Contents

ix Conference Committee
xiii Introduction

KEYNOTE SESSION

8651 03 World, environment, Umwelt, and innerworld: a biological perspective on visual awareness (Keynote Paper) [8651-3]
J. J. Koenderink, Technische Univ. Delft (Netherlands) and Univ. of Leuven (Belgium)

8651 04 Does evolution favor true perceptions? (Keynote Paper) [8651-4]
D. D. Hoffman, Univ. of California, Irvine (United States); M. Singh, Rutgers Univ. (United States); J. Mark, Univ. of California, Irvine (United States)

LIGHTNESS AND COLOR

8651 05 Mapping luminance onto lightness in vision and art (Invited Paper) [8651-5]
A. Gilchrist, Rutgers Univ. (United States)

8651 06 Human lightness perception is guided by simple assumptions about reflectance and lighting [8651-6]
R. F. Murray, York Univ. (Canada)

8651 07 Spatial imaging in color and HDR: prometheus unchained (Invited Paper) [8651-7]
J. J. McCann, McCann Imaging (United States)

VISION AND THE EVOLUTION OF TECHNOLOGY

8651 08 Visual stimuli: past and present (Invited Paper) [8651-8]
G. Westheimer, Univ. of California, Berkeley (United States)

8651 09 Emergent technologies: 25 years (Invited Paper) [8651-9]
H. K. Rising III, Consultant (United States)

8651 0B Perceptual approaches to finding features in data (Invited Paper) [8651-11]
B. E. Rogowitz, Visual Perspectives Research and Consulting (United States)

EARLY VISION IMAGE QUALITY I

8651 0C Is image quality a function of contrast perception? (Invited Paper) [8651-12]
A. M. Haun, E. Peli, Schepens Eye Research Institute, Harvard Medical School (United States)
Visible contrast energy metrics for detection and discrimination (Invited Paper) [8651-13]
A. J. Ahumada, A. B. Watson, NASA Ames Research Ctr. (United States)

EARLY VISION IMAGE QUALITY II

Initial spatio-temporal domain expansion of the Modelfest database [8651-15]
T. Carney, S. Mozaffari, S. Sun, R. Johnson, S. Shirvastava, P. Shen, E. Ly, Univ. of California, Berkeley (United States)

A database of local masking thresholds in natural images [8651-16]
M. Alam, K. P. Vilankar, D. M. Chandler, Oklahoma State Univ. (United States)

Interplay between JPEG-2000 image coding and quality estimation [8651-17]
G. O. Pinto, S. S. Hemaml Cornell Univ. (United States)

HIGHER-LEVEL ISSUES IN IMAGE QUALITY I

From image quality to atmosphere experience: how evolutions in technology impact experience assessment (Invited Paper) [8651-18]
I. Heynderickx, Technische Univ. Delft (Netherlands) and Philips Research Labs. (Netherlands); H. de Ridder, Technische Univ. Delft (Netherlands)

Preference limits of the visual dynamic range for ultra high quality and aesthetic conveyance [8651-19]
S. Daly, T. Kunkel, X. Sun, S. Farrell, P. Crum, Dolby Labs., Inc. (United States)

Quantifying image quality in graphics: perspective on subjective and objective metrics and their performance [8651-20]
R. K. Mantiuk, Bangor Univ. (United Kingdom)

Visualizing lighting with images: converging between the predictive value of renderings and photographs [8651-21]
U. Engelke, M. G. M. Stokkermans, M. J. Murdoch, Philips Research (Netherlands)

HIGHER-LEVEL ISSUES IN IMAGE QUALITY II

A survey on 3D quality of experience and 3D quality assessment [8651-22]
A. K. Moorthy, Texas Instruments Inc. (United States); A. C. Bovik, The Univ. of Texas at Austin (United States)

Visual quality beyond artifact visibility [8651-23]
J. A. Redi, Technische Univ. Delft (Netherlands)

Subjective matters: from image quality to image psychology (Invited Paper) [8651-24]
E. A. Fedorovskaya, RadixNova (United States); H. De Ridder, Technische Univ. Delft (Netherlands)
PERCEPTION AND NATURAL ENVIRONMENTS: IMAGE STATISTICS, TEXTURE, AND FEATURES I

8651 OP  The rough side of texture: texture analysis through the lens of HVEI (Invited Paper) [8651-25]
T. N. Pappas, Northwestern Univ. (United States)

8651 OQ  Optimizing visual performance by adapting images to observers (Invited Paper) [8651-26]
M. A. Webster, Univ. of Nevada, Reno (United States); I. Juricevic, Indiana Univ. (United States)

PERCEPTION AND NATURAL ENVIRONMENTS: IMAGE STATISTICS, TEXTURE, AND FEATURES II

8651 OR  Efficient image representations and features (Invited Paper) [8651-27]
M. Dorr, Schepens Eye Research Institute, Harvard Medical School (United States); E. Vig, Harvard Univ. (United States); E. Barth, Univ. of Lübeck (Germany)

8651 OS  Highly overcomplete sparse coding [8651-28]
B. A. Olshausen, Univ. of California, Berkeley (United States)

8651 OT  Blind image quality assessment without training on human opinion scores [8651-29]
A. Mittal, R. Soundararajan, G. S. Muralidhar, A. C. Bovik, J. Ghosh, The Univ. of Texas at Austin (United States)

ATTENTION AND SALIENCY: FROM PERCEPTION TO APPLICATIONS

8651 OV  Saliency identified by absence of background structure [8651-31]
F. W. M. Stentiford, Univ. College London (United Kingdom)

8651 OW  Investigation of eye-catching colors using eye tracking [8651-32]
M. Baik, H.-J. Suk, J. Lee, K.-A. Choi, KAIST (Korea, Republic of)

8651 OX  Can relative skill be determined from a photographic portfolio? [8651-33]
A. Agrawal, V. Premachandran, Nanyang Technological Univ. (Singapore); R. Somavarapu, The Univ. of Texas at Dallas (United States); R. Kakarala, Nanyang Technological Univ. (Singapore)

EYE MOVEMENTS AND VISUAL TASKS IN COMPLEX ENVIRONMENTS

8651 OY  Binocular eye movements in health and disease (Invited Paper) [8651-34]
C. W. Tyler, Smith-Kettlewell Institute (United States)

8651 OZ  Reflexive and voluntary control of smooth eye movements [8651-35]
J. B. Mulligan, NASA Ames Research Ctr. (United States); S. B. Stevenson, Univ. of Houston College of Optometry (United States); L. K. Cormack, The Univ. of Texas at Austin (United States)
8651 10 Simple gaze-contingent cues guide eye movements in a realistic driving simulator [8651-36]
L. Pomarjanschi, Univ. of Lübeck (Germany); M. Dorr, P. J. Bex, Schepens Eye Research Institute, Harvard Medical School (United States); E. Barth, Univ. of Lübeck (Germany)

8651 11 Designing an obstacle display for helicopter operations in degraded visual environment [8651-37]
P. M. Knabl, N. Peinecke, Deutsches Zentrum für Luft- und Raumfahrt e.V. (Germany)

3D ATTENTION AND VISUAL TRACKING

8651 12 Visual storytelling in 2D and stereoscopic 3D video: effect of blur on visual attention [8651-38]
Q. Huynh-Thu, C. Vienne, L. Blondé, Technicolor (France)

8651 13 Using natural versus artificial stimuli to perform calibration for 3D gaze tracking [8651-39]
C. Maggia, N. Guyader, A. Guérin-Dugué, Lab. of Images Speech Signal Automatism (France)

8651 14 Study of center-bias in the viewing of stereoscopic image and a framework for extending 2D visual attention models to 3D [8651-40]
J. Wang, M. Perreira Da Silva, P. Le Callet, V. Ricordel, LUNAM Univ., Univ. de Nantes, CNRS (France)

8651 15 How visual attention is modified by disparities and textures changes? [8651-41]
D. Khaustova, J. Fournier, E. Wyckens, France Télécom R&D France (France); O. Le Meur, Univ. of Rennes 1 (France)

ART AND PERCEPTION

8651 16 Copy-paste in depth [8651-43]
M. W. A. Wijntjes, Technische Univ. Delft (Netherlands)

8651 17 Drawing accuracy measured using polygons [8651-44]
L. Carson, Univ. of Waterloo (Canada); M. Millard, Stanford Univ. (United States); N. Quehl, J. Danckert, Univ. of Waterloo (Canada)

8651 18 Fractals in art and nature: why do we like them? [8651-45]
B. Spehar, The Univ. of New South Wales (Australia); R. P. Taylor, The Univ. of Oregon (United States)

INTERACTIVE PAPER SESSION

8651 19 Picture perception and visual field [8651-46]
A. J. van Doorn, H. de Ridder, Technische Univ. Delft (Netherlands); J. Koenderink, Technische Univ. Delft (Netherlands) and Univ. of Leuven (Belgium)
8651 1A Measurements of achromatic and chromatic contrast sensitivity functions for an extended range of adaptation luminance [8651-47]
K. J. Kim, Seoul National Univ. (Korea, Republic of); R. Mantiuk, Bangor Univ. (United Kingdom); K. H. Lee, Seoul National Univ. (Korea, Republic of)

8651 1B Viewer preferences for adaptive playout [8651-48]
S. Deshpande, Sharp Labs. of America Inc. (United States)

8651 1C The effect of familiarity on perceived interestingness of images [8651-49]
S. L. Chu, Virginia Polytechnic and State Univ. (United States); E. Fedorovskaya, RadixNova Ltd. (United States); F. Quek, Virginia Polytechnic and State Univ. (United States); J. Snyder, Kodak Research Labs. (United States)

8651 1D Quantifying patterns of dynamics in eye movement to measure goodness in organization of design elements in interior architecture [8651-51]
H. Mirkia, A. Sangari, M. Nelson, A. H. Assadi, Univ. of Wisconsin-Madison (United States)

8651 1E Development of a human vision simulation camera and its application: implementation of specific color perception [8651-52]
H. Okumura, S. Takubo, S. Ozaki, T. Kawasaki, I. N. Abdullah, K. Arai, Saga Univ. (Japan); O. Fukuda, Measurement Solution Research Ctr., AIST (Japan)

8651 1F IMF-based chaotic characterization of AP and ML visually-driven postural responses [8651-53]
H. Azhar, G. Giraudet, J. Faubert, Univ. de Montréal (Canada)

8651 1G Application of imaging technology for archaeology researches: framework design for connectivity analysis in pieces of Jomon pottery [8651-54]
K. Miyata, National Museum of Japanese History (Japan); R. Yajima, K. Kobayashi, Chuo Univ. (Japan)

8651 1H Top-down visual search in Wimmelbild [8651-55]
J. Bergbauer, Tecnical Univ. Munich (Germany); S. Tari, Middle East Technical Univ. (Turkey)

8651 1I Visual discrimination and adaptation using non-linear unsupervised learning [8651-56]
S. Jiménez, V. Laparra, J. Malo, Univ. de València (Spain)

8651 1J Chromatic induction and contrast masking: similar models, different goals? [8651-57]
S. Jiménez, Univ. de València (Spain); X. Otazu, Univ. Autònoma de Barcelona (Spain); V. Laparra, J. Malo, Univ. de València (Spain)

8651 1K Aesthetics and entropy II: a critical examination [8651-58]
M. R. V. Sahyun, Consultant (United States)

Author Index