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Imaging and Multimedia Analytics in a Web and Mobile World 2019

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Editors:

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IMAGING AND MULTIMEDIA ANALYTICS IN A WEB AND MOBILE WORLD 2019

Wednesday, January 16, 2019

Deep Learning for Face Recognition

Session Chair: Qian Lin, HP Labs, HP Inc. (United States)

8:50 – 10:30 am
Harbour AB

8:50   IMAWM-400
Face set recognition, *Tongyang Liu[1], Xiaoyu Xiang[1], Qian Lin[2], and Jan Allebach[1]; [1]Purdue University and [2]HP Labs, HP Inc. (United States) ...pg. 5*

9:10   IMAWM-401
Dense prediction for micro-expression spotting based on deep sequence model, *Khanh Tran, Xiaopeng Hong, Quang-Nhat Vo, and Guoying Zhao, University of Oulu (Finland)...pg. 10*

9:30   IMAWM-402
Real time facial expression recognition using deep learning, *Shaoyuan Xu[1], Qian Lin[2], and Jan Allebach[1]; [1]Purdue University and [2]HP Labs, HP Inc. (United States) ...pg. 15*

9:50   IMAWM-403
Face alignment via 3D-assisted features, *Song Guo[1], Fei Li[1], Hajime Nada[2], Hidetsugu Uchida[2], Tomoaki Matsunami[2], and Narishige Abe[2]; [1]Fujitsu Research & Development Center Co., Ltd. (China) and [2]Fujitsu Laboratories Ltd. (Japan) ...pg. 23*

10:10   IMAWM-404
Face recognition by the construction of matching cliques of points, *Frederick Stentiford, UCL (United Kingdom) ...pg. 30*

10:00 am – 3:30 pm Industry Exhibition

10:10 – 10:50 am Coffee Break

Deep Learning I

Session Chair: Qian Lin, HP Labs, HP Inc. (United States)

10:50 – 11:50 am
Harbour AB

                             IMAWM-405
KEYNOTE: Deep learning in the VIPER Laboratory, *Edward Delp, Purdue University (United States)*

Prof. Edward Delp is the Charles William Harrison distinguished professor of electrical and computer engineering, professor of biomedical engineering, and professor of psychological sciences (Courtesy) at Purdue University. Delp was born in Cincinnati, Ohio. He received his BSEE (cum laude) and MS from the University of Cincinnati, and his PhD from Purdue University. In May 2002 he received an Honorary Doctor of Technology from the Tampere University of Technology in Tampere, Finland. In 2014 Delp received the Morrill Award from Purdue University. This award honors a faculty member's outstanding career achievements and is Purdue's highest career achievement recognition for a faculty member. The Office of the Provost gives the Morrill Award to faculty members who have excelled as teachers, researchers and scholars, and in engagement missions. The award is named for Justin Smith Morrill, the Vermont congressman who sponsored the 1862 legislation that bears his name and allowed for the creation of land-grant college and universities in the United States. In 2015 Delp was named Electronic Imaging Scientist of the Year by IS&T and SPIE. The Scientist of the Year award is given annually to a member of the electronic imaging community who has demonstrated excellence and commanded the respect of his/ her peers by making significant and substantial contributions to the field of electronic imaging via research, publications and service. He was cited for his contributions to multimedia security and image and video compression. Delp is a fellow of IEEE, SPIE, IS&T, and the American Institute of Medical and Biological Engineering.

Deep Learning II

Session Chair: Wiley Wang, Ditto.com (United States)

11:50 am – 12:10 pm
Harbour AB

                             IMAWM-406
Comparison of texture retrieval techniques using deep convolutional features, *Otavio Gomes[1], Augusto Valente[1], Guilherme Megeto[1], Fábio Perez[1], Marcos Cascone[1], and Qian Lin[2]; [1]Eldorado Research Institute (Brazil) and [2]HP Labs, HP Inc. (United States) ...pg. 34*

12:30 – 2:00 pm Lunch

IMAWM

Wednesday Plenary

2:00 – 3:00 pm
Grand Peninsula Ballroom D

Light Fields and Light Stages for Photoreal Movies, Games, and Virtual Reality, *Paul Debevec, senior scientist, Google (United States)*

Paul Debevec will discuss the technology and production processes behind "Welcome to Light Fields", the first downloadable virtual reality experience based on light field capture techniques which allow the visual appearance of an explorable volume of space to be recorded and reprojected photorealistically in VR enabling full 6DOF head movement. The lightfields technique differs from conventional approaches such as 3D modelling and photogrammetry. Debevec will discuss the theory and application of the technique. Debevec will also discuss the Light Stage computational illumination and facial scanning systems which use geodesic spheres of inward-pointing LED lights as have been used to create digital actor effects in movies such as Avatar, Benjamin Button, and Gravity, and have recently been used to create photoreal digital actors based on real people in movies such as Furious 7, Blade Runner: 2049, and Ready Player One. The lighting reproduction process of light stages allows omnidirectional lighting environments captured from the real world to be accurately reproduced in a studio, and has recently be extended with multispectral capabilities to enable LED lighting to accurately mimic the color rendition properties of daylight, incandescent, and mixed lighting environments. They have also recently used their full-body light stage in conjunction with natural language processing and automultiscopic video projection to record and project interactive conversations with survivors of the World War II Holocaust.

Paul Debevec is a senior scientist at Google VR, a member of Google VR's Daydream team, and adjunct research professor of computer science in the Viterbi School of Engineering at the University of Southern California, working within the Vision and Graphics Laboratory at the USC Institute for Creative Technologies. Debevec's computer graphics research has been recognized with ACM SIGGRAPH's first Significant New Researcher Award (2001) for "Creative and Innovative Work in the Field of Image-Based Modeling and Rendering", a Scientific and Engineering Academy Award (2010) for "the design and engineering of the Light Stage capture devices and the image-based facial rendering system developed for character relighting in motion pictures" with Tim Hawkins, John Monos, and Mark Sagar, and the SMPTE Progress Medal (2017) in recognition of his achievements and ongoing work in pioneering techniques for illuminating computer-generated objects based on measurement of real-world illumination and their effective commercial application in numerous Hollywood films. In 2014, he was profiled in The New Yorker *magazine's "Pixel Perfect: The Scientist Behind the Digital Cloning of Actors" article by Margaret Talbot.*

3:00 – 3:30 pm Coffee Break

IMAWM

Computer Vision and Artificial Intelligence for Health & Beauty Applications

Session Chair: Raja Bala, PARC (United States)

3:30 – 5:10 pm
Harbour AB

3:30   IMAWM-407
Diagnostic and personalized skin care via artificial intelligence (Invited), *Ankur Purwar[1] and Matthew Shreve[2]; [1]Procter & Gamble (Singapore) and [2]Palo Alto Research Center (United States)...N/A*

4:00   IMAWM-408
Computer vision in imaging diagnostics, *Andre Esteva, Stanford University (United States) ...N/A*

4:20   IMAWM-409
A new model to reliably predict human facial appearance, *Paul Matts[1] and Brian D'Alessandro[2]; [1]Proctor & Gamble (United Kingdom) and [2]Canfield Scientific (United States) ...N/A*

4:40   IMAWM-410
The intersection of artificial intelligence and augmented reality (Invited), *Parham Arabi, University of Toronto (Canada) ...N/A*

5:30 – 7:00 pm Symposium Interactive Papers (Poster) Session

Thursday January 17, 2019

Medical Imaging - Computational   **JOINT SESSION**

8:50 – 10:10 am
Grand Peninsula Ballroom A

This medical imaging session is jointly sponsored by: Computational Imaging XVII, Human Vision and Electronic Imaging 2019, and Imaging and Multimedia Analytics in a Web and Mobile World 2019.

8:50   IMAWM-145
Smart fetal care, *Jane You[1], Qin Li[2], Qiaozhu Chen[3], Zhenhua Guo[4], and Hongbo Yang[5]; [1]The Hong Kong Polytechnic University (Hong Kong), [2]Shenzhen Institute of Information Technology (China), [3]Guangzhou Women and Children Medical Center (China), [4]Tsinghua University (China), and [5]Suzhou Institute of Biomedical Engineering and Technology, Chinese Academy of Sciences (China) ...pg. 1*

9:10   COIMG-146
Self-contained, passive, non-contact, photoplethysmography: Real-time extraction of heart rates from live view within a Canon Powershot, *Henry Dietz, Chadwick Parrish, and Kevin Donohue, University of Kentucky (United States) ...N/A*

9:30   COIMG-147
Edge-preserving total variation regularization for dual-energy CT images, *Sandamali Devadithya and David Castañón, Boston University (United States) ...N/A*

9:50   COIMG-148
Fully automated dental panoramic radiograph by using internal mandible curves of dental volumetric CT, *Sanghun Lee[1], Seongyoun Woo[1], Joonwoo Lee[2], Jaejun Seo[2], and Chulhee Lee[1]; [1]Yonsei University and [2]Dio Implant (Republic of Korea) ...N/A*

10:10 – 10:40 am Coffee Break

Deep Learning for Detection & Segmentation I

Session Chair: Zhigang Fan, Apple Inc. (United States)

10:40 am – 12:30 pm
Harbour A

10:40   IMAWM-411
Similarity and difference in object detection architectures (Invited), *David Eigen, Clarifai (United States) ...N/A*

11:10   IMAWM-412
A heuristic approach for detecting frames in online fashion images, *Litao Hu[1], Gautam Golwala[2], Perry Lee[2], Sathya Sundaram[2], and Jan Allebach[1]; [1]Purdue University and [2]Poshmark Inc. (United States) ...pg. 40*

11:30   IMAWM-413
Detecting and decoding barcode in on-line fashion image, *Qingyu Yang[1], Gautam Golwala[2], Sathya Sundaram[2], Perry Lee[2], and Jan Allebach[1]; [1]Purdue University and [2]Poshmark Inc. (United States) ...pg. 44*

11:50   IMAWM-414
Edge/region fusion network for scene labeling in infrared imagery, *Brad Sorg, Theus Aspiras, and Vijayan Asari, University of Dayton (United States) ...pg. 50*

12:10   IMAWM-415
Detecting non-native content in on-line fashion images, *Zhenxun Yuan[1], Alexander Gokan[1], Zhi Li[1], Gautam Golwala[2], Sathya Sundaram[2], Perry Lee[2], and Jan Allebach[1]; [1]Purdue University and [2]Poshmark Inc. (United States)...pg. 56*

12:30 – 2:00 pm Lunch

Multimedia Analytics in Online & Mobile Systems

Session Chair: Yandong Guo, XMotors (United States)

2:00 – 3:20 pm
Harbour A

2:00   IMAWM-416
Smart cooking for camera-enabled multifunction oven, *Wiley Wang, June Life, Inc. (United States) ...N/A*

2:20   IMAWM-418
Paint code identification using mobile color detector, *Xunyu Pan and Johnathan Tripp, Frostburg State University (United States) ...pg. 73*

2:40   IMAWM-419
New results for natural language processing applied to an on-line fashion marketplace, *Kendal Norman[1], Zhi Li[1], Gautam Golwala[2], Sathya Sundaram[2], Perry Lee[2], and Jan Allebach[1]; [1]Purdue University and [2]Poshmark Inc. (United States) ...pg. 79*

3:00   IMAWM-417
British Waterways boattr - towpath as social commons, *Adnan Hadzi, University of Malta (Malta) ...pg. 63*

3:20 – 3:40 pm Coffee Break

Deep Learning for Detection & Segmentation II

Session Chair: Jan Allebach, Purdue University (United States)

3:40 – 4:40 pm
Harbour A

3:40   IMAWM-420
Vision-based driving experience improvement (Invited), *Yandong Guo, XMotors (United States) ...N/A*

4:20   IMAWM-421
A simple but efficient method of fusion and sifting for RGB-D semantic segmentation, *Cheng Zhang, Jichao Jiao, and Zhongliang Deng, Beijing University of Posts and Telecommunications (China) ...N/A*

IMAWM

Paper titles and authors as of 1 Jan 2019; final proceedings manuscript may vary.