

IS&T International Symposium on

Electronic Imaging

SCIENCE AND TECHNOLOGY

14–18 February 2016 • San Francisco, CA, USA

FINAL PROGRAM



Photo: Diana Gonzalez.



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- **SHORT COURSES** • **EXHIBITS** • **DEMONSTRATION SESSION** • **PLENARY TALKS** • **INTERACTIVE PAPER SESSION** • **SPECIAL EVENTS** • **TECHNICAL SESSIONS**

Human Vision and Electronic Imaging (HVEI) 2016

Conference grouping: Human Perception and Cognition for Emerging Technologies

Conferences in this grouping discuss human visual, auditory and tactile perception, and cognition related to electronic imaging algorithms, methods, and applications; texture and material perception; image understanding; task-based visualization; other topics. Special topics this year include: high-level adaptation, psychophysiological measures of image quality, cross-sensory perception, and visual aesthetics, art and emotion in electronic media.

Conference overview

The conference on Human Vision and Electronic Imaging explores the role of human perception and cognition in the design, analysis, and use of electronic media systems. Over the years, it has brought together researchers, technologists and artists, from all over the world, for a rich and lively exchange of ideas. We believe that understanding the human observer is fundamental to the advancement of electronic media systems, and that advances in these systems and applications drive new research into the perception and cognition of the human observer. Every year, we introduce new topics through our Special Sessions, centered on areas driving innovation at the intersection of perception and emerging media technologies. The HVEI website (<http://hvei.eecs.northwestern.edu>) includes additional information and updates.

Awards: Student Best Paper/Poster Award

Joint Sessions: Perception and Quality with the Image Quality and System Performance Conference and Retinex at 50 with the Color Imaging: Displaying, Processing, Hardcopy, and Applications Conference.

Events: Monday evening HVEI Banquet and Talk; Museum Field Trip; End-of-Day Discussions; and Panel Discussions.

Conference Chairs: Bernice E. Rogowitz, Visual Perspectives (USA); Thrasylvoulos N. Pappas, Northwestern Univ. (USA); and Huib de Ridder, Technische Univ. Delft (the Netherlands)

Program Committee: Albert J. Ahumada, NASA Ames Research Ctr. (USA); Jan P. Allebach, Purdue Univ. (USA); Erhardt Barth, Univ. zu Lübeck (Germany); Walter R. Bender, Sugar Labs (USA); Michael H. Brill, Datacolor (USA); Kjell Brunnstrom, ACREO (Sweden); Damon M. Chandler, Oklahoma State Univ. (USA); John C. Dalton, Synthetik Software (USA); Scott J. Daly, Dolby Labs., Inc. (USA); Ulrich Engelke, Commonwealth Scientific and Industrial Research Organisation (Australia); Elena A. Fedorovskaya, Rochester Institute of Technology (USA); James A. Ferwerda, Rochester Institute of Technology (USA); Jennifer L. Gille, Qualcomm Technologies Inc. (USA); Sergio R. Goma, Qualcomm Technologies Inc. (USA); Sheila S. Hemami, Northeastern Univ. (USA); Hari Kalva, Florida Atlantic Univ. (USA); Stanley A. Klein, Univ. of California, Berkeley (USA); Patrick Le Callet, Univ. de Nantes (France); Lora T. Likova, The Smith-Kettlewell Eye Research Institute (USA); Monica Lopez-Gonzalez, La Petite Noiseuse Productions (USA); John J. McCann, McCann Imaging (USA); Mark E. McCourt, North Dakota State Univ. (USA); Jeffrey B. Mulligan, NASA Ames Research Ctr. (USA); Karol Myszkowski, Max-Planck-Institut für Informatik (Germany); Adar Pelah, The Univ. of York (UK); Eliezer Peli, Schepens Eye Research Institute (USA); Judith A. Redi, Technische Univ. Delft (the Netherlands); Hawley K. Rising, Consultant (USA); Sabine Süsstrunk, École Polytechnique Fédérale de Lausanne (Switzerland); Christopher W. Tyler, The Smith-Kettlewell Eye Research Institute (USA); Andrew B. Watson, NASA Ames Research Ctr. (USA); and Michael A. Webster, Univ. of Nevada, Reno (USA)



Photo: Stephen Keith.

Human Vision and Electronic Imaging (HVEI) 2016

Monday, February 15, 2016

Welcome and Keynote Session 1:**The Neuroscience of Multisensory Processing**

Session Chairs: Bernice Rogowitz, Visual Perspectives (USA); Thrasyvoulos Pappas, Northwestern University (USA); and Huib de Ridder, Delft University of Technology (Netherlands)

8:50 – 9:50 am

Continental Ballroom 4

HVEI Conference Welcome

HVEI-091

Towards a rudimentary neural model of multisensory integration in human neocortex, John Foxe¹ and Sophie Molholm²; ¹University of Rochester Medical Center and ²Albert Einstein College of Medicine (USA)

Multisensory Interactions

Session Chairs: Mark McCourt, North Dakota State University (USA) and Lora Likova, Smith-Kettlewell Eye Research Institute (USA)

9:50 – 10:20 am

Continental Ballroom 4

9:50

HVEI-092

Multisensory development and plasticity: From neurons to the clinic (Invited), Mark Wallace, Vanderbilt University (USA)

10:20 – 10:50 am Coffee Break

Multisensory Interactions (continued)

Session Chairs: Mark McCourt, North Dakota State University (USA) and Lora Likova, Smith-Kettlewell Eye Research Institute (USA)

10:50 – 12:30 am

Continental Ballroom 4

10:50

HVEI-093

Psychophysical investigations into Ramachandran's mirror and visual feedback for phantom limb pain: Video-based variants for unilateral and bilateral amputees, and temporal dynamics of paresthesias (Invited), David Peterzell, John F. Kennedy University (USA)

11:10

HVEI-094

Language processing in congenitally blind people (Invited), Krish Sathian^{1,2}, Valeria Occelli¹, Simon Lacey¹, and Randall Stilla¹; ¹Emory University and ²Atlanta VAMC (USA)

11:30

HVEI-095

High-order multisensory mechanisms: Insights from Braille writing and reading (Invited), Lora Likova, Christopher Tyler, Kristyo Mineff, Laura Caciamani, and Spero Nicholas, Smith-Kettlewell Eye Research Institute (USA)

11:50

HVEI-096

Blind individuals represent the auditory space in egocentric rather than allocentric reference frame (Invited), Tiziana Vercillo¹ and Monica Gori²; ¹University of Nevada, Reno (USA) and ²Fondazione Istituto Italiano di Tecnologia (Italy)

12:10

HVEI-097

Individual differences in multisensory integration and timing (Invited), Elliot Freeman and Alberta Ipser, City University London (United Kingdom)

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

Multisensory Interactions (continued)

Session Chairs: Mark McCourt, North Dakota State University (USA) and Lora Likova, Smith-Kettlewell Eye Research Institute (USA)

3:30 – 4:30 pm

Continental Ballroom 4

3:30

HVEI-098

Beyond the predominance of the visual empire: A functional model on haptics & more (Invited), Claus-Christian Carbon^{1,2,3}; ¹University of Bamberg, ²Forschungsgruppe EPAEG, and ³Bamberg Graduate School of Affective and Cognitive Sciences (Germany)

3:50

HVEI-099

Visual-tactile integration during active touch (Invited), Cintia Martins and Qi Wang, Columbia University (USA)

4:10

HVEI-100

Evaluating the effectiveness of auditory and tactile surface graphs for the visually impaired, James Ferwerda¹, Vladimir Bulatov², and John Gardner²; ¹Rochester Institute of Technology and ²ViewPlus Technologies (USA)

HVEI Monday Author Discussion Session

Moderators: Bernice Rogowitz, Visual Perspectives (USA); Thrasyvoulos Pappas, Northwestern University (USA); and Huib de Ridder, Delft University of Technology (Netherlands)

4:30 – 5:30 pm

Continental Ballroom 4

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

HVEI Banquet

Conference Chairs: Bernice Rogowitz, Visual Perspectives (USA); Thrasyvoulos Pappas, Northwestern University (USA); and Huib de Ridder, Delft University of Technology (Netherlands)

7:30 – 10:30 pm

TBA at Registration

HVEI-101

Back to the blues: Color, music, emotion, and synesthesia, Stephen Palmer, University of California (USA)

Tuesday, February 16, 2016

COLOR/HVEI: RETINEX at 50: History Joint Session

Session Chair: Marcelo Bertalmio, Universitat Pompeu Fabra (Spain)

8:50 – 10:10 am
Continental Ballroom 4

This session is jointly sponsored by: Color Imaging XXI: Displaying, Processing, Hardcopy, and Applications, and Human Vision and Electronic Imaging (HVEI) 2016.

8:50 RETINEX-017
Retinexes algorithms: Many spatial processes used to solve many different problems (Invited), John McCann, McCann Imaging (USA)

9:30 RETINEX-018
Designator Retinex, Milano Retinex and the locality issue (Invited), Alessandro Rizzi, Università degli Studi di Milano (Italy)

10:10 – 10:50 am Coffee Break

COLOR/HVEI: RETINEX at 50: Spatial Algorithms Joint Session

Session Chair: John McCann, McCann Imaging (USA)

10:50 am – 12:30 pm
Continental Ballroom 4

This session is jointly sponsored by: Color Imaging XXI: Displaying, Processing, Hardcopy, and Applications, and Human Vision and Electronic Imaging (HVEI) 2016.

10:50 RETINEX-019
The oriented difference of Gaussians model of brightness perception (Invited), Mark McCourt and Barbara Blakeslee, North Dakota State University (USA)

11:10 RETINEX-020
A center-surround framework for spatial image processing, Vassilios Vonikakis, Advanced Digital Sciences Center (ADSC) (Singapore)

11:30 RETINEX-021
Retinex-like computations in human lightness perception and their possible realization in visual cortex (Invited), Michael Rudd, University of Washington (USA)

11:50 RETINEX-022
The role of lightness perception in determining the perceived contrast of real world scenes (Invited), David Kane and Marcelo Bertalmio, Universitat Pompeu Fabra (Spain)

12:10 RETINEX-023
Processing astro photographs using Retinex based methods (Invited), Daniele Marini, Alessandro Rizzi, and Cristian Bonanomi, Università degli Studi di Milano (Italy)

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 Quality from Threshold to Experience

Session Chairs: Thrasylvoulos Pappas, Northwestern University (USA) and Huib de Ridder, Delft University of Technology (Netherlands)

3:30 – 6:10 pm

Continental Ballroom 4

3:30 HVEI-102
The pyramid of visibility, Andrew Watson and Albert Ahumada, NASA Ames Research Ctr. (USA)

3:50 HVEI-103
Perceptual image quality assessment using a normalized Laplacian pyramid, Valero Laparra^{1,2}, Johannes Ballé^{2,3}, Alexander Berardino², and Eero Simoncelli^{2,3}; ¹Universitat de Valencia (Spain), ²New York University (USA), and ³Howard Hughes Medical Institute (USA)

4:10 HVEI-104
A method for rapid measurement of contrast sensitivity on mobile touch-screens, Jeffrey Mulligan, NASA Ames Research Ctr. (USA)

4:30 HVEI-105
Subjective analysis and objective characterization of adaptive bitrate videos, Jacob Søgaard¹, Samira Tavakoli², Kjell Brunnstrom^{3,4}, and Narciso Garcia²; ¹Technical University of Denmark (Denmark), ²Universidad Politécnica de Madrid (Spain), ³Acreo Swedish ICT, and ⁴Mid Sweden University (Sweden)

4:50 HVEI-106
Assessing visibility of individual transmission errors in networked video, Jari Korhonen and Claire Mantel, Technical University of Denmark (Denmark)

5:10 HVEI-107
Visual saliency in HEVC video stream, Marwa Ammar¹, Mihai Mitrea¹, Ismail Boujelben¹, and Patrick Le Callet²; ¹Telecom Sud Paris and ²Polytech Nantes/Université de Nantes (France)

5:30 HVEI-108
Perceptual flicker visibility prediction model, Lark Kwon Choi and Alan Bovik, The University of Texas at Austin (USA)

5:50 HVEI-109
Does visual quality depend on semantics? A study on the relationship between impairment annoyance and image semantics at early attentive stages, Judith Redi, Ernestasia Siahaan, and Alan Hanjalic, Technische Universiteit Delft (Netherlands)

EI 2016 Symposium Demonstration Session and Exhibit Hall

Happy Hour

5:30 – 7:00 PM

Continental Ballroom Foyer

HVEI Tuesday Author Discussion Session

Moderators: Bernice Rogowitz, Visual Perspectives (USA); Thrasyvoulos Pappas, Northwestern University (USA); and Huib de Ridder, Delft University of Technology (Netherlands)

6:10 – 7:10 pm

Continental Ballroom 4

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)

Perceptual Image Analysis

Session Chair: Bernice Rogowitz, Visual Perspectives (USA)

9:40 – 10:20 am

Continental Ballroom 4

9:40

HVEI-110

Hierarchical Manifold Sensing with foveation and adaptive partitioning of the dataset (JIST-first), Irina Burciu, Thomas Martinetz, and Erhardt Barth, University of Lübeck (Germany)

10:00

HVEI-111

Comparing object recognition from binary and bipolar edge features, Jae-Hyun Jung¹, Tian Pu^{1,2}, and Eliezer Peli¹; ¹Schepens Eye Research Institute/Mass. Eye and Ear, Harvard Medical School (USA) and ²University of Electronic Science and Technology of China (China)

10:20 – 10:50 am Coffee Break

Individual Differences in Perceptual Judgments

Session Chairs: Michael Webster, University of Nevada, Reno (USA) and David Peterzell, John F. Kennedy University (USA)

10:50 am – 12:40 pm

Continental Ballroom 4

10:50

HVEI-112

Discovering sensory processes using individual differences: A review and factor analytic manifesto (Invited), David Peterzell, John F. Kennedy University (USA)

11:10

HVEI-113

Individual differences in perceptual preferences: The role of “good fit” (Invited), Stephen Palmer¹, Karen Schloss², and William Griscom³; ¹University of California, Berkeley, ²Brown University, and ³Microsoft Corporation (USA)

11:40

HVEI-114

Individual differences in color naming (Invited), Delwin Lindsey and Angela Brown, Ohio State University (USA)

12:00

HVEI-115

Using individual differences to better determine normative responses from crowdsourced transcription tasks: An application to the R. E. MacLaury Color Categorization Archive (Invited), Kimberly Jameson, Pruthi Deshpande, Sean Tauber, Stephanie Chang, Nathaniel Benjamin, Yang Jiao, and Sergio Gago, University of California, Irvine (USA)

12:20

HVEI-116

Individual differences in lifetime face exposure predict behavioral and neural responses to faces (Invited), Benjamin Balas and Corey Grant, North Dakota State University (USA)

12:40 – 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 – 3:20 pm Coffee Break

Human Vision and Electronic Imaging (HVEI) 2016 Interactive Papers Oral Previews

Session Chair: Jeffrey Mulligan, NASA Ames Research Ctr. (USA)

3:20 – 3:30 pm

Continental Ballroom 4

In this session interactive poster authors will each provide a brief oral preview of their poster presentation, which will be presented fully in the Human Vision and Electronic Imaging (HVEI) 2016 Interactive Papers Session at 5:30 pm on Wednesday.

3:20

HVEI-117

Role of spatio-temporal distortions in the visual periphery in disrupting natural attention deployment, Yashas Rai K, Marcus Barkowsky, and Patrick Le Callet, University of Nantes (France)

3:21

HVEI-118

Reducing inattentive blindness using subliminal cues in visual performance tasks, Deepthi Pappusetty and Hari Kalva, Florida Atlantic University (USA)

3:22

HVEI-119

Evaluation of aesthetic appeal with regard of user’s knowledge, Pierre Lebreton¹, Alexander Raake¹, and Marcus Barkowsky²; ¹Technische Universität Ilmenau (Germany) and ²Université de Nantes (France)

3:23

HVEI-120

Visually-based sensations: From perception to the ‘wow factor’, Floris van Nes, Eindhoven University of Technology; TU/e (Netherlands)

3:24

HVEI-121

Image segmentation using fuzzy spatial-taxon cut: comparison of two different stage one perception based input models of color (Bayesian classifier and fuzzy constraint), Lauren Barghout, University of California, Berkeley (USA)

3:25 HVEI-122
Positive and negative polarity contrast sensitivity measuring app,
*Alex Hwang^{1,2,3} and Eliezer Peli^{1,2,3}; ¹Schepens Eye Research Institute,
²Massachusetts Eye and Eye, and ³Harvard University (USA)*

3:26 HVEI-123
**Are lab-based audiovisual quality tests reflecting what users experience
at home?,** *Miguel Rios Quintero¹ and Alexander Raake^{1,2}; ¹Technical
Universität Berlin and ²Technische Universität Ilmenau (Germany)*

3:27 HVEI-124
**Image quality of experience: A subjective test targeting the consumer's
experience,** *Michele Saad¹, Margaret Pinson², David Nicholas¹, Niels
Van Kets³, Glenn Van Wallendael³, Ramesh Jaladi¹, and Philip Coriveau¹;
¹Intel Corporation (USA), ²NTIA's Institute for Telecommunication Sciences
(USA), and ³Ghent University-iMinds (Belgium)*

Psychophysiological Measures for Visual Quality

Session Chairs: Kjell Brunnstrom, Acreo Swedish ICT AB (Sweden) and
Sebastian Arndt, Technische Universität Berlin (Germany)

3:30 – 5:10 pm
Continental Ballroom 4

3:30 HVEI-125
Review on using physiology in quality of experience (Invited),
*Sebastian Arndt¹, Kjell Brunnstrom², Eva Cheng³, Ulrich Engelke⁴,
Sebastian Möller¹, and Jan-Niklas Antons¹; ¹Technische Universität Berlin
(Germany), ²Acreo (Sweden), ³RMIT University, and ⁴CSIRO (Australia)*

3:50 HVEI-126
**Physiological capture of augmented viewing states: Objective impact
measures of high-dynamic range and wide-color gamut viewing
experiences (Invited),** *Dan Darcy, Evan Gitterman, Alex Brandmeyer, and
Poppy Crum, Dolby Laboratories, Inc. (USA)*

4:10 HVEI-127
**Using eye tracking metrics and visual saliency maps to assess image
utility (Invited),** *Laura Matzen, Michael Haass, Jonathan Tran, and Laura
McNamara, Sandia National Laboratories (USA)*

4:30 HVEI-128
**Towards prediction of sense of presence in immersive audiovisual
communications (Invited),** *Anne-Flore Perrin, Martin Rerabek, and Touradj
Ebrahimi, EPFL (Switzerland)*

4:50 HVEI-129
Emotion recognition by physiological signals (Invited), *Naeem Ramzan,
Sebastian Palke, Thomas Cuntz, Ryan Gibson, and Abbes Amira,
University of West of Scotland (United Kingdom)*

HVEI Wednesday Author Discussion Session

Moderators: Bernice Rogowitz, Visual Perspectives (USA); Thrasyvoulos
Pappas, Northwestern University (USA); and Huib de Ridder, Delft
University of Technology (Netherlands)

5:10 – 5:40 pm
Continental Ballroom 4

EI 2016 Symposium Interactive Papers Session

5:30 – 7:00 PM
Continental Ballroom 6

**Human Vision and Electronic Imaging (HVEI) 2016 Interactive Papers
Session**

5:30 – 7:00 pm
Continental Ballroom 6

The HVEI interactive papers will be presented in the EI 2016 Symposium
Interactive Papers Session.

Thursday, February 18, 2016

Keynote Session II: Visual Cognition

Session Chairs: Bernice Rogowitz, Visual Perspectives (USA); Thrasy-
voulos Pappas, Northwestern University (USA); and Huib de Ridder,
Delft University of Technology (Netherlands)

8:50 – 9:40 am

Continental Ballroom 4

8:50

HVEI-130

**Optimizing for visual cognition in high performance scientific
computing,** *Colin Ware, University of New Hampshire (USA)*

Perceptual Coding for Visualization

Session Chair: Ulrich Engelke, CSIRO (Australia)

9:40 – 10:30 am

Continental Ballroom 4

9:40

HVEI-131

**From vision science to data science: Applying perception to problems in
big data (Invited),** *Remco Chang, Tufts University (USA)*

10:10

HVEI-132

**A grounded theory study on the language of data visualization
principles and guidelines,** *Eser Kandogan¹ and Hanseung Lee²; ¹IBM
Research and ²Google (USA)*

10:30 – 11:00 am Coffee Break

Perceptual Coding for Visualization (continued)

Session Chair: Ulrich Engelke, CSIRO (Australia)

11:00 am – 12:20 pm

Continental Ballroom 4

11:00

HVEI-133

Why we use bad color maps and what you can do about it (Invited),
Kenneth Moreland, Sandia National Laboratories (USA)

11:20

HVEI-134

**SwordPlots: Exploring neuron behavior within dynamic communities of
brain networks (IJST-first),** *Chihua Ma¹, Angus Forbes¹, Daniel Llano²,
Tanya Berger-Wolf¹, and Robert Kenyon¹; ¹University of Illinois at Chicago
and ²University of Illinois at Urbana-Champaign (USA)*

11:40

HVEI-135

Color visualization of the phase component of complex signals, *Alfredo
Restrepo, Universidad de los Andes (Colombia)*

12:00

HVEI-136

**Visual performance in multidimensional data characterisation with
scatterplots and parallel coordinates (Invited),** *Ulrich Engelke, Jenny
Vuong, and Julian Heinrich, CSIRO (Australia)*

12:20 – 1:50 pm Lunch Break

Keynote Session III: Perception and Aesthetics in Emerging Media

Session Chairs: Bernice Rogowitz, Visual Perspectives (USA); Thrasylvoulos Pappas, Northwestern University (USA); and Huib de Ridder, Delft University of Technology (Netherlands)

1:50 – 2:40 pm

Continental Ballroom 4

1:50

HVEI-137

Lessons learned from the colorization and 3D conversion of feature films and how they can be applied to the emerging mediums of virtual and augmented reality: A creative, consumer and neuroscience perspective, Barry Sandrew, *Augmented Vision Works (USA)*

Art, Aesthetics, and Perception

Session Chairs: Monica Lopez-Gonzalez, La Petite Noiseuse Productions (USA) and Elena Fedorovskaya, Rochester Institute of Technology (USA)

2:40 – 3:40 pm

Continental Ballroom 4

2:40

HVEI-138

Peripheral color vision and motion processing, Christopher Tyler^{1,2}; ¹Smith-Kettlewell Eye Research Institute (USA) and ²City University (United Kingdom)

3:00

HVEI-139

Experiencing the interestingness concept within and between pictures, Christel Chamaret, Claire-Hélène Demarty, Vincent Demoulin, and Gwenaëlle Marquant, *Technicolor (France)*

3:20

HVEI-140

Enhancing visualization with expressive motion, Matthew Lockyer¹, Lyn Bartram¹, Thecla Schiphorst¹, and Karen Studd²; ¹Simon Fraser University (Canada) and ²GMU School of Dance (USA)

3:40 – 4:00 pm Coffee Break

Art, Aesthetics and Perception (continued)

Session Chairs: Monica Lopez-Gonzalez, La Petite Noiseuse Productions (USA) and Elena Fedorovskaya, Rochester Institute of Technology (USA)

4:00 – 6:00 pm

Continental Ballroom 4

4:00

HVEI-141

Color systems are categories that carry meaning in visualizations: A conceptual metaphor theory approach (Invited), Jack Ox^{1,2}; ¹University of Texas, Dallas and ²University of New Mexico (USA)

4:20

HVEI-142

Towards a computational account of art cognition: Unifying perception, visual art, and music through Bayesian inference (Invited), Jorge Menendez, *University College London (United Kingdom)*

4:40

HVEI-143

Minds in the spotlight: Using live performance art to uncover creative thinking processes (Invited), Monica Lopez-Gonzalez, *La Petite Noiseuse Productions (USA)*

5:00

HVEI-144

Swapping swatches: Adapting to and from an artist's palette (Invited), Katie Tregillus and Michael Webster, *University of Nevada Reno (USA)*

5:20

HVEI-145

Art, interpersonal comparisons of color experience, and potential human tetrachromacy (Invited), Kimberly Jameson¹, Keith Goldfarb², and Vladimir Bochko³; ¹University of California, Irvine (USA), ²Blackthorn Media LLC (USA), and ³University of Vaasa (Finland)

5:40

HVEI-146

Painting like old masters, creative algorithms for 2.5D reproduction (Invited), Carinna Parraman, *University of the West of England (United Kingdom)*

HVEI Thursday Author Discussion and Reception

Hosts: Bernice Rogowitz, Visual Perspectives (USA); Thrasylvoulos Pappas, Northwestern University (USA); and Huib de Ridder, Delft University of Technology (Netherlands)

6:00 – 7:00 pm

Continental Ballroom 4