

Conference 7873

Monday-Tuesday 24-25 January 2011 • Proceedings of SPIE Vol. 7873

Computational Imaging IX

Conference Chairs: **Charles A. Bouman**, Purdue Univ.; **Ilya Pollak**, Purdue Univ.; **Patrick J. Wolfe**, Harvard Univ.



Cosponsored by: GE Healthcare

Monday 24 January

Oak Room **Mon. 8:20 to 8:50 am**

Keynote Presentation I

8:20 am: **A tour of modern image processing**, Peyman Milanfar, Univ. of California, Santa Cruz (United States).[7873-01]

SESSION 2

Oak Room **Mon. 8:50 to 11:10 am**

Inverse Problems

8:50 am: **Myopic reconstruction and its application to MRFM data**, Se Un Park, Univ. of Michigan (United States); Nicolas Dobleigeon, Univ. de Toulouse (France); Alfred O. Hero III, Univ. of Michigan (United States)[7873-02]

9:10 am: **Seismic imaging of transmission overhead line structure foundations**, Denis Vautrin, Institut de Recherche en Communications et en Cybernétique de Nantes (France); Matthieu Voorons, Ecole Polytechnique de Montréal (Canada); Jérôme Idier, Institut de Recherche en Communications et en Cybernétique de Nantes (France); Yves Goussard, Ecole Polytechnique de Montréal (Canada); Stéven Kerzalié, Apside Technologies (France); Nicolas Paul, EDF Recherche & Développement (France)[7873-04]

9:30 am: **Inverse problems for cryo electron microscopy of viruses: randomly oriented projection images of random 3D structures in noise**, Qiu Wang, Peter C. Doerschuk, Cornell Univ. (United States)[7873-05]

9:50 am: **Inverse problems arising in different synthetic aperture radar imaging and a general Bayesian approach for them**, Sha Zhu, Ali Mohammad-Djafari, Lab. des Signaux et Systèmes (France)[7873-06]

Coffee Break10:10 to 10:50 am

10:50 am: **Medical image enhancement using resolution synthesis**, Tak-Shing Wong, Charles A. Bouman, Purdue Univ. (United States); Jean-Baptiste Thibault, GE Healthcare (United States); Ken D. Sauer, Univ. of Notre Dame (United States)[7873-07]

SESSION 3

Oak Room **Mon. 11:10 am to 12:30 pm**

Image and Video Analysis

11:10 am: **Joint pose estimation and image segmentation for monocular articulated tracking**, Landis M. Huffman, Ilya Pollak, Purdue Univ. (United States)[7873-46]

11:30 am: **An open level set framework for image segmentation and restoration using the Mumford and Shah model**, Rami Mohieddine, Luminita A. Vese, Univ. of California, Los Angeles (United States)[7873-08]

11:50 am: **Video indexing and retrieval using Fisher information nonlinear embedding**, Xu Chen, Alfred O. Hero III, Univ. of Michigan (United States)[7873-09]

12:10 pm: **Segmentation assisted food classification for dietary assessment**, Fengqing Zhu, Marc Bosch, Tusa R. Schap, Nitin Khanna, David S. Ebert, Carol J. Boushey, Edward J. Delp III, Purdue Univ. (United States)[7873-10]

Lunch Break 12:30 to 2:00 pm

SESSION 4

Oak Room **Mon. 2:00 to 2:20 pm**

Image and Video Analysis II

2:00 pm: **Sparse Fisher linear discriminant analysis**, Hasib A. Siddiqui, Hau Hwang, Qualcomm Inc. (United States)[7873-35]

SESSION 5

Oak Room **Mon. 2:20 to 3:40 pm**

Imaging for Aerospace Applications

2:20 pm: **Shape-based segmentation of alloy micrographs using matching pursuits**, Landis M. Huffman, Ilya Pollak, Purdue Univ. (United States); Jeff P. Simmons, Air Force Research Lab. (United States); Marc De Graef, Carnegie Mellon Univ. (United States)[7873-35]

2:40 pm: **Characterization of moving dust particles**, Brent J. Bos, Scott R. Antonille, Nargess Memarsadeghi, NASA Goddard Space Flight Ctr. (United States)[7873-13]

3:00 pm: **A super-resolution algorithm for enhancement of flash lidar data**, Alexander Bulyshev, Analytical Mechanics Associates, Inc. (United States); Michael D. Vanek, Farzin Amzajerjian, NASA Langley Research Ctr. (United States); Diego F. Pierrottet, Coherent Applications, Inc. (United States); Glenn D. Hines, Robert A. Reisse, NASA Langley Research Ctr. (United States)[7873-14]

3:20 pm: **Image registration for stability testing of MEMS**, Nargess Memarsadeghi, Jacqueline Le Moigne, Peter N. Blake, NASA Goddard Space Flight Ctr. (United States); Peter A. Morey, Ball Aerospace & Technologies Corp. (United States); Wayne B. Landsman, Adnet Systems Inc. (United States); Victor J. Chambers, Samuel H. Moseley, NASA Goddard Space Flight Ctr. (United States)[7873-17]

Coffee Break 3:40 to 4:00 pm

SESSION 6

Oak Room **Mon. 4:00 to 5:20 pm**

Image Processing for Mobile Device Applications

4:00 pm: **Capacitive touch sensing: signal and image processing algorithms**, Zachi I. Baharav, Corning Inc. (United States); Ramakrishna Kakarala, Nanyang Technological Univ. (Singapore)[7873-18]

4:20 pm: **Denoising, deblurring, and super-resolution in mobile phones**, Filip Sroubek, Jan Kamenicky, Jan Flusser, Institute of Information Theory and Automation (Czech Republic)[7873-19]

4:40 pm: **Arabic word recognizer for mobile applications**, Nitin Khanna, Golnaz Abdollahian, Ben Brame, Mireille Boutin, Edward J. Delp III, Purdue Univ. (United States)[7873-20]

5:00 pm: **Volume estimation using food specific shape templates in mobile image-based dietary assessment**, Junghoon Chae, Insoo Woo, SungYe Kim, Ross Maciejewski, Fengqing Zhu, Edward J. Delp III, Carol J. Boushey, David S. Ebert, Purdue Univ. (United States)[7873-21]

Tuesday 25 January

SESSION 10

Grand Peninsula Ballroom A Tues. 8:20 to 9:20 am
Plenary Session and Society Award Presentations

8:25 am: **New Dimensions in Visual Quality**, Alan C. Bovik, The Univ. of Texas at Austin (United States)[E111SE-101]

Oak Room Tues. 9:30 to 10:00 am

Keynote Presentation II

9:30 am: **Medical x-ray computed tomography: past, present, and future**, Jiang Hsieh, GE Healthcare (United States)[7873-36]

SESSION 8

Oak Room Tues. 10:00 am to 12:30 pm

Special Session: Advance Methods in Tomographic Imaging I

Session Chairs: **Samit Basu**, Morpho Detection Inc.; **Charles A. Bouman**, Purdue Univ.

10:00 am: **Spectral x-ray CT imaging using energy sensitive photon counting detectors**, Katsuyuki Taguchi, The Johns Hopkins Outpatient Ctr. (United States)[7873-37]

10:20 am: **Toward material characterization using dual energy x-ray CT**, Joseph A. O'Sullivan, Bruce R. Whiting, David G. Politte, Washington Univ. in St. Louis (United States); Jeffrey F. Williamson, Virginia Commonwealth Univ. (United States)[7873-38]

Coffee Break 10:40 to 11:10 am

11:10 am: **A hybrid approach to imaging and anomaly characterization from dual energy CT data**, Eric L. Miller, Oguz Semerici, Tufts Univ. (United States).....[7873-39]

11:30 am: **Robust multifrequency inversion in terahertz diffraction tomography**, David A. Castañón, Ke A. Chen, Boston Univ. (United States)[7873-40]

11:50 am: **A learning-based approach to material classification using multi-energy x-ray computed tomography**, Limor Eger, Prakash Ishwar, William C. Karl, Boston Univ. (United States)[7873-41]

12:10 pm: **Robustness of spectral CT for explosives detection**, Samit Basu, Morpho Detection Inc. (United States)[7873-42]

Lunch Break 12:30 to 2:00 pm

SESSION 9

Oak Room Tues. 2:00 to 3:00 pm

Special Session: Advance Methods in Tomographic Imaging II

Session Chairs: **Samit Basu**, Morpho Detection Inc.; **Charles A. Bouman**, Purdue Univ.

2:00 pm: **Constrain static target kinetic iterative image reconstruction for 4D cardiac CT imaging**, Adam M. Alessio, Univ. of Washington Medical Ctr. (United States); Patrick J. La Rivière, The Univ. of Chicago Medical Ctr. (United States)[7873-43]

2:20 pm: **Model based motion artifact reduction for computed tomography**, Zhou Yu, Jean-Baptist Thibault, GE Healthcare (United States); Jiao Wang, Ken D. Sauer, Univ. of Notre Dame (United States); Charles A. Bouman, Purdue Univ. (United States)[7873-44]

2:40 pm: **Bayesian estimation with Gauss-Markov-Potts priors in optical diffraction tomography**, Hacheme Ayasso, Bernard Duchêne, Ali Mohammad-Djafari, Lab. des Signaux et Systèmes (France) . . . [7873-03]

Coffee Break 3:00 to 3:40 pm

Oak Room Tues. 3:40 to 5:00 pm

Advanced Methods in Inverse Problems

3:40 pm: **Accelerating sparse reconstruction for fast and precomputable system matrix inverses**, Stanley J. Reeves, Auburn Univ. (United States)[7873-45]

4:00 pm: **An expectation maximization solution for fusing 2D and 3D ladar data**, Paul F. Dolce, Stephen C. Cain, Air Force Institute of Technology (United States)[7873-24]

4:20 pm: **Superresolution with the focused plenoptic camera**, Andrew Lumsdaine, Georgi N. Chunev, Indiana Univ. (United States); Todor G. Georgiev, Adobe Systems Inc. (United States)[7873-25]

4:40 pm: **Content-preserving zoom-in view generation for surveillance videos**, Kenji Watanabe, Naoko Nitta, Noboru Babaguchi, Osaka Univ. (Japan)[7873-26]

Grand Peninsula Ballroom E Tues. 5:30 to 8:00 pm

Interactive Paper and Symposium Demonstration Session

Demonstrations 5:30 to 8:00 pm

A symposium-wide demonstration session will be open to attendees 5:30 to 8:00 pm Tuesday evening. Demonstrators will provide interactive, hands-on demonstrations of a wide-range of products related to Electronic Imaging.

Posters 5:30 to 7:00 pm

Interactive papers will be placed on display after 9:00 am on Monday. An interactive paper session, with authors present at their papers, will be held Tuesday evening, 5:30 to 7:00 pm.

Color image compression by gray-to-color mapping, Mark S. Drew, Simon Fraser Univ. (Canada); Graham D. Finlayson, Univ. of East Anglia Norwich (United Kingdom); Abhilash Jindal, Indian Institute of Technology Kanpur (India)[7873-27]

Human motion recognition based on tensor decomposition using multiple viewpoint image sequence, Takayuki Hori, Jun Ohya, Waseda Univ. (Japan); Jun Kurumisawa, Chiba Univ. of Commerce (Japan)[7873-28]

Visual real-time detection, recognition, and tracking of ground and airborne targets, Levente Kovács, Csaba Benedek, Computer and Automation Research Institute (Hungary)[7873-29]

Illuminant color estimation by hue categorization based on gray world assumption, Harumi Kawamura, Nippon Telegraph and Telephone Corp. (Japan); Shunichi Yonemura, Jun Ohya, Waseda Univ. (Japan); Norihiko Matsuura, Nippon Telegraph and Telephone Corp. (Japan) . . . [7873-30]

Super-resolved refocusing with a plenoptic camera, Zhiliang Zhou, Univ. of Science and Technology of China (China); Yan Yuan, BeiHang Univ. (China); Xiangli Bin, Univ. of Science and Technology of China (China) and Academy of Opto-electronics, Chinese Academy of Sciences (China); Lulu Qian, Univ. of Science and Technology of China (China)[7873-31]

Plenoptic rendering with interactive performance using GPUs, Georgi N. Chunev, Andrew Lumsdaine, Indiana Univ. (United States); Todor G. Georgiev, Adobe Systems Inc. (United States)[7873-32]

Compressive through-focus wavefield imaging, Edwin A. Marengo, Oren Mangoubi, Northeastern Univ. (United States)[7873-33]