]
J. Yuan, Q. Sun, S. Rahardja, Institute for Infocomm Research (Singapore)

650819 **Rate-smoothed encoding for real-time video streaming applications** [6508-44]
J. Wu, J. Cai, Nanyang Technological Univ. (Singapore)

65081A **Joint source-channel rate allocation in parallel channels** [6508-45]
L. Pu, M. W. Marcellin, I. Djordjevic, B. Vasic, A. Bilgin, The Univ. of Arizona (USA)

65081B **Constant quality JPEG2000 rate control for digital cinema** [6508-46]
M. D. Smith, Consultant (USA); J. Villasenor, Univ. of California, Los Angeles (USA)

65081C **On preserving robustness-false alarm tradeoff in media hashing** [6508-47]
S. Roy, X. Zhu, J. Yuan, Institute for Infocomm Research (Singapore); E.-C. Chang, National
Univ. of Singapore (Singapore)

SESSION 10 IMAGING SYSTEMS

65081D **Edge-based automatic white balancing with linear illuminant constraint** [6508-48]
H. H. Chen, C.-H. Shen, P.-S. Tsai, National Taiwan Univ. (Taiwan)

65081E **Highly automated image recomposition: the picture you wish you had taken** [6508-49]
J. Luo, P. Lei, Eastman Kodak Co. (USA)

65081F **Symmetric trinocular dense disparity estimation for car surrounding camera array** [6508-50]
Y.-M. Tsai, Y.-L. Chang, L.-G. Chen, National Taiwan Univ. (Taiwan)

65081G **Surveillance system with mega-pixel scalable transcoder** [6508-51]
T. Hata, N. Kuwahara, Mitsubishi Electric Corp. (Japan); D. L. Schwenke, A. Vetro, Mitsubishi
Electric Research Labs. (USA)

65081H **A 2-D gel electrophoresis DNA image analysis algorithm with automatic thresholding**
[6508-52]
N. Kaabouch, R. R. Schultz, Univ. of North Dakota (USA)

65081I **Automatic estimation and compensation of geometric distortions in video copies** [6508-53]
B. Chupeau, A. Massoudi, F. Lefèbvre, Thomson R&D France (France)

Part Two

SESSION 11 VIDEO CODING II

- 65081J **A novel statistical learning-based rate distortion analysis approach for multiscale binary shape coding** [6508-54]
Z. Chen, K. N. Ngan, The Chinese Univ. of Hong Kong (Hong Kong China)
- 65081K **Drift-compensated coding optimization for fast bit-rate reduction transcoding** [6508-55]
P. Zhang, Institute of Computing Technology (China) and Graduate School, Chinese Academy of Sciences (China); X. Ji, Institute of Computing Technology (China); W. Gao, Peking Univ. (China); Q. Huang, Graduate School, Chinese Academy of Sciences (China)
- 65081L **A fast inter mode decision algorithm in H.264/AVC for IPTV broadcasting services** [6508-56]
G.-Y. Kim, B.-Y. Yoon, Electronics and Telecommunications Research Institute (South Korea); Y.-S. Ho, Gwangju Institute of Science and Technology (South Korea)

SESSION 12 MOTION ESTIMATION

- 65081M **Enhanced SAD reuse fast motion estimation** [6508-57]
K. L. Tang, K. N. Ngan, The Chinese Univ. of Hong Kong (Hong Kong China)
- 65081N **Motion estimation performance models with application to hardware error tolerance** [6508-58]
H.-Y. Cheong, A. Ortega, Univ. of Southern California (USA)
- 65081O **Super-resolution based on region-matching motion estimation** [6508-59]
O. A. Omer, T. Tanaka, Tokyo Univ. of Agriculture and Technology (Japan)

POSTER SESSION

- 65081P **An improved adaptive interpolation approach for H.264** [6508-60]
D. Wu, K. P. Lim, T. K. Chiew, Z. Zhou, Institute for Infocomm Research (Singapore); C. C. Ko, National Univ. of Singapore (Singapore)
- 65081Q **A comparative study of image compression based on directional wavelets** [6508-61]
K. Li, W. Xu, Q. Dai, Tsinghua Univ. (China); Y. Wang, Polytechnic Univ. (USA)
- 65081R **Locally adaptive reconstruction of lost low-frequency coefficients in wavelet coded images** [6508-62]
J. Rombaut, A. Pižurica, W. Philips, Ghent Univ. (Belgium)
- 65081S **Pose estimation from video sequences based on Sylvester's equation** [6508-63]
C. Chen, D. Schonfeld, J. Yang, Univ. of Illinois at Chicago (USA); M. Mohamed, Motorola Labs. (USA)
- 65081T **A fast and efficient method to protect color images** [6508-64]
M. Chaumont, W. Puech, Lab. LIRMM, CNRS, Univ. of Montpellier II (France)
- 65081U **3D-face model tracking based on a multi-resolution active search** [6508-65]
M. Chaumont, W. Puech, Lab. LIRMM, CNRS, Univ. of Montpellier II (France)

- 65081V **Region-based hidden Markov models for image categorization and retrieval** [6508-66]
F. Li, Q. Dai, W. Xu, Tsinghua Univ. (China)
- 65081W **A new support tool for machine learning and pattern recognition using tracking and motion segmentation** [6508-67]
E. Bichot, O. Masset, L. Mascarilla, P. Courtellemont, Univ. of La Rochelle (France)
- 65081X **Pet fur color and texture classification** [6508-68]
J. Yen, Toshiba America (USA); D. Mukherjee, S. Lim, D. Tretter, Hewlett Packard Labs. (USA)
- 65081Y **A simple reversed-complexity Wyner-Ziv video coding mode based on a spatial reduction framework** [6508-69]
D. Mukherjee, Hewlett-Packard Labs. (USA); B. Macchiavello, R. L. de Queiroz, Univ. de Brasília (Brazil)
- 650820 **Motion refined medium granular scalability** [6508-71]
Z. Li, W. Yao, S. Rahardja, Institute for Infocomm Research (Singapore)
- 650821 **An efficient multi-frame dynamic search range motion estimation for H.264** [6508-72]
Q.-C. Sun, J. Wang, X.-H. Chen, L. Yu, Zhejiang Univ. (China)
- 650822 **An area-efficient VLSI architecture for AVS intra frame encoder** [6508-73]
K. Zhang, L. Yu, Zhejiang Univ. (China)
- 650823 **Fast luminance and chrominance correction based on motion compensated linear regression for multi-view video coding** [6508-74]
W.-Y. Chen, L.-F. Ding, L.-G. Chen, National Taiwan Univ. (Taiwan)
- 650824 **Complexity control of fast motion estimation in H.264/MPEG-4 AVC with rate-distortion-complexity optimization** [6508-75]
M. Wu, S. Forchhammer, S. M. Aghito, COM/DTU (Denmark)
- 650825 **Wyner-Ziv residual coding for wireless multi-view system** [6508-76]
Z. Jin, Ningbo Univ. (China); M. Yu, G. Jiang, Ningbo Univ. (China) and Peking Univ. (China); K. Chen, M. Yang, Z. Jiang, Ningbo Univ. (China)
- 650826 **Progressive image transmission with RCPT protection** [6508-77]
L. Yao, L. Cao, The Univ. of Mississippi (USA); C. W. Chen, Florida Institute of Technology (USA)
- 650827 **A sender-driven time-stamp controlling based dynamic light field streaming service** [6508-78]
Z. Han, Q. Dai, Y. Liu, Tsinghua Univ. (China)
- 650828 **A fast and quality-preserving method for H.264 encoding using dynamic SAD maps** [6508-79]
D. Wu, T. K. Chiew, K. P. Lim, J. Y. Tham, Z. Zhou, Institute for Infocomm Research (Singapore); C. C. Ko, National Univ. of Singapore (Singapore)
- 650829 **Impact of rate control tools on very fast non-embedded wavelet image encoders** [6508-81]
O. López, M. Martínez-Rach, Miguel Hernández Univ. (Spain); J. Oliver, Technical Univ. of Valencia (Spain); M. P. Malumbres, Miguel Hernández Univ. (Spain)

- 65082A **Non-rigid object tracker based on a robust combination of parametric active contour and point distribution model** [6508-82]
J. I. Olszewska, Univ. Catholique de Louvain (Belgium); T. Mathes, Univ. de Liège (Belgium); C. De Vleeschouwer, Univ. Catholique de Louvain (Belgium); J. Piater, Univ. de Liège (Belgium); B. Macq, Univ. Catholique de Louvain (Belgium)
- 65082B **Optimal packet scheduling and rate control for video streaming** [6508-83]
E. Gürses, Norwegian Univ. of Science and Technology (Norway); G. B. Akar, Middle East Technical Univ. (Turkey); N. Akar, Bilkent Univ. (Turkey)
- 65082C **Evaluation of a combined pre-processing and H.264-compression scheme for 3D integral images** [6508-84]
R. Olsson, M. Sjöström, Y. Xu, Mid Sweden Univ. (Sweden)
- 65082D **Key frame extraction from unstructured consumer video clips** [6508-85]
C. Papin, Kodak Pathé (USA); J. Luo, Eastman Kodak Co. (USA)
- 65082E **Multiresolution mesh segmentation based on surface roughness and wavelet analysis** [6508-86]
C. Roudet, F. Dupont, Lab. LIRIS, CNRS, Univ. Lyon 1 (France); A. M. Baskurt, Lab. LIRIS, CNRS, INSA de Lyon (France)
- 65082F **Occlusion and split detection and correction for object tracking in surveillance applications** [6508-87]
C. Vázquez, Communications Research Ctr. (Canada); M. Ghazal, A. Amer, Concordia Univ. (Canada)
- 65082G **Optimal reverse frame selection for stored video delivery under constrained resources** [6508-88]
D. Tao, J. Cai, Nanyang Technological Univ. (Singapore)
- 65082H **Post-processing for decoding without update step in motion-compensated lifted wavelet video coding** [6508-89]
A. Mavlankar, M. Flierl, B. Girod, Stanford Univ. (USA)
- 65082I **Wavelet-based multiple description coding of 3-D geometry** [6508-90]
A. Norkin, Tampere Univ. of Technology (Finland); M. O. Bici, G. B. Akar, Middle East Technical Univ. (Turkey); A. Gotchev, J. Astola, Tampere Univ. of Technology (Finland)
- 65082J **Hysteresis-based selective Gaussian-mixture model for real-time background update** [6508-91]
F. Achkar, A. Amer, Concordia Univ. (Canada)
- 65082K **View interpolation by inverse filtering: generating the center view using multiview images of circular camera array** [6508-92]
A. Kubota, Tokyo Institute of Technology (Japan); K. Kodama, National Institute of Informatics (Japan); Y. Hatori, Tokyo Institute of Technology (Japan)
- 65082L **A novel framework for improving bandwidth utilization for VBR video delivery over wide-area networks** [6508-93]
J. Yuan, S. Roy, Q. Sun, Institute for Infocomm Research (Singapore)

- 65082M **H.264/AVC error resilient video streaming using leaky prediction** [6508-94]
Y. Liu, Hewlett-Packard Labs. (USA); R. Kurceren, Nokia Inc. (USA)
- 65082N **A fast and accurate characteristic-based rate-quantization model for video transmission** [6508-95]
D.-Y. Chan, W.-T. Chien, National Chiayi Univ. (Taiwan); C.-Y. Chang, C.-F. Chou, C.-J. Lin, J.-Y. Hu, National Taiwan Univ. (Taiwan)
- 65082O **A double motion-compensated orthogonal transform with energy concentration constraint** [6508-96]
M. Flierl, B. Girod, Stanford Univ. (USA)
- 65082P **Image compression using constrained relaxation** [6508-97]
Z. He, Univ. of Missouri, Columbia (USA)
- 65082Q **Rate-distortion optimized color quantization for compound image compression** [6508-98]
W. Ding, Univ. of Science and Technology of China (China); Y. Lu, F. Wu, S. Li, Microsoft Research Asia (China)
- 65082R **Dynamic GOP structure for scalable video coding** [6508-99]
H. Kim, SungKongHoe Univ. (South Korea); C. W. Chen, Florida Institute of Technology (USA)
- 65082S **The wavelet-based multi-resolution motion estimation using temporal aliasing detection** [6508-100]
T. Lee, D. V. Anderson, Georgia Institute of Technology (USA)
- 65082T **Adaptive P2P video streaming via packet labeling** [6508-101]
J. Chakareski, Layered Media (USA); P. Frossard, École Polytechnique Fédérale de Lausanne (Switzerland)
- 65082U **Using machine learning for fast intra MB coding in H.264** [6508-102]
H. Kalva, L. Christodoulou, Florida Atlantic Univ. (USA)
- 65082V **Sub-band motion compensation for spatially scalable video coding** [6508-103]
R. Zhang, M. L. Comer, Purdue Univ. (USA)
- 65082W **Non-linear up-sampling for image coding in a spatial pyramid** [6508-104]
M. Beermann, Univ. of Ottawa (Canada) and RWTH Aachen Univ. (Germany); J.-R. Ohm, RWTH Aachen Univ. (Germany)
- 65082X **Collusion attack to a scalable AND-ACC fingerprinting scheme** [6508-105]
Y. Wu, Z. Zhao, Institute for Infocomm Research (Singapore)
- 65082Y **Improvements of multiple FGS layers coding for low-delay applications in SVC** [6508-106]
Y. Zheng, X. Ji, Institute of Computing Technology (China); F. Wu, Microsoft Research Asia (China); D. Zhao, W. Gao, Institute of Computing Technology (China)
- 65082Z **Achieving H.264-like compression efficiency with distributed video coding** [6508-107]
S. Milani, Univ. of Padova (Italy); J. Wang, K. Ramchandran, Univ. of California, Berkeley (USA)

Author Index

Conference Committee

Symposium Chairs

Michael A. Kriss, Consultant (USA)
Robert A. Sprague, Consultant (USA)

Conference Chairs

Chang Wen Chen, Florida Institute of Technology (USA)
Dan Schonfeld, University of Illinois at Chicago (USA)
Jiebo Luo, Eastman Kodak Company (USA)

Program Committee

Kiyoharu Aizawa, The University of Tokyo (Japan)
Yucel Altunbasak, Georgia Institute of Technology (USA)
Rashid Ansari, University of Illinois at Chicago (USA)
John G. Apostolopoulos, Hewlett-Packard Laboratories (USA)
Mireille Boutin, Purdue University (USA)
Alan C. Bovik, The University of Texas at Austin (USA)
Charles D. Creusere, New Mexico State University (USA)
Gerard de Haan, Philips Research Laboratories (Netherlands)
Edward J. Delp, Purdue University (USA)
Eric Dubois, University of Ottawa (Canada)
Frederic Dufaux, École Polytechnique Fédérale de Lausanne (Switzerland)
Touradj Ebrahimi, École Polytechnique Fédérale de Lausanne (Switzerland)
Onur G. Guleryuz, DoCoMo Communications Laboratories USA, Inc. (USA)
Lina J. Karam, Arizona State University (USA)
W. C. Karl, Boston University (USA)
Janusz Konrad, Boston University (USA)
Alex C. Kot, Nanyang Technological University (Singapore)
C.-C. Jay Kuo, University of Southern California (USA)
Reginald L. Lagendijk, Technische Universiteit Delft (Netherlands)
Shipeng Li, Microsoft Research Asia (China)
Bangalore S. Manjunath, University of California/Santa Barbara (USA)
Peyman Milanfar, University of California/Santa Cruz (USA)
Pierre Moulin, University of Illinois at Urbana-Champaign (USA)
Sethuraman Panchanathan, Arizona State University (USA)
Thrasyvoulos N. Pappas, Northwestern University (USA)
William A. Pearlman, Rensselaer Polytechnic Institute (USA)
Fernando Pereira, Instituto Superior Técnico (Portugal)
Béatrice Pesquet-Popescu, École Nationale Supérieure des Télécommunications (France)
Fatih M. Porikli, Mitsubishi Electric Research Laboratories (USA)

Majid Rabbani, Eastman Kodak Company (USA)
Kannan Ramchandran, University of California, Berkeley (USA)
Kenneth Rose, University of California/Santa Barbara (USA)
Amir Said, Hewlett-Packard Laboratories (USA)
Paul Salama, Indiana University-Purdue University at Indianapolis (USA)
Gaurav Sharma, University of Rochester (USA)
Eckehard G. Steinbach, Technische Universität München (Germany)
Robert L. Stevenson, University of Notre Dame (USA)
Thomas Stockhammer, Nomor Research (Germany)
Huifang Sun, Mitsubishi Electric Research Laboratories (USA)
Ming-Ting Sun, University of Washington (USA)
Andrew G. Tescher, AGT Associates (USA)
Bhaskaran Vasudev, Epson Palo Alto Laboratory (USA)
Anthony Vetro, Mitsubishi Electric Research Laboratories (USA)
John W. Woods, Rensselaer Polytechnic Institute (USA)
Ying Wu, Northwestern University (USA)
Heather H. Yu, Panasonic Information & Networking Technologies
 Laboratory (USA)

Session Chairs

- 1 Video Coding I
John G. Apostolopoulos, Hewlett-Packard Laboratories (USA)
Shipeng Li, Microsoft Research Asia (China)
- 2 Image and Video Analysis
Touradj Ebrahimi, École Polytechnique Fédérale de Lausanne
 (Switzerland)
Philippe Salembier, Universidad Politècnica de Catalunya (Spain)
- 3 Special Session: The Mathematics of Imaging
Mireille Boutin, Purdue University (USA)
- 4 Special Session: Collaborative Object Tracking
Fatih M. Porikli, Mitsubishi Electric Research Laboratories (USA)
Ying Wu, Northwestern University (USA)
- 5 Distributed Video Coding
Edward J. Delp, Purdue University (USA)
Kannan Ramchandran, University of California, Berkeley (USA)
- 6 Wavelet Representation and Coding
John W. Woods, Rensselaer Polytechnic Institute (USA)
- 7 Image Registration and Recognition
Robert L. Stevenson, University of Notre Dame (USA)

- 8 Special Session: Next-Generation Video Coding Technologies
C.-C. J. Kuo, University of Southern California (USA)
Shawmin Lei, Sharp Laboratories of America, Inc. (USA)
Shijun Sun, Sharp Laboratories of America, Inc. (USA)
- 9 Media Communication and Networking
Zhihai He, University of Missouri, Columbia (USA)
Michael W. Marcellin, The University of Arizona (USA)
- 10 Imaging Systems
Anthony Vetro, Mitsubishi Electric Research Laboratories (USA)
- 11 Video Coding II
Amir Said, Hewlett-Packard Laboratories (USA)
- 12 Motion Estimation
Antonio Ortega, University of Southern California (USA)

Introduction

We would like to extend a warm welcome to each of you. We have an exciting technical program of outstanding papers in all areas of image processing and communications.

We would like to acknowledge the tremendous work done by the program committee who reviewed the outstanding papers that appear in the conference proceedings. Their hard work has allowed us to assemble a superb and highly selective technical program.

This year, VCIP has received a large number of submissions consisting of 170 papers. Among them, 17 were invited papers to special sessions. We were able to accept only 87 regular papers to the conference including 42 papers for the oral sessions. The overall acceptance for regular paper submissions was at a highly selective rate of 56%, and a rate of only 27% for oral sessions. This process has made VCIP one of the most selective conferences in image processing.

VCIP is the first conference devoted to image processing and communications. It has become a leading forum for the presentation of fundamental research results and technological advances in the field of visual communication and image processing. The high selectivity of this year's program will enhance VCIP's reputation as the elite forum for high-quality conference publications in image processing and communications.

We would also like to thank the organizers of the three exciting special sessions in several innovative research areas in image processing and communications:

The Mathematics of Imaging

Organizer: Mireille Boutin, Purdue Univ.

Collaborative Object Tracking

Organizers: Fatih M. Porikli, Mitsubishi Electric Research Labs.

Ying Wu, Northwestern Univ.

Next-Generation Video Coding Technologies

Organizers: C.-C. J. Kuo, Univ. of Southern California

Shawmin Lei, Sharp Labs. of America, Inc.

Shijun Sun, Sharp Labs. of America, Inc.

Finally, we are very grateful for the support of IS&T and SPIE for making our work as conference chairs as easy as possible. We would also like to express our gratitude for the support of Hewlett Packard, Kodak, Mitsubishi Electric Research Labs, and

Motorola. Their generous contribution has allowed us to select several outstanding papers to receive best paper awards.

We hope that your experience in this year's VCIP conference will be rewarding and memorable, and we look forward to seeing you again in the future.

Chang Wen Chen
Dan Schonfeld
Jiebo Luo
VCIP 2007 Conference Chairs