Color Imaging XII: Processing, Hardcopy, and Applications

Reiner Eschbach
Gabriel G. Marcu
Chairs/Editors

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

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

SPIE Vol. 6493
## Contents

<table>
<thead>
<tr>
<th>SESSION 1</th>
<th>COLOR SCIENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>649302</td>
<td>On the behavior of spatial models of color (Invited Paper) [6493-01]</td>
</tr>
<tr>
<td></td>
<td>A. Rizzi, Univ. degli Studi di Milano (Italy); J. J. McCann, McCann Imaging (USA)</td>
</tr>
<tr>
<td>649303</td>
<td>Effect of time spacing on the perceived color [6493-02]</td>
</tr>
<tr>
<td></td>
<td>S. Roch, J. Y. Hardeberg, P. Nussbaum, Gjøvik Univ. College (Norway)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SESSION 2</th>
<th>COMPRESSION AND ARCHIVING</th>
</tr>
</thead>
<tbody>
<tr>
<td>649304</td>
<td>Segmentation for MRC compression [6493-03]</td>
</tr>
<tr>
<td></td>
<td>E. Haneda, Purdue Univ. (USA); J. Yi, Samsung Electronics (South Korea); C. A. Bouman, Purdue Univ. (USA)</td>
</tr>
<tr>
<td>649305</td>
<td>A new approach to JBIG2 binary image compression [6493-04]</td>
</tr>
<tr>
<td></td>
<td>M. Figuera, Purdue Univ. (USA); J. Yi, Samsung Electronics (South Korea); C. A. Bouman, Purdue Univ. (USA)</td>
</tr>
<tr>
<td>649306</td>
<td>Removal of artifacts from JPEG compressed document images [6493-05]</td>
</tr>
<tr>
<td></td>
<td>B. Oztan, Univ. of Rochester (USA); A. Malik, Z. Fan, R. Eschbach, Xerox Corp. (USA)</td>
</tr>
<tr>
<td>649307</td>
<td>Digital images for eternity: color microfilm as archival medium [6493-06]</td>
</tr>
<tr>
<td></td>
<td>C. Normand, R. Gschwind, P. Fornaro, Univ. of Basel (Switzerland)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SESSION 3</th>
<th>DISPLAYS I</th>
</tr>
</thead>
<tbody>
<tr>
<td>649308</td>
<td>Color appearance change of a large size display under various illumination conditions [6493-07]</td>
</tr>
<tr>
<td></td>
<td>S. Y. Choi, M. R. Luo, Univ. of Leeds (United Kingdom); M. R. Pointer, National Physical Lab. (United Kingdom)</td>
</tr>
</tbody>
</table>

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. 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.
An investigation of the effect of image size on the color appearance of softcopy reproductions using a contrast matching technique [6493-08]
M. Nezamabadi, E. D. Montag, R. S. Berns, Rochester Institute of Technology (USA)

Modeling for hue shift effect of human visual system on high luminance display [6493-09]
T.-H. Lee, M.-Y. Lee, K.-H. Park, Y.-H. Ha, Kyungpook National Univ. (South Korea)

Optimizing color edge contrast in presence of noise and amplitude quantization errors [6493-10]
F. Lebowsky, STMicroelectronics (France); Y. Huang, STMicroelectronics (Singapore)

SESSION 4 DISPLAYS II

Correlating 2D NTSC gamut ratio to its 3D gamut volume [6493-11]
P.-L. Sun, Shih Hsin Univ. (Taiwan)

Device calibration method for optical light modulator [6493-12]
Y. Bang, A. Baik, D. Park, Samsung Advanced Institute of Technology (South Korea); I. Yeo, J. Han, Samsung Electro-Mechanics (South Korea)

LCD TV comparable to CRT TV for moving image quality: world's best MPRT LCD TV [6493-13]

Nonlinear curve optimization in digital imaging [6493-14]
S. Quan, X. Jiang, Qualcomm, Inc. (USA)

Reducing rainbow effect for filed sequential color LCDs [6493-15]
P.-L. Sun, Shih Hsin Univ. (Taiwan)

Third-time lucky: why a series of ISO display standards deserves extensive coverage at electronic imaging conferences [6493-17]
F. L. van Nes, ErgoNes (Netherlands) and Technische Univ. Eindhoven (Netherlands)

SESSION 5 GAMUT MAPPING

A novel color mapping method for preferred color reproduction [6493-18]
K. M. Kim, H. S. Oh, S. H. Kim, D. C. Choi, Samsung Electronics Co., Ltd. (South Korea)

Gamut mapping method for ICC saturated intent [6493-19]
M.-K. Cho, H.-K. Choh, S.-E. Kim, Y.-T. Kim, Y. Bang, Samsung Advanced Institute of Technology (South Korea)

SESSION 6 IMAGING SOLUTIONS AND APPLICATIONS

Adaptive color artwork [6493-20]
G. Beretta, Hewlett-Packard Labs. (USA)

Peteye detection and correction [6493-21]
J. Yen, Toshiba America (USA); H. Luo, Yahoo! (USA); D. Tretter, Hewlett Packard Labs. (USA)
<table>
<thead>
<tr>
<th>SESSION 7</th>
<th>PRINTING</th>
</tr>
</thead>
</table>
| 64930N    | **Modeling an electrophotographic printer: Part I. monochrome systems (Invited Paper)** [6493-23]  
M. A. Kriss, Consultant (USA) |
| 64930O    | **Modeling an electrophotographic printer: Part II. color systems** [6493-24]  
M. A. Kriss, Consultant (USA) |
| 64930P    | **Printer color calibration using an embedded sensor** [6493-25]  
Y. Wu, A. Gudaitis, Hewlett Packard Co. (USA) |
| 64930Q    | **Color measurements on prints containing fluorescent whitening agents** [6493-26]  
M. Andersson, O. Norberg, Mid Sweden Univ. (Sweden) |

<table>
<thead>
<tr>
<th>SESSION 8</th>
<th>PRINTING AND APPLICATIONS</th>
</tr>
</thead>
</table>
| 64930R    | **A reference printer and color management architecture** [6493-27]  
P. J. Green, London College of Communication (United Kingdom) |
| 64930S    | **Efficient color printer characterization based on extended Neugebauer spectral models** [6493-28]  
P. Soler, J. Arnabat, Hewlett-Packard (Spain) |
| 64930T    | **Digital camera calibration for color measurements on prints** [6493-29]  
M. Andersson, Mid Sweden Univ. (Sweden) |
| 64930U    | **User preferences in color enhancement for unsupervised printing methods** [6493-30]  
C. Parraman, Univ. of the West of England (United Kingdom); A. Rizzi, Univ. of Milano (Italy) |
| 64930V    | **A user-friendly digital image processing procedure: technical implementation** [6493-31]  
R. Shaw, White Rose Digital (USA) |
| 64930W    | **Production planning and automated imposition** [6493-32]  
C. Tuijn, Agfa Graphics (Belgium) |
| 64930X    | **The perfect photo book: hints for the image selection process** [6493-33]  
R. Fageth, W. Schmidt-Sacht, CeWe Color AG & Co. OHG (Germany) |

<table>
<thead>
<tr>
<th>SESSION 9</th>
<th>IMAGE PROCESSING</th>
</tr>
</thead>
</table>
| 64930Y    | **Local contrast enhancement** [6493-57]  
M. Bressan, C. R. Dance, H. Poirier, D. Arregui, Xerox Research Ctr. Europe (France) |
| 64930Z    | **Color recovery from gray image based on analysis of wavelet packet sub-bands** [6493-34]  
K.-W. Ko, O.-S. Kwon, C.-H. Son, E.-Y. Kwon, Y.-H. Ha, Kyungpook National Univ. (South Korea) |
Model-based deduction of CMYK surface coverages from visible and infrared spectral measurements of halftone prints [6493-35]
T. Bugnon, M. Brichon, R. D. Hersch, Ecole Polytechnique Fédérale de Lausanne (Switzerland)

Accurate spectral response measurement system for digital color cameras [6493-36]
G.-W. Chang, Z.-M. Yeh, National Taiwan Normal Univ. (Taiwan)

Interpolation for nonlinear Retinex-type algorithms [6493-37]
D. Shaked, Hewlett Packard Labs. (Israel)

Omnidirectional scene illuminant estimation using a multispectral imaging system [6493-38]
S. Tominaga, T. Fukuda, Osaka Electro-Communication Univ. (Japan)

Deducing ink-transmittance spectra from reflectance and transmittance measurements of prints [6493-39]
M. Hébert, R. D. Hersch, Ecole Polytechnique Fédérale de Lausanne (Switzerland)

Halftone independent methods for color drift correction [6493-40]
V. Monga, S. Wang, R. Bala, Xerox Wilson Research Ctr. (USA)

Controlling the error in spectral vector error diffusion [6493-41]
J. Gerhardt, J. Y. Hardeberg, Gjøvik Univ. College (Norway)

Holladay halftoning using super resolution encoded templates [6493-42]
J. S. McElvain, C. M. Hains, Xerox Innovation Group (USA)

The hybrid screen: improving the breed [6493-44]
C. Lee, J. P. Allebach, Purdue Univ. (USA)

Ranked dither for robust color printing [6493-45]
M. R. Gupta, J. Bowen, Univ. of Washington (USA)

Rank-ordered error diffusion: method and applications [6493-46]
R. P. Loce, B. Xu, Xerox Corp. (USA)

AM/FM halftoning: improved cost function and training framework [6493-47]
S. W. Han, M. Jain, R. Kumontoy, C. Bauman, Purdue Univ. (USA); P. Majewicz, Hewlett-Packard Co. (USA); J. P. Allebach, Purdue Univ. (USA)

Resolution enhancement techniques for halftoned images [6493-48]
B. T. Ryu, J. O. Lee, C.-W. Kim, Inha Univ. (South Korea); H. K. Lee, S. H. Kim, Samsung Electronics Co. (South Korea)
Contribution to quality assessment of digital halftoning algorithm [6493-49]
F. Cittadini, M. Remita, Océ Print Logic Technologies (France) and Univ. Pierre et Marie Curie (France); J. Pervillé, S. Berche, Océ Print Logic Technologies (France); M. Ben Chouikha, Univ. Pierre et Marie Curie (France); H. Brettel, Ecole Nationale Supérieure des Télécommunications (France); G. Alquié, Univ. Pierre et Marie Curie (France)

Uniform rosette for moiré-free color halftoning [6493-50]
S.-G. Wang, Xerox Innovation Group (USA)

POSTER SESSION

Implement of FGS video encoding based on H.264 [6493-56]
Q. Lin, G. Feng, HuaQiao Univ. (China)

A watermarking algorithm for halftone image based on human vision system model [6493-51]
X. Wan, C. Hu, J. Xu, Wuhan Univ. (China)

Compression of color images using a hologram of gray tones [6493-52]
A. Restrepo-Martínez, R. Castañeda, Univ. Nacional de Colombia Sede Medellin (Colombia)

Author Index
Conference Committee

Symposium Chairs

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

Conference Chairs

Reiner Eschbach, Xerox Corporation (USA)
Gabriel G. Marcu, Apple Computer, Inc. (USA)

Program Committee

A. U. Agar, Oger Telecom (Turkey)
Jan P. Allebach, Purdue University (USA)
Jan Bares, NexPress Solutions, LLC (USA)
Phil J. Green, London College of Communication (United Kingdom)
Roger David Hersch, École Polytechnique Fédérale de Lausanne (Switzerland)
Patrick G. Herzog, Color AIxpers GmbH (Germany)
Choon-Woo Kim, Inha University (South Korea)
Michael A. Kriss, Consultant (USA)
Shaun T. Love, Lexmark International, Inc. (USA)
Alessandro Rizzi, Università degli Studi di Milano (Italy)
Shoji Tominaga, Osaka Electro-Communication University (Japan)
Chris Tuijn, Agfa-Gevaert Group (Belgium)

Session Chairs

1  Color Science
   Reiner Eschbach, Xerox Corporation (USA)

2  Compression and Archiving
   Shoji Tominaga, Osaka Electro-Communication University (Japan)

3  Displays I
   Gabriel G. Marcu, Apple Computer, Inc. (USA)

4  Displays II
   Choon-Woo Kim, Inha University (South Korea)

5  Gamut Mapping
   Phil J. Green, London College of Communication (United Kingdom)
6 Imaging Solutions and Applications  
Chris Tuijn, Agfa-Gevaert Group (Belgium)

7 Printing  
Giordano B. Beretta, Hewlett-Packard Laboratories (USA)

8 Printing and Applications  
Michael A. Kriss, Consultant (USA)

9 Image Processing  
Alessandro Rizzi, Università degli Studi di Milano (Italy)

10 Multispectral Imaging  
Alessandro Rizzi, Università degli Studi di Milano (Italy)

11 Halftoning I  
Jan P. Allebach, Purdue University (USA)

12 Halftoning II  
Reiner Eschbach, Xerox Corporation (USA)