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Electronic Imaging

SCIENCE AND TECHNOLOGY

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Computational Imaging XIV

Editors: **Charles A. Bouman**, Purdue Univ. (USA), and
Ken D. Sauer, Univ. of Notre Dame (USA)

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Computational Imaging XIV

Symposium Chairs:

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Nitin Sampat, Rochester Institute of Technology (USA)

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Computational Imaging XIV

Conference Chairs

Charles Bouman, Purdue University (USA)
Ken Sauer, University of Notre Dame (USA)

Tuesday, February 16, 2016

Keynote: Indoor and Outdoor Image Based Localization for Mobile Devices

Session Chair: Charles Bouman, Purdue University (USA)

8:50 – 9:50 am

Golden Gate 1

8:50

COIMG-147

Indoor and outdoor image based localization for mobile devices,

Avideh Zakhor, University of California, Berkeley (USA)

Optimization and Learning

Session Chair: Peyman Milanfar, Google, Inc. (USA)

9:50 – 10:30 am

Golden Gate 1

9:50

COIMG-148

An alternating direction method of multiplier algorithm for single-photon imaging sensors, *Stanley Chan, Purdue University (USA)*

10:10

COIMG-149

Adaptive activation functions for deep networks, *Michael Dushkoff and Raymond Ptucha, Rochester Institute of Technology (USA)*

10:30 – 10:50 am Coffee Break

Optimization and Learning (continued)

Session Chair: Peyman Milanfar, Google, Inc. (USA)

10:50 – 12:30 pm

Golden Gate 1

10:50

COIMG-150

Filtering without normalization, *Peyman Milanfar, Google, Inc. (USA)*

11:10

COIMG-151

Sparse non-local interpolation for nano-scale imaging, *Suhas Sreehari¹, Singanallur Venkatakrishnan², Jeffrey Simmons³, Lawrence Drummy³, and Charles Bouman¹; ¹Purdue University, ²Lawrence Berkeley National Laboratory, and ³Air Force Research Laboratory (USA)*

11:30

COIMG-152

Hierarchical decomposition of large deep networks, *Sumanth Chennupati, Shagan Sah, Sai Nooka, and Raymond Ptucha, Rochester Institute of Technology (USA)*

11:50

COIMG-153

A supervised learning approach for dynamic image sampling, *G.M. Dilshan Godaliyadda¹, Dong Hye Ye¹, Michael D. Uchic², Michael A. Groeber², Gregory T. Buzzard³, and Charles A. Bouman¹; ¹Purdue University and ²Air Force Research Laboratory (USA)*

12:10

COIMG-154

Stochastic first-order minimization techniques using Jensen's surrogates for x-ray transmission tomography, *Soysal Degirmenci¹, Joseph O'Sullivan¹, and David Politte²; ¹Washington University and ²Washington University School of Medicine (USA)*

12:30 – 2:00 pm Lunch Break

Computational Imaging XIV

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

Scientific Imaging

Session Chair: Dilworth Parkinson, University of California, Berkeley (USA)

3:30 – 5:10 pm

Golden Gate 1

3:30

COIMG-155

Making advanced scientific algorithms and big scientific data management more accessible, S. V. Venkatakrishnan^{1,2}, K. Aditya Mohan³, Keith Beattie⁴, Joaquin Correa⁵, Eli Dartó, Jack R. Deslippe⁵, Alexander Hexemer^{1,2}, Harinarayan Krishnan^{1,4}, Alastair A. MacDowell², Stefano Marchesini^{1,2,4}, Simon J. Patton⁴, Talita Perciano^{1,4}, James A. Sethian^{1,4,7}, Rune Stromsness⁴, Brian L. Tierney⁴, Craig E. Tull⁴, Daniela Ushizima^{1,4}, and Dilworth Y. Parkinson^{1,2}; ¹Center for Advanced Mathematics for Energy Research Applications, Lawrence Berkeley National Lab, ²Advanced Light Source, Lawrence Berkeley National Lab, ³Purdue University, ⁴Computational Research Division, Lawrence Berkeley National Lab, ⁵National Energy Research Scientific Computing Center, ⁶Energy Sciences Network, ⁷UC Berkeley (USA)

3:50

COIMG-156

Simulation of abnormal grain growth in polycrystalline materials, Shruthi S. Kubatur and Mary L. Comer, Purdue University (USA)

4:10

COIMG-157

Reducing restoration artifacts in 3D computational microscopy using wavefront encoding, Nurmohammed Patwary and Chrysanthe Preza, University of Memphis (USA)

4:30

COIMG-158

Single shot digital holography based on iterative reconstruction with alternating updates of amplitude and phase, Dennis J. Lee^{1,2}, Charles A. Bouman², and Andrew M. Weiner²; ¹Sandia National Laboratories and ²Purdue University (USA)

4:50

COIMG-159

Improving Video-Based heart rate estimation, Dahjung Chung, Jeehyun Choe, Marguerite E. O'Haire, A.J. Schwichtenberg, and Edward J. Delp, Purdue University (USA)

EI 2016 Symposium Demonstration Session and Exhibit Hall

Happy Hour

5:30 – 7:00 PM

Continental Ballroom Foyer

Wednesday, February 17, 2016**Image and Signal Analysis**

Session Chair: James Theiler, Los Alamos National Laboratory (USA)

8:50 – 10:10 am

Golden Gate 1

8:50

COIMG-160

Right spectrum in the wrong place: A framework for local hyperspectral anomaly detection, James Theiler, Los Alamos National Laboratory (USA)

9:10

COIMG-161

Data adaptive affinity functions in unsupervised segmentation, Reid Porter, Diane Oyen, and James Theiler, Los Alamos National Laboratory (USA)

9:30

COIMG-162

A strip-based fast text detection for low cost embedded devices, Jobin J. Mathew¹, Yue Wang¹, Eli Saber¹, David Larson², Peter Bauer², George Kerby², and Jerry Wagner²; ¹Rochester Institute of Technology and ²Hewlett Packard Company (USA)

10:10 – 10:30 am Coffee Break

Nondestructive Evaluation and Security Imaging

Session Chair: David Castañón, Boston University (USA)

10:30 am – 12:10 pm

Golden Gate 1

10:30

COIMG-164

Simulation of an inverse schlieren image acquisition system for inspecting transparent objects, Johannes Meyer¹, Robin Gruna², Thomas Längle², and Jürgen Beyerer²; ¹Karlsruhe Institute for Technology and ²Fraunhofer IOSB (Germany)

10:50

COIMG-165

Enhancing nuclear resonance fluorescence with coded aperture for security based imaging, Zachary Sun, W. Clem Karl, and David Castañón, Boston University (USA)

11:10

The unavoidable use of computational imaging on next generation biometric identification systems, Jens Gregor¹ and Hector Santos-Villalobos²; ¹University of Tennessee and ²Oak Ridge National Laboratory (USA)

11:30

COIMG-167

Sparse data 3-D X-ray reconstructions on GPU processors, Fernando Quivira¹, Simon Bedford², Richard Moore³, John Beaty¹, and David Castañón⁴; ¹Northeastern University, ²Astrophysics, Inc., ³Massachusetts General Hospital, and ⁴Boston University (USA)

11:50

COIMG-521

Non-destructive evaluation for destruction: x-ray imaging for hard drive magnet recovery, Jeffrey S. Kallman, Karina P. Bond, William D. Brown, and Harry E. Martz; Lawrence Livermore National Laboratory (USA)

12:10 – 2:00 pm Lunch Break

Computational Imaging XIV

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

Reconstruction and Restoration

Session Chair: Hector Santos-Villalobos, Oak Ridge National Laboratory (USA)

3:30 – 5:30 pm

Golden Gate 1

3:30 COIMG-168
Depth-guided deblurring, Thomas Hach¹ and Arvind Amruth²; ¹Arnold & Richter Cinetechnik and ²Technical Univ. Munich (Germany)

3:50 COIMG-169
Spectral resolution enhancement of hyperspectral images via sparse representations, Konstantina Fotiadou^{1,2}, Grigorios Tsagkatakis¹, and Panagiotis Tsakalides^{1,2}; ¹Foundation for Research and Technology (FORTH), Institute of Computer Science (ICS) and ²University of Crete (Greece)

4:10 COIMG-170
Multi-spectral infrared computed tomography, Philip Bingham, Marissa E. Morales-Rodriguez, Panos Datskos, and David Graham, Oak Ridge National Laboratory (USA)

4:30 COIMG-171
Multi-modal kHz frame rate multi-photon microscopy pairing Lissajous trajectory beam-scanning with model-based image reconstruction, Garth Simpson, Shane Sullivan, Ryan Muir, Justin Newman, Suhas Sreehari, and Charles Bouman, Purdue University (USA)

4:50 COIMG-172
Non-uniform neutron source approximation for the iterative reconstruction of coded source images, Hector Santos-Villalobos¹, Jens Gregor², and Philip Bingham¹; ¹Oak Ridge National Laboratory and ²University of Tennessee (USA)

5:10 COIMG-173
Exploiting structure and variable-dependency modeling in block-based compressed sensing image reconstruction in the presence of non-linear mixtures (JIST-first), Lynn Keuthan¹, Robert Harrington¹, and Jefferson Willey²; ¹The George Washington University and ²U.S. Naval Research Lab. (USA)

Computational Imaging XIV 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.

COIMG-174

Gradient enhanced image pyramid for improved nonlinear image registration, Lin Gan and Gady Agam, Illinois Institute of Technology (USA)

COIMG-175

Hidden watermark of 3D models by just noticeable color difference, Tzung-Han Lin, National Taiwan University of Science and Technology (Taiwan)

COIMG-176

Illumination normalization and skin color verification for robust face detection, Sanghun Lee and Chulhee Lee, Yonsei University (South Korea)

COIMG-177

Improved reconstruction for compressive hyperspectral imaging using spatial-spectral non-local means regularization, Pablo Meza¹, Esteban Vera², and Javier Martínez¹; ¹Universidad de La Frontera (Chile) and ²Duke University (USA)

COIMG-178

Protein chemical cross-linking/mass spectrometry: From raw data to fully immersive visualizations, Islam Akef Ebeid¹, Carolina Cruz-Neira¹, Mihir Jaiswal², and Boris Zybailov²; ¹University of Arkansas at Little Rock and ²University of Arkansas for Medical Sciences (USA)

COIMG-179

Real-time depth estimation and view interpolation using Quasar, Bart Goossens, Simon Donné, Jan Aelterman, Jonas De Vylder, Dirk Van Haerenborgh, and Wilfried Philips, Universiteit Gent (Belgium)

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

Continental Ballroom 6