

IS&T International Symposium on Electronic Imaging Science and Technology 2018

**Image Processing: Algorithms and
Systems XVI**

**Burlingame, California, USA
28 January - 1 February 2018**

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ISBN: 978-1-5108-6922-6

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57 Morehouse Lane
Red Hook, NY 12571



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Image Processing: Algorithms and Systems XVI

Tuesday, January 30, 2018

7:15 – 8:45 am Women in Electronic Imaging Breakfast

Neural Networks in Image Processing Applications

8:50 – 10:10 am

Sandpebble B

8:50 IPAS-193

Deep pFibonacci scattering networks, Federica Battisti¹, Marco Carli¹, Eleonora De Paola¹, and Karen Egiazarian²; ¹Università degli Studi Roma TRE (Italy) and ²Tampere University of Technology (Finland)

9:10 IPAS-194

An estimation method of human impression factors for objects from their 3D shapes using a deep neural network, Koichi Taguchi¹, Manabu Hashimoto¹, Kensuke Tobitani², and Noriko Nagata²; ¹Chukyo University and ²Kwansei Gakuin University (Japan)

9:30 IPAS-195 [no paper]

Texture analysis and classification using Pix2Pix network and AlexNet, Mark Lenson, Florida Atlantic University (United States)

9:50 IPAS-196

Learning adaptive parameter tuning for image processing, Jingming Dong¹, Iuri Frosio², and Jan Kautz²; ¹University of California, Los Angeles, and ²NVIDIA Corporation (United States)

10:00 am – 7:30 pm Industry Exhibition

10:10 – 11:10 am Coffee Break

Image Enhancement and Filtering Algorithms

11:10 – 11:50 am

Sandpebble B

11:10 IPAS-218

Sharpening image details using local phase congruency analysis, Andrey Shcherbinin¹, Konstantin Kolchin¹, Ivan Glazistov¹, Michael Rychagov¹, and Seung-Hoon Han²; ¹Samsung R&D Institute Russia (Russian Federation) and ²Samsung Research (Republic of Korea)

11:30 IPAS-219

Color visibility images and measures of image enhancement, Artyom Grigoryan¹ and Sos Agaian²; ¹University of Texas at San Antonio, and ²College of Staten Island, CUNY (United States)

11:50 AM – 2:00 pm Lunch

Plenary Session

2:00 – 3:00 pm

Grand Peninsula Ballroom D

Fast, Automated 3D Modeling of Buildings and Other GPS Denied Environments, Avidah Zakhor, University of California, Berkeley (United States)

Professor Avidah Zakhor discusses fast, automated 3D modeling of buildings and other GPS denied environments with examples from her work in 3D reality capture, and visual and metric documentation of building interiors. Dr. Zakhor is a serial entrepreneur with startups in outdoor mapping, indoor mapping, and micro-lithography, currently CEO and founder of Indoor Reality, a Silicon Valley startup with products in 3D reality capture, and visual and metric documentation of building interiors.

Dr. Zakhor has been faculty member at University of California, Berkeley since 1994 where she holds the Qualcomm Chair in the electrical engineering and computer science department. She co-founded OPC technology in 1996, which was acquired by Mentor Graphics in 1998, and UrbanScan Inc. in 2005, acquired by Google in 2007. UrbanScan created the first fully automated 3D outdoor mapping system for 3D exterior models of buildings in urban environments. She has received a number of best paper awards in 3D computer vision, image processing, signal processing, is an IEEE fellow, and received the presidential young investigator award in 1992. Dr. Zakhor received her BSc in electrical engineering, from the California Institute of Technology (1983), and her MS (1985) and PhD (1987) in electrical engineering and computer science from MIT.

3:00 – 3:30 pm Coffee Break

Image Processing Algorithms I

3:30 – 4:30 pm

Sandpebble B

3:30 IPAS-260

Robust linearized combined metrics of image visual quality, Oleg Ieremeiev¹, Vladimir Lukin¹, Nikolay Ponomarenko¹, and Karen Egiazarian²; ¹National Aerospace University (Ukraine) and ²Tampere University of Technology (Finland)

3:50 IPAS-261

1-Bit tensor completion, Anastasia Aidini^{1,2}, Grigorios Tsagkatakis¹, and Panagiotis Tsakalides^{1,2}; ¹Foundation for Research and Technology (FORTH) and ²University of Crete (Greece)

4:10 IPAS-262

Blind image watermarking in wavelet-domain robust to printing and smartphone acquisition, Andrea Leopardi, Davide Soresina, Davide Marcantonio, Alain Malacarne, Nicola Conci, and Giulia Boato, Università degli Studi di Trento (Italy)

Symposium Demonstration Session

5:30 – 7:30 pm

Grand Peninsula Ballroom E

Wednesday, January 31, 2018

Image Processing Systems

8:50 – 10:10 am

Sandpebble B

8:50 IPAS-305

Separation of scanned media using a strip based methodology, Osborn de Lima¹, Eli Saber¹, Kevin Merrill², and Mark Shaw²; ¹Rochester Institute of Technology and ²HP Inc. (United States)

9:10 IPAS-306

Methods and tools for denoising of complex valued images based on block-matching and high order singular value decomposition, Mykola Ponomarenko, Vladimir Katkovnik, and Karen Egiazarian, Tampere University of Technology (Finland)

9:30 IPAS-307

Automatic banknote stain detection, Jiho Yoon¹, Sangwook Baek¹, Euison Choi², Hyunji Jo², and Chulhee Lee¹; ¹Yonsei University and ²R&D Center of Nautilus Hyosung Inc. (Republic of Korea)

9:50 IPAS-308

Rule-based optical character recognition for serial number on renminbi banknote, Yu-Shiuan Tsai¹, Yi-Yu Hsieh², Chih-Hui Ho³, Ya-Ching Chang², Yao-Yuan Chang², Heng-Jyun Lin², Han-Yang Wang², Yu-Chen Chou², and Jen-Hui Chuang²; ¹National Taiwan Ocean University (Taiwan), ²National Chiao Tung University (Taiwan), and ³University of California, San Diego (United States)

10:00 am – 4:00 pm Industry Exhibition

10:10 – 10:50 am Coffee Break

Image Processing Algorithms II

10:50 am – 12:10 pm

Sandpebble B

10:50 IPAS-328

Real-time 3DRS motion estimation for frame-rate conversion, Petr Pohl, Valery Anisimovskiy, Igor Kovliga, Alexey Gruzdev, and Roman Arzumanyan, Samsung R&D Institute Russia (Russian Federation)

11:10 IPAS-329 [no paper]

Rician noise rejection in sparse representation, Leandro Delfin¹, Raul Pinto Elias¹, Humberto de Jesus Ochoa Dominguez², Osslan Osiris Vergara Villegas², and Dante Mujica Vargas¹; ¹CENIDET and ²UACJ (Mexico)

11:30 IPAS-330 [no paper]

Registration of visible and infrared facial images for temperature measurement, C.Y.N. Dwith^{1,2}, Pejman Ghassemi¹, Joshua Pfefer¹, Jon Casamento¹, and Quanzeng Wang^{1,2}; ¹U.S. Food and Drug Administration and ²University of Maryland (United States)

11:50 IPAS-331 [no paper]

Gradient management and algebraic reconstruction for single image super resolution, Leandro Delfin, CENIDET (Mexico)

12:10 – 2:00 pm Lunch

Plenary Session

2:00 – 3:00 pm

Grand Peninsula Ballroom D

Ubiquitous, Consumer AR Systems to Supplant Smartphones, Ronald T. Azuma, Intel, Corp. (United States)

Dr. Ronald T. Azuma, researcher and augmented reality pioneer, shares his vision for achieving ubiquitous, consumer AR systems. Recent large investments in augmented reality reflect the commercial interest in its inherent potential to replace current smartphone technology, but much remains to be done. In his talk, Dr. Azuma gives a vision for achieving this goal, which requires not just solving numerous technical challenges but also determining new, compelling AR experiences that will establish AR as a new platform and novel form of media.

Dr. Azuma leads a team in Intel Labs that designs and prototypes novel experiences and key enabling technologies to enable new forms of media. These technology areas include computational imaging and photography, computational displays, and head-worn displays. Dr. Azuma is recognized as a pioneer and innovator in augmented reality, and has held prominent leadership roles in that research area, including leading and implementing research projects and demonstrations in areas such as AR, visualization, and mobile applications. Dr. Azuma received his BSc (1988) in electrical engineering from University of California, Berkeley, and MS (1990) and PhD (1995) in computer science from University of North Carolina, Chapel Hill. Prior to joining Intel, he was a research leader at Nokia Research Center Hollywood, and a senior researcher at Hughes Research Laboratories.

3:00 – 3:30 pm Coffee Break

Image Processing: Algorithms and Systems XVI Interactive (Poster) Papers Oral Previews

3:30 – 5:20 pm

Sandpebble B

In this session interactive poster authors will each provide a brief oral preview of their poster presentation, which will be presented fully in the Image Processing: Algorithms and Systems XVI Interactive Papers Session at 5:30 pm on Wednesday.

3:30 IPAS-381
A similarity measurement method for diffuse lung disease CT slice image retrieval, Mengjiao Wang and Rujie Liu, Fujitsu R&D Center Co., Ltd. (China)

3:40 IPAS-382
Blind estimation of white Gaussian noise variance in highly textured images, Mykola Ponomarenko¹, Nikolay Gapon², Viacheslav Voronin², and Karen Egiazarian¹; ¹Tampere University of Technology (Finland) and ²Don State Technical University (Russian Federation)

3:50 IPAS-383
Color facial image representation with new quaternion gradients, Artyom Grigoryan and Sos Agaian, University of Texas at San Antonio (United States)

4:00 IPAS-220
Combined local and global image enhancement algorithm, Viacheslav Voronin¹, Evgeny Semenishchev¹, Mykola Ponomarenko², and Sos Agaian³; ¹Don State Technical University (Russian Federation), ²Tampere University of Technology (Finland), and ³The College of Staten Island, CUNY (United States)

4:10 IPAS-384 [no paper]
Combining pairs images of the which is fixed in the non-visible range, Evgeny Semenishchev and Viacheslav Voronin, Don State Technical University (Russian Federation)

4:20 IPAS-385
Compression of signs of DCT coefficients for additional lossless compression of JPEG images, Oleksandr Miroshnichenko¹, Mykola Ponomarenko², Vladimir Lukin¹, and Karen Egiazarian²; ¹National Aerospace University (Ukraine) and ²Tampere University of Technology (Finland)

4:30 IPAS-386
Disparity estimation using fast motion-search and local image characteristics, Yong-Jun Chang and Yo-Sung Ho, Gwangju Institute of Science and Technology (Republic of Korea)

4:40 IPAS-387
Flexible shape of seam for image retargeting with face detection, Ikuko Tsubaki and Kazuo Sasaki, Tokyo University of Technology (Japan)

4:50 IPAS-389
Non-linear masking based contrast enhancement via illumination estimation, Soonyoung Hong, Minsub Kim, and Moon Gi Kang, Yonsei University (Republic of Korea)

5:00 IPAS-390
Occlusion aware reduced angular candidates based light field depth estimation from an epipolar plane image, Ji-Hun Mun and Yo-Sung Ho, Gwangju Institute of Science and Technology (Republic of Korea)

5:10 IPAS-391
Two general models for gradient operators in imaging, Artyom Grigoryan¹ and Sos Aгаian²; ¹University of Texas at San Antonio, and ²College of Staten Island, CUNY (United States)

11:10 IPAS-440
High dynamic range imaging with a single exposure-multiplexed image using smooth contour prior, Mushfiqur Rouf and Rabab Ward, University of British Columbia (Canada)

11:30 IPAS-441
Enhancement of underwater color images by two-side 2-D quaternion discrete Fourier transform, Artyom Grigoryan¹, Aparna John¹, and Sos Aгаian²; ¹University of Texas at San Antonio and ²City University of New York/CSI (United States)

11:50 PMII-442
Automatic tuning method for camera denoise and sharpness based on perception model, Weijuan Xi¹, Huanzhao Zeng², and Jonathan Phillips²; ¹Purdue University and ²Google Inc. (United States)

12:10 – 2:00 pm Lunch

3D Scene Sensing and Object Recording JOINT SESSION

Session Chairs: William Puech, University of Montpellier (France) and Robert Sitnik, Warsaw University of Technology (Poland)

2:00 – 4:00 pm
 Grand Peninsula Ballroom BC

This session is jointly sponsored by: 3D Image Processing, Measurement (3DIPM), and Applications 2018, and Image Processing: Algorithms and Systems XVI.

2:00 3DIPM-460
An accurate and robust algorithm for tracking guitar neck in 3D based on modified RANSAC homography, Zhao Wang and Jun Ohya, Waseda University (Japan)

2:20 3DIPM-461
Skeleton-based dynamic hand gesture recognition using 3D depth data, Dan Zhao, Beijing Institute of Technology (China)

2:40 IPAS-462
Combining local and global optical flow for RGB-D point cloud alignment, Sunho Kim and Yo-Sung Ho, Gwangju Institute of Science and Technology (Republic of Korea)

3:00 IPAS-463
Discrimination of active dynamic objects in stereo-based visual SLAM, Ihtisham Ali, Olli Suominen, and Atanas Gotchev, Tampere University of Technology (Finland)

3:20 IPAS-464
Error correction for time-of-flight images using validity classification, Yunseok Song and Yo-Sung Ho, Gwangju Institute of Science and Technology (Republic of Korea)

3:40 3DIPM-465
How to capture aesthetic features of complex cultural heritage objects – active illumination data fusion, Grzegorz Maczkowski¹, Eryk Bunsch², and Jakub Krzeslowski¹; ¹Warsaw University of Technology and ²King Jan III Museum Palace at Wilanow (Poland)

Symposium Interactive Papers (Poster) Session

5:30 – 7:30 pm
 The Grove

Meet the Future: A Showcase of Student and Young Professionals Research

5:30 – 7:30 pm
 The Grove

Thursday, February 1, 2018

Camera Image Processing JOINT SESSION

Session Chair: Michael Kriss, MAK Consultants (United States)

10:50 am – 12:10 pm
 Grand Peninsula Ballroom BC

This session is jointly sponsored by: Image Processing: Algorithms and Systems XVI, and Photogrammetry, Mobile, and Immersive Imaging 2018.

10:50 IPAS-439
Color interpolation algorithm for the Sony-RGBW color filter array, Jonghyun Kim and Moon Gi Kang, Yonsei University (Republic of Korea)