

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

**Image Processing: Algorithms and
Systems XIV**

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Image Processing: Algorithms and Systems XIV

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Monday, February 15, 2016

Image Processing Algorithms

Session Chair: Atanas Gotchev, Tampere University of Technology (Finland)

8:50 – 10:10 am

Golden Gate 4

8:50 IPAS-180

Combined full-reference image visual quality metrics, Oleg I. Ieremeiev¹, Vladimir V. Lukin¹, Nikolay N. Ponomarenko¹, Karen O. Egiazarian², and Jaakko Astola²; ¹National Aerospace University (Ukraine) and ²University of Tampere (Finland)

9:10 IPAS-181

Automatic face anonymization in visual data: Are we really well protected?, Natacha Ruchaud and Jean-luc Dugelay, Eurecom (France)

9:30 IPAS-182

Non photorealistic rendering in frequency domain, Federica Mangiatordi, Emiliano Pallotti, Vittorio Baroncini, and Licia Capodiferro, Fondazione Ugo Bordoni (Italy)

9:50 IPAS-183

Comparison study of Gaussian mixture models for fingerprints image duplication with new one, Sos Agaian¹, Rushikesh Yeole¹, Gary Reinecke², Mary Ann³, and Mike Troy³; ¹University of Texas at San Antonio ²Boston University, School of Medicine and ³FlashScan3D (USA)

10:10 – 10:50 am Coffee Break

Image and Video Processing Algorithms

Session Chair: Karen Egiazarian, Tampere University of Technology (Finland)

10:50 am – 12:10 pm

Golden Gate 4

10:50 IPAS-184

Image stitching by means of adaptive normalization, Oleg Michailovich, University of Waterloo (Canada)

4:25 IPAS-193

Video inpainting of complex scenes based on local statistical model, V.V.Voronin¹, R.A. Sizyakin¹, V.I. Marchuk¹, Yigang Cen², G.G. Galustov³, and K.O. Egiazarian⁴; ¹Don State Technical University (Russian Federation), ²Beijing Jiaotong University (China) ³Southern Federal University (Russian Federation) ⁴Tampere University of Technology (Finland)

11:30 IPAS-186

Spatio-temporal video background inpainting, Petr Pohl, Alexander Molchanov, Artem Shamsuarov, and Victor Bucha, Samsung R&D Institute Russia (Russian Federation)

11:50 IPAS-187

Video segmentation in presence of static and dynamic textures, Vladimir Frantc¹, Sergey Makov¹, Viacheslav Voronin¹, Vladimir Marchuk¹, Sergei Stradanchenko¹, and Karen Egiazarian²; ¹Don State Technical University (Russian Federation) and ²University of Tampere (Finland)

Image Processing: Algorithms and Systems XIV

12:10 – 2:00 pm Lunch Break

El 2016 Opening Plenary and Symposium Awards

Session Chair: Choon-Woo Kim (Inha University)

2:00 – 3:00 PM

Continental Ballroom 5

Illuminating a bright future for medicine, Audrey K. Bowden, Stanford University (USA)

3:00 – 3:30 pm Coffee Break

Image Processing Tools 1

Session Chair: Sos Agaian, University of Texas at San Antonio (USA)

3:30 – 4:10 pm

Golden Gate 4

3:30 IPAS-188
Refractory neural nets and vision – a deeper look, Thomas C. Fall, Kalyx Associates (USA)3:50 IPAS-189
Prostate cancer detection using photoacoustic imaging and deep learning, Arjun Raj Rajanna¹, Raymond Ptucha¹, Saugata Sinha¹, Bhargava Chinni², Vikram Dogra², and Navalgund A. Rao¹; ¹Rochester Institute of technology and ²University of Rochester (USA)**Image Processing: Algorithms and Systems XIV Interactive Papers Oral Previews I**

Session Chair: Sos Agaian, University of Texas at San Antonio (USA)

4:10 – 4:30 pm

Golden Gate 4

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 XIV Interactive Papers Session at 5:30 pm on Wednesday.

4:15 IPAS-191
Approximate subgraph isomorphism for image localization, Vaishaal Vaishaal Shankar, Jordan Zhang, Jerry Chen, Christopher Dinh, Matthew Clements, and Avidesh Zakhor, University of California, Berkeley (USA)4:20 IPAS-192
2-D left-side quaternion discrete Fourier transform: Fast algorithm, Artyom Grigoryan and Sos Agaian, University of Texas at San Antonio (USA)

5:00 – 6:00 pm El 2016 Symposium Reception

Tuesday, February 16, 2016**DPMI/IPAS: Image Filtering and Denoising** Joint Session

Session Chairs: Karen Egiazarian, Tampere University of Technology (Finland) and Zhen He, Intel Corporation (USA)

8:50 – 10:10 AM

Golden Gate 6/7

This session is jointly sponsored by: Digital Photography and Mobile Imaging XII and Image Processing: Algorithms and Systems XIV.

8:50 IPAS-013
Intelligent image filtering using multilayer neural network with multi-valued neurons, Igor Aizenberg, Texas A&M University-Texarkana (USA)9:10 IPAS-014
Robust extensions to guided image filtering, Oleg Michailovich, University of Waterloo (Canada)9:30 DPMI-015
Local denoising applied to RAW images may outperform non-local patch-based methods applied to the camera output, Gabriela Ghimpeanu¹, Thomas Batard¹, Tamara Seybold², and Marcelo Bertalmio¹; ¹University Pompeu Fabra (Spain) and ²ARRI Arnold & Richter Cine Technik GmbH & Co. Betriebs KG (Germany)9:50 DPMI-016
Use of flawed and ideal image pairs to drive filter creation by genetic programming, Subash Sridhar, Henry Dietz, and Paul Eberhart, University of Kentucky (USA)

10:10 – 10:50 am Coffee Break

DPMI/IPAS: Color Filter Array Interpolation and Superresolution Joint Session

Session Chairs: Ajit Bopardikar, Samsung R&D Institute India-Bangalore (India) and Atanas Gotchev, Tampere University of Technology (Finland)

10:50 am – 12:30 pm

Golden Gate 6/7

This session is jointly sponsored by: Digital Photography and Mobile Imaging XII and Image Processing: Algorithms and Systems XIV.

10:50 IPAS-024
Optimal transparent wavelength and arrangement for multispectral filter array, Yudai Yanagi¹, Kazuma Shinoda¹, Madoka Hasegawa¹, Shigeo Kato¹, Masahiro Ishikawa², Hideki Komagata², and Naoki Kobayashi²; ¹Utsunomiya University and ²Saitama Medical University (Japan)11:10 DPMI-025
Multi-spectrum to RGB with direct structure-tensor reconstruction, Takashi Shibata^{1,2}, Masayuki Tanaka¹, and Masatoshi Okutomi¹; ¹Tokyo Institute of Technology and ²NEC Corporation (Japan)11:30 IPAS-026
Edge-directional interpolation algorithm using structure tensor, Andrey V. Nasonov¹, Andrey S. Krylov¹, Xenyan Yu. Petrova², and Michael N. Rychagov²; ¹Lomonosov Moscow State University and ²Samsung R&D Institute Russia (Russian Federation)11:50 IPAS-027
Fast edge-directed single-image super-resolution, Mushfiqur Rouf¹, Dikpal Reddy², Kari Pulli², and Rabab Ward³; ¹University of British Columbia (Canada) ²Nvidia Inc, and ³Light Co (USA)

Image Processing: Algorithms and Systems XIV

12:10 DPMI-028
Light-weight single image super-resolution via pattern-wise regression function, Kohei Kurihara¹, Yoshitaka Toyoda¹, Shotaro Moriya², Daisuke Suzuki¹, Takeo Fujita¹, Narihiro Matoba¹, Jay Thornton³, and Fatih Porikli⁴;
¹Mitsubishi Electric Corporation (Japan), ³Mitsubishi Electric Research Laboratories (MERL) (USA), and ⁴Australian National University (Australia)

12:30 – 2:00 pm Lunch Break

El 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

Image Processing Tools 2

Session Chair: Atanas Gotchev, Tampere University of Technology (Finland)

3:30 – 4:10 pm

Golden Gate 4

3:30 IPAS-194
Most luminous tetrachromatic surfaces, Alfredo Restrepo (Palacios) and Edison Maldonado, Universidad de los Andes (Colombia)

3:50 IPAS-195
Zonal-alpha-rooting color image enhancement by the two-side 2D quaternion discrete Fourier transform, Artyom Grigoryan, Aparna John, and Sos Agaian, University of Texas at San Antonio (USA)

Image Processing: Algorithms and Systems XIV Interactive Papers Oral Previews II

Session Chair: Atanas Gotchev, Tampere University of Technology (Finland)

4:10 – 4:40 pm

Golden Gate 4

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 XIV Interactive Papers Session at 5:30 pm on Wednesday.

4:10 IPAS-196
JPEG compression with recursive group coding, Nadezhda Kozhemiakina¹, Vladimir V. Lukin¹, Nikolay N. Ponomarenko¹, Jaakko Astola², and Karen O. Egiazarian²; ¹National Aerospace University (Ukraine) and ²University of Tampere (Finland)

4:15 IPAS-197
Video quality of experience metric for streaming services, Pradyal Paudyal, Yiwei Liu, Federica Battisti, and Marco Carli, Roma TRE University (Italy)

4:20 IPAS-198
Image fusion method for a single sensor based multispectral filter array containing a near infra-red channel, Seung Hoon Jee and Moon Gi Kang, Yonsei University (South Korea)

4:25 IPAS-199
Fréchet MIMO-filters for hyperspectral images, Valeri Labunets¹ and E. Ostheimer²; ¹Ural Federal University (Russian Federation) and ²Capricat LLC (USA)

4:30 IPAS-200
A comparative study of image feature detection and matching algorithms for touchless fingerprint systems, Sos Agaian, Marzena Mulawka, Rahul Rajendran, Shishir Paramathma Rao, and Shreyas Kamath K.M. and Srijith Rajeev; The University of Texas at San Antonio (USA)

El 2016 Symposium Demonstration Session and Exhibit Hall

Happy Hour

5:30 – 7:00 PM

Continental Ballroom Foyer

Wednesday, February 17, 2016

DPMI/IPAS/VIPC: Blur Removal and Synthesis Joint Session

Session Chair: Radka Tezaur, Nikon Research Corp. of America (USA)

10:50 am – 12:10 pm

Golden Gate 6/7

This session is jointly sponsored by: Digital Photography and Mobile Imaging XII, Image Processing: Algorithms and Systems XIV, and Visual Information Processing and Communication VII.

10:50 DPMI-030
Multi-image sparse motion-invariant photography, Bart Kofoed^{1,2}, Peter de With¹, and Eric Janssen²; ¹Eindhoven University of Technology and ²Prodrive Technologies (Netherlands)

11:10 DPMI-031
Virtual DSLR: High quality dynamic depth-of-field synthesis on mobile platforms, Yang Yang¹, Haiting Lin¹, Zhan Yu², Sylvain Paris², and Jingyi Yu¹; ¹University of Delaware and ²Adobe (USA)

11:50 VIPC-033
Motion deblurring for depth-varying scenes, Ruiwen Zhen and Robert Stevenson, University of Notre Dame (USA)

12:10 – 2:00 pm Lunch Break

El 2016 Wednesday Plenary and Symposium Awards

Session Chairs: Choon-Woo Kim (Inha University)

2:00 – 3:00 PM

Continental Ballroom 5

PLENARY - 001

Intel® RealSense Technology: Adding human-like sensing and interactions to computing devices, Achin Bhowmik, Intel Corporation (USA)

3:00 – 3:30 pm Coffee Break

El 2016 Symposium Interactive Papers Session

5:30 – 7:00 PM

Continental Ballroom 6

Image Processing: Algorithms and Systems XIV

Image Processing: Algorithms and Systems XIV Interactive Papers Session**5:30 – 7:00 pm**

Continental Ballroom 6

The Image Processing: Algorithms & Systems XIV interactive papers will be presented in the EI 2016 Symposium Interactive Papers Session.

Thursday, February 18, 2016**3DIPM/IPAS: 3D Scene Sensing and Object Recording** Joint Session

Session Chair: Robert Sitnik, Warsaw University of Technology (Poland)

10:40 am – 12:10 pm

Golden Gate 6/7

This session is jointly sponsored by: 3D Image Processing, Measurement (3DIPM), and Applications 2016, and Image Processing: Algorithms and Systems XIV.

10:40

Joint Session Introduction

10:50

3DIPM-044

Shadow detection on 3D point cloud, *Shuyang Sheng and B. Keith Jenkins, University of Southern California (USA)*

11:10

3DIPM-045

Im2Fit: Fast 3D model fitting and anthropometrics using single consumer depth camera and synthetic data, *Qiaosong Wang¹, Vignesh Jagadeesh³, Bryan Ressler³, and Robinson Piramuthu³; ¹University of Delaware and ³eBay Research Labs (USA)*

11:30

3DIPM-046

Human detection from still depth images, *Gulsum Can and Helin Duiagaci, Eskisehir Osmangazi University (Turkey)*

11: 50

IPAS-047

Tracking the guitarist's fingers as well as recognizing pressed chords from a video sequence, *Zhao Wang and Jun Ohya, Waseda University (Japan)*