Digital Photography VIII

Sebastiano Battiato
Brian G. Rodricks
Nitin Sampat
Francisco H. Imai
Feng Xiao
Editors

23–24 January 2012
Burlingame, California, United States

Sponsored and Published by
IS&T—The Society for Imaging Science and Technology
SPIE
Contents

vii Conference Committee

SESSION 1 SENSORS AND OPTICS

8299 02 An objective protocol for comparing the noise performance of silver halide film and digital sensor [8299-01]
F. Cao, F. Guichard, H. Hornung, R. Tessière, DxO Labs (France)

8299 03 Sensor defect probability estimation and yield [8299-02]
H. Peng, B. Keelan, Aptina Imaging Corp. (United States)

8299 04 Optimum spectral sensitivity functions for single sensor color imaging [8299-03]
Z. Sadeghipoor, École Polytechnique Fédérale de Lausanne (Switzerland); Y. M. Lu, Harvard School of Engineering and Applied Sciences (United States); S. Süsstrunk, École Polytechnique Fédérale de Lausanne (Switzerland)

8299 05 A method for the evaluation of wide dynamic range cameras [8299-04]
P. W. Wong, Pixim Inc. (United States); Y. H. Lu, Ministry of Public Security (China)

8299 06 Active pixels of transverse field detector based on a charge preamplifier [8299-05]
G. Langfelder, C. Buffa, A. F. Longoni, A. Pelamatti, F. Zaraga, Politecnico di Milano (Italy)

8299 07 Digital focusing and refocusing with thin multi-aperture cameras [8299-06]
A. Oberdörster, A. Brückner, F. Wippermann, A. Bräuer, Fraunhofer Institute for Optics and Precision Engineering (Germany); H. P. A. Lensch, Eberhard Karls Univ. Tübingen (Germany)

8299 08 The multifocus plenoptic camera [8299-07]
T. Georgiev, Adobe Systems Inc. (United States); A. Lumsdaine, Indiana Univ. (United States)

8299 09 Spatial analysis of discrete plenoptic sampling [8299-08]
A. Lumsdaine, Indiana Univ. (United States); T. G. Georgiev, Adobe Systems Inc. (United States); G. Chunev, Indiana Univ. (United States)

8299 0A Design framework for a spectral mask for a plenoptic camera [8299-09]
K. Berkner, S. A. Shroff, Ricoh Innovations, Inc. (United States)

SESSION 2 IMAGE ENHANCEMENT

8299 0B Detection thresholds of structured noise in the presence of shot noise [8299-10]
F. Li, B. Keelan, R. Jenkin, A. Dokoutchaev, Aptina Imaging Corp. (United States)

8299 0C Reduced-reference image quality assessment based on statistics of edge patterns [8299-11]
Y. Chen, W. Xue, X. Mou, Xi’an Jiaotong Univ. (China)
Joint chromatic aberration correction and demosaicking [8299-12]
M. Singh, T. Singh, Image Algorithmics (United States)

Quality versus color saturation and noise [8299-14]
B. W. Keelan, R. B. Jenkin, E. W. Jin, Aptina Imaging Corp. (United States)

Bio-inspired framework for automatic image quality enhancement [8299-15]
A. Ceresi, F. Gasparini, F. Marini, R. Schettini, Univ. degli Studi di Milano-Bicocca (Italy)

An efficient multiple exposure image fusion in JPEG domain [8299-16]
R. Hebbalaguppe, Dublin City Univ. (Ireland); R. Kakarala, Nanyang Technological Univ. (Singapore)

A controllable anti-aliasing filter for digital film cameras [8299-17]
B. Petljanski, Panavision Inc. (United States)

Rethinking camera user interfaces [8299-19]
S. Brewster, C. McAdam, J. McDonald, J. Maciver, Univ. of Glasgow (United Kingdom)

On the performances of computer vision algorithms on mobile platforms [8299-20]
S. Battilato, G. M. Farinella, E. Messina, G. Puglisi, D. Ravi, Univ. degli Studi di Catania (Italy); A. Capra, V. Tomaselli, STMicroelectronics (Italy)

A novel adaptive compression method for hyperspectral images by using EDT and particle swarm optimization [8299-21]
P. Ghamisi, K.N.Toosi Univ. of Technology (Iran, Islamic Republic of); L. Kumar, Univ. of New England (Australia)

Spectral sensitivity evaluation considering color constancy [8299-22]
H. Kuniba, Nikon Corp. (Japan)

Multispectral demosaicking using guided filter [8299-23]
Y. Monno, M. Tanaka, M. Okutomi, Tokyo Institute of Technology (Japan)

An LED-based lighting system for acquiring multispectral scenes [8299-24]
M. Parmar, Qualcomm MEMS Technologies (United States); S. Lansel, J. Farrell, Stanford Univ. (United States)

Fast in-plane translation and rotation estimation for multi-image registration [8299-25]
X. Jiang, H. Wang, Qualcomm Inc. (United States)
Multispectral filter wheel cameras: modeling aberrations for filters in front of lens [8299-26]
J. Klein, T. Aach, RWTH Aachen (Germany)

Correcting saturated pixels in images [8299-27]
J. Fu, W. Ji, X. Mou, Xi'an Jiaotong Univ. (China)

Real-time, multidirectional 2D fast wavelet transform and its denoised sharpening application [8299-28]
B. J. Baek, T. C. Kim, SAMSUNG Electronics Co., Ltd. (Korea, Republic of)

Color transfer using semantic image annotation [8299-29]
C. Cusano, F. Gasparini, R. Schettini, Univ. degli Studi di Milano-Bicocca (Italy)

Author Index
Conference Committee

Symposium Chairs

Majid Rabbani, Eastman Kodak Company (United States)
Gaurav Sharma, University of Rochester (United States)

Conference Chairs

Sebastiano Battiato, Università degli Studi di Catania (Italy)
Brian G. Rodricks, Fairchild Imaging (United States)
Nitin Sampat, Rochester Institute of Technology (United States)

Conference Cochair

Francisco H. Imai, Canon U.S.A., Inc. (United States)
Feng Xiao, Vimicro Corporation (United States)

Program Committee

Ajit S. Bopardikar, Samsung Electronics, India Software Operations Ltd. (India)
Frédéric Cao, DxO Labs (France)
Peter B. Catrysse, Stanford University (United States)
Ted J. Cooper, Lens Vector, Inc. (United States)
Jeffrey M. DiCarlo, Intuitive Surgical, Inc. (United States)
Alexandru F. Drimbarean, Tesseract (FotoNation) Ireland Ltd. (Ireland)
Joyce E. Farrell, Stanford University (United States)
Guotong Feng, Ricoh Innovations, Inc. (United States)
Boyd A. Fowler, Fairchild Imaging (United States)
Sergio R. Goma, Qualcomm Inc. (United States)
Mirko Guarnera, STMicroelectronics (Italy)
Xiaoyun Jiang, Qualcomm Inc. (United States)
George John, Motorola, Inc. (United States)
Michael A. Kriss, Consultant (United States)
Jiangtao Kuang, OmniVision Technologies, Inc. (United States)
Feng Li, Aptina Imaging Corporation (United States)
J. Dylan Li, Lifesize Communications, Inc. (United States)
Kevin J. Matherson, Hewlett-Packard Company (United States)
Jon S. McElvain, Dolby Laboratories, Inc. (United States)
Ricardo J. Motta, NVIDIA Corporation (United States)
Seishi Ohmori, Nikon Corporation (Japan)
Manu Parmar, Qualcomm Inc. (United States)
Gloria G. Putnam, Eastman Kodak Company (United States)
John R. Reinert-Nash, Lifetouch, Inc. (United States)
Filippo D. Stanco, Università degli Studi di Catania (Italy)
Qun Sun, Aptina Imaging Corporation (United States)
Sabine Süssstrunk, École Polytechnique Fédérale de Lausanne (Switzerland)
Touraj Tajbakhsh, Dream Chip Technologies (Germany)
Radka Tezaur, Nikon Precision Inc. (United States)
Michael Wang, Cisco Systems, Inc. (United States)
Dietmar Wüller, Image Engineering Dietmar Wüller (Germany)
Weihua Xiong, OmniVision Technologies, Inc. (United States)
Alireza Yasan, Foveon Inc. (United States)
Lei Zhang, The Hong Kong Polytechnic University (Hong Kong, China)

Session Chairs

1. Sensors and Optics
   Feng Li, Aptina Imaging Corporation (United States)

2. Image Enhancement
   Ajit S. Bopardikar, Samsung Electronics, India Software Operations Ltd. (India)

3. Image Quality and Mobile Imaging I: Joint Session with Conference 8293
   Peter D. Burns, Consultant (United States)
   Sebastiano Battiato, Università degli Studi di Catania (Italy)

4. Image Quality and Mobile Imaging II: Joint Session with Conference 8293
   Peter D. Burns, Consultant (United States)
   Sebastiano Battiato, Università degli Studi di Catania (Italy)

5. Multispectral
   Nitin Sampat, Rochester Institute of Technology (United States)