IS&T International Symposium on Electronic Imaging Science and Technology 2020

Color Imaging XXV: Displaying, Processing, Hardcopy, and Applications

Burlingame, California
26 - 30 January 2020

Editors:

Reiner Eschbach
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COLOR IMAGING XXV: DISPLAYING, PROCESSING, HARDCOPY, AND APPLICATIONS

Tuesday, January 28, 2020

7:30 – 8:45 am Women in Electronic Imaging Breakfast; pre-registration required

Skin and Deep Learning · JOINT SESSION

Session Chair: Gabriel Marcu, Apple Inc. (United States)

8:45 – 9:30 am
Regency C
This session is jointly sponsored by: Color Imaging XXV: Displaying, Processing, Hardcopy, and Applications, and Material Appearance 2020.

8:45
Conference Welcome

8:50   MAAP-082
Beyond color correction: Skin color estimation in the wild through deep learning, *Robin Kips, Quoc Tran, Emmanuel Malherbe, and Matthieu Perrot, L'Oréal Research and Innovation (France)*...N/A

9:10   COLOR-083
SpectraNet: A deep model for skin oxygenation measurement from multi-spectral data, *Ahmed Mohammed, Mohib Ullah, and Jacob Bauer, Norwegian University of Science and Technology (Norway)*...1

Spectral Dataset · JOINT SESSION

Session Chair: Ingeborg Tastl, HP Labs, HP Inc. (United States)

9:30 – 10:10 am
Regency C
This session is jointly sponsored by: Color Imaging XXV: Displaying, Processing, Hardcopy, and Applications, and Material Appearance 2020.

9:30   MAAP-106
Visible to near infrared reflectance hyperspectral images dataset for image sensors design, *Axel Clouet[1], Jérôme Vaillant[1], and Célia Viola[2]; [1]CEA-LETI and [2]CEA-LITEN (France)*...N/A

9:50   MAAP-107
A multispectral dataset of oil and watercolor paints, *Vahid Babaei[1], Azadeh Asadi Shahmirzadi[2], and Hans-Peter Seidel[1]; [1]Max-Planck-Institut für Informatik and [2]Consultant (Germany)*...NA

10:00 am – 7:30 pm Industry Exhibition - Tuesday

10:10 – 10:40 am Coffee Break

Color and Appearance Reproduction · JOINT SESSION

Session Chair: Mathieu Hebert, Université Jean Monnet de Saint Etienne (France)

10:40 am – 12:30 pm
Regency C
This session is jointly sponsored by: Color Imaging XXV: Displaying, Processing, Hardcopy, and Applications, and Material Appearance 2020.

10:40   MAAP-396
From color and spectral reproduction to appearance, BRDF, and beyond, *Jon Yngve Hardeberg, Norwegian University of Science and Technology (NTNU) (Norway)*...N/A

11:10   MAAP-120
HP 3D color gamut – A reference system for HP's Jet Fusion 580 color 3D printers, *Ingeborg Tastl[1] and Alexandra Ju[2]; [1]HP Labs, HP Inc. and [2]HP Inc. (United States)*...N/A

11:30   COLOR-121
Spectral reproduction: Drivers, use cases, and workflow, *Tanzima Habib, Phil Green, and Peter Nussbaum, Norwegian University of Science and Technology (Norway)*...6

11:50   COLOR-122
Parameter estimation of PuRet algorithm for managing appearance of material objects on display devices (JIST-first), *Midori Tanaka, Ryusuke Arai, and Takahiko Horiuchi, Chiba University (Japan)*...11

12:10   COLOR-123
Colorimetrical performance estimation of a reference hyperspectral microscope for color tissue slides assessment, *Paul Lemaillet and Wei-Chung Cheng, US Food and Drug Administration (United States)*...18

12:30 – 2:00 pm Lunch

PLENARY: Automotive Imaging

Session Chairs: Radka Tezaur, Intel Corporation (United States), and Jonathan Phillips, Google Inc. (United States)

2:00 – 3:10 pm
Grand Peninsula Ballroom D

Imaging in the Autonomous Vehicle Revolution, *Gary Hicok, senior vice president, hardware development, NVIDIA Corporation (United States)*...N/A

3:10 – 3:30 pm Coffee Break

Color Understanding

Session Chair: Alessandro Rizzi, Università degli Studi di Milano (Italy)

3:30 – 5:10 pm
Regency C

3:30   COLOR-161
Automated multicolored fabric image segmentation and associated psychophysical evaluation, *Nian Xiong, North Carolina State University (United States)*...N/A

3:50   COLOR-162
Comparing a spatial extension of ICtCp color representation with S-CIELAB and other recent color metrics for HDR and WCG quality assessment, *Anustup Choudhury and Scott Daly, Dolby Laboratories, Inc. (United States)*...23

4:10   COLOR-163
An improved optimisation method for finding a color filter to make a camera more colorimetric, *Graham Finlayson and Yuteng Zhu, University of East Anglia (United Kingdom)*...32

4:30   COLOR-164
Random Spray Retinex extensions considering region of interest and eye movements (JIST-first), *Midori Tanaka[1], Matteo Lanaro[2], Takahiko Horiuchi[1], and Alessandro Rizzi[2]; [1]Chiba University (Japan) and [2]Università degli Studi di Milano (Italy)*...N/A

4:50   COLOR-165
Teaching color and color science: The experience of an international Master course, *Maurizio Rossi[1], Alice Plutino[2], Andrea Siniscalco[1], and Alessandro Rizzi[2]; [1]Politecnico di Milano and [2]Università degli Studi di Milano (Italy)*...37

5:30 – 7:30 pm Symposium Demonstration Session

Wednesday, January 29, 2020

Color Halftoning

Session Chair: Alessandro Rizzi, Università degli Studi di Milano (Italy)

8:50 – 10:10 am
Regency C

8:50   COLOR-195
New results for aperiodic, clustered-dot halftoning, *Jiayin Liu[1], Altyngul Jumabayeva[1], Yujian Xu[1], Yin Wang[1], Tal Frank[2], Shani Gat[2], Orel Bat Mor[2], Ben-Shoshan Yotam[2], Robert Ulichney[3], and Jan Allebach[1]; [1]Purdue University (United States), [2]HP Indigo (Israel), and [3]HP Labs, HP Inc. (United States)*...41

9:10   COLOR-196
Data-bearing halftone image alignment and assessment on 3D surface, *Ziyi Zhao[1], Yujian Xu[1], Robert Ulichney[2], Matthew Gaubatz[2], Stephen Pollard[3], and Jan Allebach[1]; [1]Purdue University (United States), [2]HP Labs, HP Inc. (United States), and [3]HP Inc. UK Ltd. (United Kingdom)*...48

9:30   COLOR-197
Using watermark visibility measurements to select an optimized pair of spot colors for use in a binary watermark, *Alastair Reed[1], Vlado Kitanovski[2], Kristyn Falkenstern[1], and Marius Pedersen[2]; [1]Digimarc Corporation (United States) and [2]Norwegian University of Science and Technology (Norway)*...54

9:50   COLOR-198
Hiding data in the blue channel, *Robert Ulichney and Matthew Gaubatz, HP Labs, HP Inc. (United States)*...60

10:00 am – 3:30 pm Industry Exhibition - Wednesday

10:10 – 10:50 am Coffee Break

Color and Human Vision

Session Chair: Gabriel Marcu, Apple Inc. (United States)

10:50 am – 12:10 pm
Regency C

10:50   COLOR-235
Individual differences in feelings about the color red, *Yasuyo Ichihara, Kogakuin University (Japan)*...66

11:10   COLOR-236
Colors before and after cataract surgery: A study of color constancy and discrimination, *John McCann, McCann Imaging (United States)*...70

11:30   COLOR-237
Daltonization by spectral filtering, *Phil Green and Peter Nussbaum, Norwegian University of Science and Technology (Norway)*...75

11:50   WITHDRAWN COLOR-238
Psychophysical evaluation of grey scale functions performance, *Kwame Baah, University of the Arts London (United Kingdom)*...N/A

Color Imaging XXV: Displaying, Processing, Hardcopy, and Applications Interactive Papers Oral Previews

Session Chair: Gabriel Marcu, Apple Inc. (United States)

12:10 – 12:30 pm
Regency C

In this session interactive poster authors will each provide a brief oral overview of their poster presentation, which will be presented in the Color Imaging XXV: Displaying, Processing, Hardcopy, and Applications 2020 Interactive Papers Session at 5:30 pm on Wednesday.

12:10   COLOR-259
Visual fidelity improvement in virtual reality through spectral textures applied to lighting simulations, *Francisco Díaz-Barrancas, Halina Cwierz, Pedro José Pardo, Ángel Luis Pérez, and María Isabel Suero, University of Extremadura (Spain)*...79

12:20   COLOR-260
Application of spectral computing technics for color vision testing using virtual reality devices, *Halina Cwierz, Francisco Díaz-Barrancas, Pedro José Pardo, Ángel Luis Pérez, and María Isabel Suero, University of Extremadura (Spain)*...82

12:30 – 2:00 pm Lunch

3:10 – 3:30 pm Coffee Break

Dark Side of Color

Session Chair: Alessandro Rizzi, Università degli Studi di Milano (Italy)

3:30 – 5:10 pm
Regency C

3:30   COLOR-279
Increases in scattered light causes increased darkness, *John McCann, McCann Imaging (United States)*...86

3:50   COLOR-280
Do you see what I see?, *Phil Green, Norwegian University of Science and Technology (Norway)*...N/A

4:10   COLOR-281
Replacing test charts with pictures, *Sophie Triantaphillidou, Edward Fry, and Oliver van Zwanenberg, University of Westminster (United Kingdom)*...N/A

4:30   COLOR-282
Colors challanges in navigating autonomous vehicles, *Dietmar Wueller, Image Engineering GmbH & Co. KG (Germany)*...92

4:50   COLOR-283
Does computer vision need color science?, *Jan Allebach, Purdue University (United States)*...N/A

Color Imaging XXV: Displaying, Processing, Hardcopy, and Applications Interactive Posters Session

5:30 – 7:00 pm
Sequoia

The Color Imaging XXV: Displaying, Processing, Hardcopy, and Applications Conference works to be presented at the EI 2020 Symposium Interactive Posters Session are listed in the Color Imaging XXV: Displaying, Processing, Hardcopy, and Applications Interactive Papers Oral Previews session just before Wednesday lunch.

5:30 – 7:00 pm EI 2020 Symposium Interactive Posters Session

5:30 – 7:00 pm Meet the Future: A Showcase of Student and Young Professionals Research

Thursday, January 30, 2020

Inkjet Printer Development and Diagnostic

Session Chair: Sophie Triantaphillidou, University of Westminster (United Kingdom)

8:50 – 10:30 am
Regency C

8:50   COLOR-350
Developing an inkjet printer I: RGB image to CMY ink amounts -- Image processing and color management, *Yin Wang[1], Baekdu Choi[1], Daulet Kenzhebalin[1], Sige Hu[1], George Chiu[1], Zillion Lin[2], Davi He[2], and Jan Allebach[1]; [1]Purdue University (United States) and [2]Sunvalleytek International Inc. (China)*...105

9:10   COLOR-351
Developing an inkjet printer II: CMY ink amounts to multibit CMY half-tones, *Baekdu Choi[1], Daulet Kenzhebalin[1], Sige Hu[1], George Chiu[1], Davi He[2], Zillion Lin[2], and Jan Allebach[1]; [1]Purdue University and [2]Sunvalleytek International Inc. (United States)*...114

9:30   COLOR-352
Developing an inkjet printer III: Multibit CMY halftones to hardware-ready bits, *Sige Hu[1], Daulet Kenzhebalin[1], George Chiu[1], Zillion Lin[2], Davi He[2], and Jan Allebach[1]; [1]Purdue University (United States) and [2]Sunvalleytek International Inc. (China)*...122

9:50   COLOR-349
Developing an inkjet printer IV: Printer mechanism control for best print quality, *Daulet Kenzhebalin[1], Baekdu Choi[1], Sige Hu[1], George Chiu[1], Zillion Lin[2], Davi He[2], and Jan Allebach[1]; [1]Purdue University (United States) and [2]Sunvalley Group (China)*...97

10:10   COLOR-353
Using acoustic information to diagnose the health of a printer, *Chin-Ning Chen[1], Katy Ferguson[2], Anton Wiranata[2], Mark Shaw[2], Wan-Eih Huang[1], George Chiu[1], Patricia Davis[1], and Jan Allebach[1]; [1]Purdue University and [2]HP Inc. (United States)*...130

10:30 – 11:00 am Coffee Break