IS&T International Symposium on

Electronic Imaging

SCIENCE AND TECHNOLOGY

14–18 February 2016 • San Francisco, CA, USA

PROCEEDINGS

Imaging and Multimedia Analytics in a Web and Mobile World 2016

Editors: **Jan Allebach,** Purdue University (United States); **Zhigang Fan,** Apple Inc. (United States); and **Qian Lin,** HP Inc. (United States)

These papers represent the program of Electronic Imaging 2016,
held February 14-18, 2016, at the Hilton San Francisco, Union Square in San Francisco, CA.

Copyright 2016

Manuscripts are reproduced from PDFs as submitted and approved by authors; no editorial changes have been made.

Imaging and Multimedia Analytics in a Web and Mobile World 2016

Symposium Chairs:
Choon-Woo Kim, Inha University (Korea, the Republic of)
Nitin Sampat, Rochester Institute of Technology (United States)

Symposium Short Course Chairs
Majid Rabbani, Eastman Kodak Co. (United States)
Mohamed-Chaker Larabi, University of Poitiers (France)

At-large Conference Chair Representative
Adnan Alattar, Digimarc (United States)

Local Liaison Chair
Joyce Farrell, Stanford University (United States)

Exhibit and Sponsorship Chair
Kevin Matherson, Microsoft Corp. (United States)

Past Symposium Chair
Sheila Hemami, Northeastern University (United States)

Imaging and Multimedia Analytics in a Web and Mobile World 2016

Conference Chairs
Jan Allebach, Purdue University (United States)
Zhigang Fan, Apple Inc. (United States)
Qian Lin, HP Inc. (United States)

Conference Committee
Gady Agam, Illinois Institute of Technology (United States)
Vijayan Asari, University of Dayton (United States)
Reiner Fageth, CEWE Stifung & Co. KGaA (Germany)
Michael Gormish, Ricoh Innovations, Inc. (United States)
Yandong Guo, Microsoft Corporation (United States)
Ali Jahanian, Massachusetts Institute of Technology (United States)
Ramakrishna Kakarala, Picartio Inc (United States)
Xiaofan Lin, A9.COM, Inc. (United States)
Yung-Hsiang Lu, Purdue University (United States)
Mu Qiao, Shutterfly, Inc. (United States)
Alastair Reed, Digimarc Corporation (United States)
Andreas Savakis, Rochester Institute of Technology (United States)
Bin Shen, Google Inc. (United States)
Wiley Wang (United States)
Buyue Zhang, NVIDIA Corporation (United States)

Monday, February 15, 2016

Face Analysis and Recognition

Session Chair: Qian Lin, Hewlett-Packard Company (USA)

9:10 – 10:10 am
Golden Gate 8

9:10   IMAWM-455
Joint and discriminative dictionary learning for facial expression recognition, *Sriram Kumar, Behnaz Ghoraani, and Andreas Savakis, Rochester Institute of Technology (USA)*

9:30   IMAWM-456
Class specific discriminant dictionary learning with kernels for face recognition, *Bao-Di Liu[1], Yuting Wang[2], Liangke Gui[3], Yu-Xiong Wang[3], Bin Shen[4], Xue li[5], and Yan-Jiang Wang[1]; [1]China University of Petroleum (China), [2]Karlsruhe Institute of Technology (Germany), [3]Carnegie Mellon University (USA), [4]Purdue University (USA), and [5]Tsinghua University (China),*

9:50   IMAWM-457
Face pose normalization and simulation methods based on multi-view face alignment, *Changsong Liu[1,2,3] and Liting Wang[1]; [1]Department of Electronic Engineering, Tsinghua University (China), [2]State Key Laboratory of Intelligent Technology and Systems, and [3]Tsinghua National Laboratory for Information Science and Technology (China)*

10:10 – 10:30 am   Coffee Break

Keynote: Social Media & Mobile Imaging
Session Chair: Zhigang Fan, Apple Inc (USA)
10:30 – 11:30 am
Golden Gate 8

IMAWM-458
Browsing Information Overloading Unstructured Multimedia Social Network Contents on Mobile Devices, *Chang Wen Chen, State University of New York at Buffalo (USA)*

Social Media & Mobile Imaging

Session Chair: Mu Qiao, Shutterfly Inc. (USA)

11:30 am – 12:30 pm
Golden Gate 8

11:30   IMAWM-459
Hazmat sign location detection based on Fourier shape descriptors, *Kharittha Thongkor[1], Albert Parra Pozo[2], Thumrongrat Amornraska[1], and Edward Delp[2]; [1]King Mongkut's University of Technology Thonburi (Thailand) and [2]Purdue University (USA)*

11:50   IMAWM-460
Is it possible to attract new customers via mobile services for printed products?, *Reiner Fageth, CEWE Stiftung & Co. KGAA (Germany)*

12:10   IMAWM-461
Robust and secure image encryption schemes during JPEG compression process, *Kun He[1,2], Christophe Bidan[1,2], Gaëtan Le Guelvouit[1], and Cyrielle Feron[1]; [1]B-Com and [2]CentraleSupélec (France)*

12:30 – 2:00 pm   Lunch Break

EI 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 Analysis and Big Data

Session Chair: Bin Shen, Google Research (USA)

3:30 – 4:30 pm
Golden Gate 8

3:30   IMAWM-462
Face search in a big data system, *Qian Lin[1], Carlos Ceja[2], Meichun Hsu[2], Yongqiang Mou[1], and Min Xu[1]; [1]HP Labs and [2]Hewlett-Packard Enterprise (USA)*

3:50   IMAWM-463
MS-Celeb-1M: Challenge of Recognizing One Million Celebrities in the Real World, *Yandong Guo, Lei Zhang, Yuxiao Hu, Xiaodong He, and Jianfeng Gao, Microsoft (USA)*

4:10   IMAWM-464
Data analysis on camera data for willing-to-pay trend in online photo service, *Mu Qiao and Ariawan Suwendi, Shutterfly Inc. (USA)*

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

Tuesday, February 16, 2016

Video Analysis

Session Chair: Reiner Fageth, CEWE Stiftung & Co. KGAA (Germany)

9:30 – 10:10 am
Golden Gate 8

9:30   IMAWM-465
Touch event recognition for human interaction, *Qingshuang Chen, He Li, Rana Abu-Zhaya, Amanda Seidl, Fengqing Zhu, and Edward Delp, Purdue University (USA)*

9:50   IMAWM-466
Real Time Automated Machinery Threat Detection and Identification System for Pipeline Infrastructure Protection, *Almabrok Essa, Paheding Sidike, and Vijayan Asari, University of Dayton (USA)*

10:10 – 10:30 am   Coffee Break

Invited Talk: Deep Learning
Session Chair: Andreas Savakis, Rochester Institute of Technology (USA)
10:30 – 11:10 am
Golden Gate 8

                                                                IMAWM-467
Deep 3D shape representation, *Yi Fang, New York University Abu Dhabi (USA)*

Deep Learning

Session Chair: Yandong Guo, Microsoft (USA)

11:10 am – 12:30 pm
Golden Gate 8

11:30   IMAWM-469
Automatic mobile retinal microaneurysm detection using handheld fundus camera via cloud computing, *Jane You[1], Qin Li[2], and Zhenhua Guo[3]; [1]The Hong Kong Polytechnic University, [2]Shenzhen Institute of Information Technology, and [3]Tsinghua University (China)*

11:50   IMAWM-470
Two-step learning of deep convolutional neural network for discriminative face recognition under varying illumination, *Yeoreum Choi, Hyung-Il Kim, and Yong Man Ro, Korea Advanced Institute of Science and Technology (South Korea)*

12:10   IMAWM-471
Deep network for accurate tracking and analyzing gait patterns in low resolution video surveillance towards threat and person identification, *Binu Nair and Kimberly Kendricks, University of Nevada, Las Vegas (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

Image Analysis and Machine Learning

Session Chair: Jan Allebach, Purdue University (USA)

3:30 – 4:50 pm
Golden Gate 8

3:30   IMAWM-472
One-class maximum margin matrix factorization, *Bin Shen, Cheng Lu, and Qifan Wang, Purdue University (USA); Si Chen, Xiamen University of Technology (China); and Yan Yan, Xiamen University (China)*

4:10   IMAWM-474
A Bayesian Approach to Infer Photo Aesthetic Quality Scores From Psychophysical Experiment, *Jianyu Wang[1], Yandong Guo[2], and Jan Allebach[1]; [1]Purdue University and [2]Microsoft Research (USA)*

EI 2016 Symposium Demonstration Session and Exhibit Hall Happy Hour
5:30 – 7:00 PM
Continental Ballroom Foyer