

# **IS&T International Symposium on Electronic Imaging Science and Technology 2016**

Image Quality and System Performance  
XIII

San Francisco, California, USA  
14 – 18 February 2016

**Editors:**

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## Image Quality and System Performance XIII

**Monday, February 15, 2016**

### Mobile Quality

Session Chair: Jonathan Phillips, Google Inc. (USA)

**8:40 – 10:20 am**

Golden Gate 5

8:40

**IQSP Conference Opening Remarks**

8:50

IQSP-201

**Development of a perceptually calibrated objective metric for exposure,** Zhen He, Elaine Jin, and Yongshen Ni, Intel Corporation (USA)

9:10

IQSP-202

**A methodology for perceptual image quality assessment of smartphone cameras,** Susan Farnand<sup>1</sup>, Young Jang<sup>2</sup>, Chuck Han<sup>2</sup>, and Hau Hwang<sup>2</sup>; <sup>1</sup>Rochester Institute of Technology and <sup>2</sup>Qualcomm Technologies, Inc. (USA)

9:30

IQSP-203

**Correlation of photo-response blooming metrics with image quality in CMOS image sensors,** Pulla Reddy Ailuri, Orit Skorka, Ning Li, Radu Ispasoiu, and Vladi Koborov, ON Semiconductor (USA)

9:50

IQSP-204

**IEEE standard for mobile device image quality,** Margaret Belska, NVIDIA (USA)

10:20 – 10:40 am Coffee Break

### DPMI/IQSP: Mobile and Digital Camera Image Quality Evaluation Joint Session

Session Chairs: Joyce Farrell, Stanford University (USA) and Elaine Jin, Intel Corporation (USA)

**10:40 am – 12:30 pm**

Golden Gate 6/7

This session is jointly sponsored by: Digital Photography and Mobile Imaging XII and Image Quality and System Performance XIII.

10:40

**Conference Opening Remarks**

10:50

DPMI-004

**Image stabilization performance – existing standards and the challenges for mobile imaging,** Uwe Artmann and Philipp Feldker, Image Engineering GmbH & Co. KG (Germany)

11:10

DPMI-005

**Image flare measurement according to ISO 18844,** Dietmar Wueller, Image Engineering GmbH & Co. KG (Germany)

11:30

DPMI-006

**MTF measurements of wide field of view cameras,** Boyd Fowler, Vlad Cardei, and Sam Kavusi, Google Inc. (USA)

11:50

DPMI-007

**Method for quantifying image sensor susceptibility to chromatic flare artifacts,** Orit Skorka, Dave Jasinski, Radu Ispasoiu, and Vladi Koborov, ON Semiconductor (USA)

12:10

DPMI-008

**“Which factor is more important in obtaining good capture characterization, and, consequently, render higher color accuracy: The characterization of the camera’s sensor, or the characterization of illuminant?”**, Nitin Sampat and Stephen Viggiano, Rochester Institute of Technology (USA)

12:30 – 2:00 pm Lunch Break

### EI 2016 Opening Plenary and Symposium Awards

Session Chair: Choon-Woo Kim (Inha University)

**2:00 – 3:00 PM**

Continental Ballroom 5

**Illuminating a bright future for medicine,** Audrey K. Bowden, Stanford University (USA)

3:00 – 3:30 pm Coffee Break

### DPMI/IQSP: Image Capture I Joint Session

Session Chairs: Susan Farnand, Rochester Institute of Technology (USA) and Dietmar Wueller, Image Engineering GmbH & Co. KG (Germany)

**3:30 – 5:00 pm**

Golden Gate 6/7

This session is jointly sponsored by: Digital Photography and Mobile Imaging XII and Image Quality and System Performance XIII.

3:30

IQSP-009

**Adaptive geometric calibration correction for camera array,** Florian Ciurea, Dan Lelescu, and Priyam Chatterjee, Pelican Imaging (USA)

4:00

IQSP-010

**A filter design approach for consistent image quality,** Ahmed Eid, Michael Phelps, and Brian Cooper, Lexmark International (USA)

4:20

IQSP-011

**Linearization and normalization in spatial frequency response measurement,** Uwe Artmann, Image Engineering GmbH & Co. KG (Germany)

4:40

IQSP-012

**Optimized tone curve for in-camera image processing,** Praveen Cyriac, David Kane, and Marcelo Bertalmio, Universitat Pompeu Fabra (Spain)

5:00 – 6:00 pm EI 2016 Symposium Reception

**Tuesday, February 16, 2016**

### Keynote: Objective Quality Assessment

Session Chair: Robin Jenkin, ON Semiconductor (USA)

**8:50 – 9:40 am**

Golden Gate 5

IQSP-205

**Objective image quality assessment: Facing the real-world challenges,** Zhou Wang, University of Waterloo (Canada)

## Image Quality and System Performance XIII

**Objective Quality Assessment**

Session Chair: Nicolas Bonnier, Apple Inc. (USA)

**9:40 – 10:20 am**

Golden Gate 5

9:40

IQSP-206

**Applicability of existing objective metrics of perceptual quality for adaptive video streaming**, Jacob Søgaard<sup>1</sup>, Lukáš Krasula<sup>2,3</sup>, Muhammad Shahid<sup>4</sup>, Dogancan Temel<sup>5</sup>, Kjell Brunnstrom<sup>6,7</sup>, and Manzoor Razaak<sup>8</sup>; <sup>1</sup>Technical University of Denmark (Denmark), <sup>2</sup>Czech Technical University (Czech Republic), <sup>3</sup>Université de Nantes (France), <sup>4</sup>Blekinge Tekniska Högskola (Sweden), <sup>5</sup>Georgia Institute of Technology (USA), <sup>6</sup>Acreo, Swedish ICT (Sweden), <sup>7</sup>Mid Sweden University (Sweden), and <sup>8</sup>Kingston University London (United Kingdom)

10:00

IQSP-207

**Local defect detection and print quality assessment**, Jianyu Wang<sup>1</sup>, Terry Nelson<sup>2</sup>, Renee Jessome<sup>2</sup>, Steve Astling<sup>2</sup>, Eric Maggard<sup>2</sup>, Mark Shaw<sup>2</sup>, and Jan Allebach<sup>1</sup>; <sup>1</sup>Purdue University and <sup>2</sup>Hewlett-Packard Company (USA)

10:20 – 10:40 am Coffee Break

**3D Comfort and Quality**

Session Chair: Jukka Häkkinen, University of Helsinki (Finland)

**10:40 am – 12:30 pm**

Golden Gate 5

10:40

IQSP-208

**System performance of light-field 3D displays**, Péter Kovács<sup>1</sup>, Robert Bregovic<sup>2</sup>, and Atanas Goichev<sup>2</sup>; <sup>1</sup>Holografika Ltd. (Hungary) and <sup>2</sup>Tampere University of Technology (Finland)

11:10

IQSP-209

**Improving visual discomfort prediction for stereoscopic images via disparity-based contrast (JIST-first)**, Werner Zellinger and Bernhard Moser, Software Competence Center Hagenberg (Austria)

11:30

IQSP-210

**The disparity cue and blur on the relative visual comfort of stereoscopic contents (JIST-first)**, Yaohua Xie<sup>1</sup>, Fang Sun<sup>2</sup>, Danli Wang<sup>1</sup>, and Heng Qiao<sup>3</sup>; <sup>1</sup>Chinese Academy of Sciences, <sup>2</sup>Liaoning Normal University, and <sup>3</sup>Central University of Finance and Economics (China)

11:50

IQSP-211

**Using binocular and monocular properties for the construction of a quality assessment metric for stereoscopic images**, Iana Iatsun, Chaker Larabi, and Christine Fernandez Maloigne, Université de Poitiers (France)

12:10

IQSP-212

**An adaptive contrast enhancement method for stereo endoscopic images combining binocular just noticeable difference model and depth information**, Bilel Sdiri<sup>1,2</sup>, Azeddine Beghdadi<sup>1</sup>, Faouzi Alaya Cheikh<sup>2</sup>, and Ole Jakob Elle<sup>3</sup>; <sup>1</sup>Université Paris 13 (France), <sup>2</sup>Gjøvik University College, and <sup>3</sup>Oslo University Hospital (Norway)

12:30 – 2:00 pm Lunch Break

**EI 2016 Tuesday Plenary and Symposium Awards**

Session Chair: Nitin Sampat (Rochester Institute of Technology)

**2:00 – 3:00 PM**

Continental Ballroom 5

**Pushing computational photography deeper into imaging system design**, Ren Ng, University of California, Berkeley (USA)

3:00 – 3:30 pm Coffee Break

**Image Capture II**

Session Chair: Frans Gaykema, Océ Technologies (Netherlands)

**3:30 – 4:40 pm**

Golden Gate 5

3:30

IQSP-213

**Imaging applications of noise equivalent quanta**, Brian Keelan, ON Semiconductor (USA)

4:00

IQSP-214

**Effects on Fourier peaks used for periodic pattern detection**, ChunJung Tai<sup>1</sup>, Robert Ulichney<sup>2</sup>, and Jan Allebach<sup>1</sup>; <sup>1</sup>Purdue University and <sup>2</sup>HP Lab (USA)

4:20

IQSP-215

**Mixing and matching sensor format with lens coverage**, Henry Dietz, University of Kentucky (USA)

**Panel on Image Quality and System Performance**

Panel Moderators: Robin Jenkin, ON Semiconductor (USA); Chaker Larabi, Université de Poitiers (France); and Sophie Triantaphillidou, University of Westminster (United Kingdom)

**4:40 – 5:30 pm**

Golden Gate 5

**EI 2016 Symposium Demonstration Session and Exhibit Hall****Happy Hour****5:30 – 7:00 PM**

Continental Ballroom Foyer

**Wednesday, February 17, 2016****IQSP/HVEI: Keynote: Perception and Quality Joint Session**

Session Chair: Chaker Larabi, Université de Poitiers (France)

**8:50 – 9:40 am**

Continental Ballroom 4

This session is jointly sponsored by: Image Quality and System Performance XIII, and Human Vision and Electronic Imaging (HVEI) 2016.

8:50

IQSP-029

**Up Periscope! Designing a new perceptual metric for imaging system performance**, Andrew Watson, NASA Ames Research Center (USA)

## Image Quality and System Performance XIII

**Perception and Quality**

Session Chair: Göte Nyman, University of Helsinki (Finland)

**9:40 – 10:30 am**

Golden Gate 5

9:40 IQSP-216

**How saccadic models help predict where we look during a visual task? Application to visual quality assessment**, *Olivier Le Meur<sup>1</sup> and Antoine Coutrot<sup>2</sup>*; <sup>1</sup>University of Rennes 1 (France) and <sup>2</sup>University College London (United Kingdom)

10:10 IQSP-217

**An audiovisual saliency model for conferencing and conversation videos**, *Naty Sidaty, Chaker Larabi, and Abdelhakim Saadane*, *Université de Poitiers (France)*

10:30 – 10:50 am Coffee Break

**Image Capture III**

Session Chair: Luke Cui, Microsoft Co. (USA)

**10:50 – 11:30 am**

Golden Gate 5

10:50 IQSP-218

**Color correction meets blind validation for image capture: Are we teaching to the test?**, *Don Williams<sup>1</sup> and Peter Burns<sup>2</sup>*; <sup>1</sup>Image Science Associates and <sup>2</sup>Burns Digital Imaging (USA)

11:10 IQSP-219

**Effect of capture illumination on preferred white point for camera automatic white balance**, *Ben Bodner, Yixuan Wang, and Susan Farnand*, *Rochester Institute of Technology (USA)*

11:30 – 2:00 pm Lunch Break

**EI 2016 Wednesday Plenary and Symposium Awards**

Session Chair: Choon-Woo Kim (Inha University)

**2:00 – 3:00 PM**

Continental Ballroom 5

**Intel® RealSense Technology: Adding human-like sensing and interactions to computing devices**, *Achin Bhowmik*, *Intel Corporation (USA)*

3:00 – 3:30 pm Coffee Break

**Psychophysics, Quality, and Perception**

Session Chair: Peter Burns, Burns Digital Imaging (USA)

**3:30 – 5:20 pm**

Golden Gate 5

3:30 IQSP-220

**The influence of lightness, and the ‘crispening’ effect on the perceived contrast of textured images**, *David Kane and Marcelo Bertalmio*, *Universitat Pompeu Fabra (Spain)*

3:50 IQSP-221

**Study on perceptible and acceptable ranges for color gamut of transparent displays**, *Suhyun Kwon, Sunhee Park, and Jaehong Kim*, *LG Display Co., Ltd. (South Korea)*

4:10 IQSP-222

**Statistical study on perceived JPEG image quality via MCL-JCI dataset construction and analysis**, *Haiqiang Wang*, *University of Southern California (USA)*

4:30 IQSP-223

**Perceptual picture quality analysis of UHD signals in terms of spatial information and noises**, *Chulhee Lee, Sangwook Baek, Sungwook Youn, Seongyoun Woo, and Jeongyeol Baek*, *Yonsei University (South Korea)*

4:50 IQSP-224

**Visual assessment of HDR video**, *Vittorio Baroncini<sup>1</sup>, Massimiliano Agostinelli<sup>2</sup>, Federica Mangiatordi<sup>1</sup>, and Emiliano Pallotti<sup>1</sup>*; <sup>1</sup>Fondazione Ugo Bordononi and <sup>2</sup>Tretag s.r.l. (Italy)

5:10  
IQSP Conference Closing Remarks**Image Quality and System Performance XIII Interactive Papers Session****5:30 – 7:00 pm**

Continental Ballroom 6

The following works will be presented at the EI 2016 Symposium Interactive Papers Session.

**Noise-free rule-based fuzzy image enhancement**, *Mehdi Roopaei, Sos Agaian, Mehdi Shadaram, and Morad Khosravi Eghbal*, *University of Texas at San Antonio (USA)* IQSP-225

**Large-scale image processing using Amazon EC2 spot instances**, *Youngsol Koh and Yung-Hsiang Lu*, *Purdue University (USA)* IQSP-226

**EI 2016 Symposium Interactive Papers Session****5:30 – 7:00 PM**

Continental Ballroom 6