

# **7th IS&V/SID Color Imaging Conference 1999**

## **Color Science, Systems, and Applications: Putting It All Together**

**Scottsdale, Arizona, USA  
16-19 November 1999**

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# The Papers Program

Wednesday Morning, Nov. 17, 8:30 a.m.

Opening Remarks: Jack Holm and Todd Newman, General Co-chairs

Wednesday Morning, Nov. 17, 8:40 a.m. – 9:25 a.m.

## Keynote Presentation

8:40 am	<b>Lessons Learned from Mondrians Applied to Real Images and Color Gamuts</b> <i>John McCann, McCann Imaging (USA)</i>	1
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Wednesday Morning, Nov. 17, 9:25 a.m. – 12:00 noon

## Image Capture

*Session Chair: Ingeborg Tastl, Sony U.S. Research Labs*

9:25 am	<b>Imaging Colorimetry Using a Digital Camera</b> <i>Wencheng Wu and Jan P. Allebach, School of ECE, Purdue University, West Lafayette, Indiana</i> <i>Mostafa Analoui, School of Dentistry, Indiana University, Indianapolis, Indiana</i>	15
9:50 am	<b>A Comparative Analysis of Spectral Reflectance Reconstruction in Various Spaces Using a Trichromatic Camera System</b> <i>Francisco H. Imai and Roy S. Berns, Munsell Color Science Laboratory, Rochester Institute of Technology, Rochester, New York, USA</i>	21
10:15 am	<b>BREAK</b>	
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11:10 am	<b>Quantization in Multispectral Color Image Acquisition</b> <i>Peter D. Burns and Roy S. Berns*</i> Eastman Kodak Company, Rochester, New York, USA *Munsell Color Science Laboratory, Chester F. Carlson Center for Imaging Science, Rochester Institute of Technology, Rochester, New York, USA	32
11:35 am	<b>Generation of Virtual Spectral Color Target and Its Application</b> <i>Hiroaki Kotera, Chen Hung-Shing and Ryoichi Saito, Department of Information and Image Sciences, Chiba University</i>	36
12:00 noon	<b>LUNCH</b>	

Wednesday Afternoon, Nov. 17, 1:30 – 2:45 p.m.

## Scene Perception

*Session Chair: Brian Funt, Simon Fraser University, School of Computing Science*

1:30 pm	<b>Color Temperature Estimation of Scene Illumination</b> <i>Shoji Tominaga and Satoru Ebisui, Department of Engineering Informatics, Osaka Electro-Communication University, Neyagawa, Osaka, Japan Brian A. Wandell Image Systems Engineering, Stanford University, Stanford, California, USA</i>	42
1:55 pm	<b>The Perception of Color at Dawn and Dusk</b> <i>Paul M. Hubel, Hewlett-Packard Laboratories, Hewlett-Packard Company, Palo Alto, California, USA</i>	48
2:20 pm	<b>Application of the Hunt94 Model to Color Perception of Outdoor Objects</b> <i>Shudeish Mahadev, Arizona Department of Environmental Quality, Phoenix, Arizona, USA Ronald C. Henry, University of Southern California, Los Angeles, California, USA</i>	52
2:45 pm	<b>BREAK</b>	

Wednesday Afternoon, Nov. 17, 3:15 – 5:20 p.m.

## Color Management

*Session Chair: George Pawle, Eastman Kodak Company*

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3:40 pm	<b>Reducing the Cost of Lookup Table Based Color Transformations</b> <i>Raja Balasubramanian, Xerox Digital Imaging Technology Center, Webster, New York, USA</i>	65
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4:55 pm	<b>Integrating New Color Image Processing Techniques with Color Management</b> <i>Jack Holm, Hewlett-Packard Laboratories, Palo Alto, California, USA</i>	80

Wednesday Evening, Nov. 17, 6:30 p.m. – 8:30 p.m.

## *Conference Reception*

Thursday Morning, Nov. 18, 8:40 a.m. – 9:25 a.m.

## **Keynote Presentation**

*Session Chair: Todd Newman, Canon Information Systems*

8:40 pm

### **How To Make Pictures and Please People**

*Robert W.G. Hunt, University of Derby, Derby, England*

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Thursday Morning, Nov. 18, 9:25 a.m. – 9:50 a.m.

## *IS&T Honors and Awards Presentation*

*John Meyer, IS&T President*

9:50 pm

### **BREAK**

Thursday Morning, Nov. 18, 10:20 a.m. – 12:00 noon

## **Color Appearance**

*Session Chair: Gary Dispoto, Hewlett-Packard Laboratories*

10:20 pm

### **A Victory for Equivalent Background —On Average**

*Mark D. Fairchild, Munsell Color Science Laboratory,  
Rochester Institute of Technology, Rochester, New York, USA*

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10:45 pm

### **Model Based Color Tolerances**

*Nathan Moroney, Hewlett-Packard Laboratories, Palo Alto, California, USA*

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11:10 pm

### **White Point Estimation for Uncalibrated Images**

*Vlad C. Cardei, Brian Funt and Kobus Barnard  
School of Computing Science, Simon Fraser University, Vancouver, Canada*

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11:35 pm

### **Determination of Adapted White Points for Various Viewing Environments**

*Peyma Oskoui and Elizabeth Pirrotta  
Hewlett Packard Laboratories, Palo Alto, California, USA*

12:00 noon

### **LUNCH**

Thursday Afternoon, Nov. 18, 1:30 – 2:45 p.m.

## Color Constancy

Session Chair: Gene Martinez, Canon Information Systems

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*ITIM, †IAMI, Consiglio Nazionale delle Ricerche	
‡STMicroelectronics, TPA Group, Printer Division	
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<i>Hans B. Wach, Edward R. Dowski, Jr., W. Thomas Cathey</i> University of Colorado, Boulder, Colorado, USA	



Thursday Evening, Nov. 18, 7:30 – 8:45 p.m.

## Imaging Rare Books

*John Warnock, CEO, Adobe Systems Inc. (USA)*

Friday Morning, Nov. 19, 8:40 – 9:25 a.m.

## Keynote Presentation

*Session Chair: Tony Johnson, Consultant UK*

8:40 am	<b>Designing Color Reproduction Systems: A Perspective View</b> <i>Noboru Ohta, Munsell Color Science Laboratory, Chester F. Carlson Center for Imaging Science, Rochester Institute of Technology, Rochester, New York, USA</i>	14
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Friday Morning, Nov. 19, 9:25 – 10:15 a.m.

## Standards

*Session Chair: Tony Johnson, Consultant UK*

9:25 am	<b>Standard RGB Color Spaces</b> <i>Sabine Süsstrunk, Laboratory of audio-visual Communication (EPFL), Lausanne, Switzerland Robert Buckley, Xerox Architecture Center, Webster, New York, USA Steve Swen, Apple Computer, Cupertino, California, USA</i>	127
9:50 am	<b>Standard Color Spaces and ICC Color Management</b> <i>Tim Kohler, Canon Information Systems, San José, California, USA Michael Rodriguez, R. R. Donnelley and Sons Co., Downers Grove, Illinois, USA</i>	135
10:15 am	<b>BREAK</b>	

Friday Morning, Nov. 19, 10:45 a.m. – Noon

## Gamut Mapping I

*Session Chair: Naoya Katoh, EP Laboratories, Sony Corp.*

10:45 am	<b>Methods for Investigating the Influence of Image Characteristics on Gamut Mapping</b> <i>Ján Morovic and Pei-Li Sun, Colour &amp; Imaging Institute, University of Derby, Derby, United Kingdom</i>	138
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11:10 am **Invited Paper: Which Trajectories Through Which Perceptually Uniform Color Spaces Produce Appropriate Colors Scales for Interval Data?** 321  
*Bernice Rogowitz and Alan Calvin and Aron Cohen*  
IBM T. J. Watson Research Center, Yorktown Heights, New York, USA  
*Adar Pelah*, Cambridge University, Cambridge, United Kingdom

11:35 am **Development and Evaluation of Six Gamut-Mapping Algorithms for Pictorial Images** 144  
*Karen M. Braun, Raja Balasubramanian and Reiner Eschbach*  
Digital Imaging Technology Center, Xerox Corporation, Rochester, New York, USA

12:00 noon **LUNCH**

Friday Afternoon, Nov. 19, 1:30 – 3:10 p.m.

## Gamut Mapping II

*Session Chair: Ján Morovic, Colour & Imaging Institute, University of Derby*

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*Karen M. Braun, Raja Balasubramanian, and Steven J. Harrington*  
Digital Imaging Technology Center, Xerox Corporation, Webster, New York, USA

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*Naoya Katoh and Masahiko Ito*, PNC Development Center, Sony Corporation, Shinagawa, Tokyo, Japan

2:20 pm **Optimizing Gamut Mapping: Lightness and Hue Adjustments** 160  
*Patrick G. Herzog and Hendrik Büring*, Aachen University of Technology, Technical Electronics Institute, Aachen, Germany

2:45 pm **General-Purpose Gamut-Mapping Algorithms: Evaluation of Contrast-Preserving Rescaling Functions for Color Gamut Mapping** 167  
*Gustav J. Braun and Mark D. Fairchild*, Munsell Color Science Laboratory, Chester F. Carlson Center for Imaging Science, Rochester Institute of Technology, Rochester, New York, USA

3:10 pm **BREAK**

Friday Afternoon, Nov. 19, 3:40 – 5:20 p.m.

## **Printing**

*Session Chair: Raja Balasubramanian, Xerox Corporation*

- |         |  |     |
|---------|--|-----|
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|         | <i>Patrick Emmel, Roger David Hersch, Ecole Polytechnique Fédérale de Lausanne (EPFL), CH-1015 Lausanne, Switzerland</i>                             |     |
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|         | <i>Di-yuan Tzeng and Roy S. Berns, Munsell Color Science Laboratory, RIT Chester F. Carlson Center for Imaging Science, Rochester, New York, USA</i> |     |
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