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

Computational Imaging XIV

San Francisco, California, USA
14 - 18 February 2016

Editors:

Charles A. Bouman
Ken D. Sauer

Computational Imaging XIV

Symposium Chairs:
Choon-Woo Kim, Inha University (Korea)
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 Sreehari[1], Singanallur Venkatakrishnan[2], Jeffrey Simmons[3], Lawrence Drummy[3], and Charles Bouman[1]; [1]Purdue University, [2]Lawrence Berkeley National Laboratory, and [3]Air 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 Godaliyadda[1], Dong Hye Ye[1], Michael D. Uchic[2], Michael A. Groeber[2], Gregery T. Buzzard[3], and Charles A. Bouman[1]; [1]Purdue University and [2]Air Force Research Laboratory (USA)*

12:10   COIMG-154
Stochastic first-order minimization techniques using Jensen's surrogates for x-ray transmission tomography, *Soysal Degirmenci[1], Joseph O'Sullivan[1], and David Politte[2]; [1]Washington University and [2]Washington University School of Medicine (USA)*

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

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 Mohan[3], Keith Beattie[4], Joaquin Correa[5], Eli Dart6, Jack R. Deslippe[5], Alexander Hexemer[1,2], Harinarayan Krishnan[1,4], Alastair A. MacDowell[2], Stefano Marchesini[1,2,4], Simon J. Patton[4], Talita Perciano[1,4], James A. Sethian[1,4,7], Rune Stromsness[4], Brian L. Tierney[4], Craig E. Tull[4], Daniela Ushizima[1,4], and Dilworth Y. Parkinson[1,2]; [1]Center for Advanced Mathematics for Energy Research Applications, Lawrence Berkeley National Lab, [2]Advanced Light Source, Lawrence Berkeley National Lab, [3]Purdue University, [4]Computational Research Division, Lawrence Berkeley National Lab, [5]National Energy Research Scientific Computing Center, [6]Energy Sciences Network, [7]UC 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. Bouman[2], and Andrew M. Weiner[2]; [1]Sandia National Laboratories and [2]Purdue 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. Mathew[1], Yue Wang[1], Eli Saber[1], David Larson[2], Peter Bauer[2], George Kerby[2], and Jerry Wagner[2]; [1]Rochester Institute of Technology and [2]Hewlett 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 Meyer[1], Robin Gruna[2], Thomas Längle[2], and Jürgen Beyerer[2]; [1]Karlsruhe Institute for Technology and [2]Fraunhofer 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 Gregor[1] and Hector Santos-Villalobos[2]; [1]University of Tennessee and [2]Oak Ridge National Laboratory (USA)*

11:30   COIMG-167
Sparse data 3-D X-ray reconstructions on GPU processors, *Fernando Quivira[1], Simon Bedford[2], Richard Moore[3], John Beaty[1], and David Castañón[4]; [1]Northeastern University, [2]Astrophysics, Inc., [3]Massachusetts General Hospital, and [4]Boston 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

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 Hach[1] and Arvind Amruth[2]; [1]Arnold & Richter Cinetechnik and [2]Technical Univ. Munich (Germany)*

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

4:10   COIMG-170
Multi-spectral infrared computed tomography, *Philip Bingham, Marissa E. Morales-Rodriquez, 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-Villalobos[1], Jens Gregor[2], and Philip Bingham[1]; [1]Oak Ridge National Laboratory and [2]University 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 Keuthan[1], Robert Harrington[1], and Jefferson Willey[2]; [1]The George Washington University and [2]U.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 Meza[1], Esteban Vera[2], and Javier Martínez[1]; [1]Universidad de La Frontera (Chile) and [2]Duke University (USA)*

COIMG-178
Protein chemical cross-linking/mass spectrometry: From raw data to fully immersive visualizations, *Islam Akef Ebeid[1], Carolina Cruz-Neira[1], Mihir Jaiswal[2], and Boris Zybaylov[2]; [1]University of Arkansas at Little Rock and [2]University 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