

# **IS&T International Symposium on Electronic Imaging Science and Technology 2017**

Visual Information Processing and  
Communication VIII

Burlingame, California, USA  
29 January – 2 February 2017

**Editors:**

**Edward Delp  
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## Visual Information Processing and Communication VIII

**Monday, January 30, 2017**

### Image and Video Compression

**10:50 am – 12:30 pm**

Cypress A

- |       |   |    |
|-------|---|----|
| 10:50 |   | 5  |
|       | <b>A fast TU mode decision algorithm based on residual difference for HEVC</b> , Nian-Rong Li <sup>1</sup> , Kai-Wen Liang <sup>1</sup> , Zong-Yi Chen <sup>1</sup> , Hui-Yu Jiang <sup>1</sup> , Jiunn-Tsair Fang <sup>2</sup> , and Pao-Chi Chang <sup>1</sup> ; <sup>1</sup> National Central University and <sup>2</sup> Ming Chuan University (Taiwan) [VPC-398] |    |
| 11:10 |   | 10 |
|       | <b>A fast intra mode decision algorithm for HEVC</b> , Weihang Liao, Daiqin Yang, and Zhenzhong Chen, Wuhan University (China) [VPC-399]  |    |
| 11:30 |   | 16 |
|       | <b>Diamond frequency domain inter frame motion estimation for HEVC</b> , Abdelrahman Abdelazim <sup>1</sup> , Ahmed Hamza <sup>2</sup> , Mohamed Hefaida <sup>1</sup> , and Djamel Ait-Boudaoud <sup>2</sup> ; <sup>1</sup> The American University of the Middle East (Kuwait) and <sup>2</sup> University of Portsmouth (United Kingdom) [VPC-400]                  |    |
| 11:50 |   | 21 |
|       | <b>Compression of infrared images</b> , Claire Mantel and Søren Forchhammer, Denmark Technical University (Denmark) [VPC-401]   |    |
| 12:10 |   | 27 |
|       | <b>Graph regularized sparse coding by modified online dictionary learning</b> , Lingdao Sha, Dan Schonfeld, and Jing Wang, University of Illinois at Chicago (United States) [VPC-402]  |    |

12:30 – 2:00 pm    Lunch Break

### El 2017 Opening Plenary and Symposium Awards

Session Chairs: Joyce E. Farrell, Stanford University, and Nitin Sampat, Rochester Institute of Technology (United States)

**2:00 – 3:00 pm**

Grand Peninsula Ballroom D

**Giga-scale 3D computational microscopy**, Laura Waller, University of California, Berkeley (United States)

Laura Waller is the Ted Van Duzer Endowed Assistant Professor of Electrical Engineering and Computer Sciences (EECS) at UC Berkeley. She is a Senior Fellow at the Berkeley Institute of Data Science, and received her BS (2004), MEng (2005), and PhD (2010) in EECS from the Massachusetts Institute of Technology (MIT). Waller's talk is on computational imaging methods for fast capture of gigapixel-scale 3D intensity and phase images in a commercial microscope that employs illumination-side and detection-side coding of angle (Fourier) space with simple hardware and fast acquisition. The result is high-resolution reconstructions across a large field-of-view, achieving high space-bandwidth-time product.

3:00 – 3:30 pm    Coffee Break

### Segmentation

**3:30 – 4:30 pm**

Cypress A

- |      |  |    |
|------|--|----|
| 3:30 |  | 32 |
|      | <b>A coarse-to-fine framework for video object segmentation</b> , Chi Zhang <sup>1</sup> and Alexander Loui <sup>2</sup> ; <sup>1</sup> Rochester Institute of Technology and <sup>2</sup> Kodak Alaris Inc. (United States) [VPC-403]   |    |
| 3:50 |  | 38 |
|      | <b>A fast and accurate segmentation method for medical images</b> , Jiatao Wu <sup>1</sup> , Yong Li <sup>1</sup> , Yun Peng <sup>2</sup> , and Chunxiao Fan <sup>1</sup> ; <sup>1</sup> Beijing University of Posts and Telecommunications and <sup>2</sup> Beijing Children's Hospital, Capital Medical University (China) [VPC-404] |    |
| 4:10 |  | 44 |
|      | <b>Adaptive combination of local motion, appearance, and shape for video segmentation (JIST-first)</b> , Woo-sung Shim <sup>1</sup> , Se-hoon Kim <sup>1</sup> , and Soochahn Lee <sup>2</sup> ; <sup>1</sup> Samsung Electronics Co., Ltd, and <sup>2</sup> Soonchunhyang University (Republic of Korea) [VPC-405]                    |    |

### Symposium Welcome Reception

**5:00 – 6:00 pm**

Atrium

**Tuesday, January 31, 2017**

### Techniques for Image and Video Processing

**8:50 – 10:10 am**

Cypress A

- |      |  |    |
|------|--|----|
| 8:50 |  | 51 |
|      | <b>Improvement of infrared image based on directional anisotropic wavelet transform</b> , Hongbin Jin <sup>1</sup> , Chunxiao Fan <sup>1</sup> , Quanyong Wang <sup>2</sup> , and Yong Li <sup>1</sup> ; <sup>1</sup> Beijing University of Posts and Telecommunications and <sup>2</sup> Ultimedical, Inc (China) [VPC-406]   |    |
| 9:10 |  | 56 |
|      | <b>Improved diamond half-pel hexagon search algorithm for block-matching motion estimation</b> , Abdelrahman Abdelazim <sup>1</sup> , Ahmed Hamza <sup>2</sup> , Bassam Noaman <sup>1</sup> , and Djamel Ait-Boudaoud <sup>2</sup> ; <sup>1</sup> The American University of the Middle East (Kuwait) and <sup>2</sup> University of Portsmouth (United Kingdom) [VPC-407] |    |
| 9:30 |  | 60 |
|      | <b>Self-example-based edge enhancement algorithm for around view monitor images</b> , Dong Yoon Choi <sup>1</sup> , Ji Hoon Choi <sup>1</sup> , Jin Wook Choi <sup>2</sup> , and Byung Cheol Song <sup>1</sup> ; <sup>1</sup> Inha University and <sup>2</sup> Hyundai Motor Company (Republic of Korea) [VPC-408]   |    |
| 9:50 |  | 65 |
|      | <b>Adaptive multi-reference prediction using a symmetric framework</b> , Zoe Liu <sup>1</sup> , Debargha Mukherjee <sup>1</sup> , Wei-Ting Lin <sup>2</sup> , Paul Wilkins <sup>1</sup> , Jingning Han <sup>1</sup> , and Yaowu Xu <sup>1</sup> ; <sup>1</sup> Google Inc. and <sup>2</sup> University of California, Santa Barbara (United States) [VPC-409]              |    |

10:00 am – 7:30 pm    Industry Exhibition

10:10 – 10:50 am    Coffee Break

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**Databases and Classification**

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**10:50 – 11:30 am**

Cypress A

10:50

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**Semi-supervised learning feature representation for historical Chinese character recognition**, Xiaoyi Yu, Wei Fan, Jun Sun, and Satoshi Naoi, Fujitsu R&D Co. Limited (China) [VIPC-411] [Proceedings Only]

11:10

**Document image classification on the basis of layout information**, Sergey Zavalishin<sup>1</sup>, Andrey Bou<sup>2</sup>, Ilya Kurilin<sup>1</sup>, and Michael Rychagov<sup>1</sup>; <sup>1</sup>Samsung R&D Institute Russia and <sup>2</sup>Kaspersky Lab (Russian Federation) [VIPC-412]

11:30 am – 2:00 pm    Lunch Break

**EI 2017 Tuesday Plenary and Symposium Awards**

Session Chairs: Joyce E. Farrell, Stanford University, and Nitin Sampat, Rochester Institute of Technology (United States)

**2:00 – 3:00 pm**

Grand Peninsula Ballroom D

**VR 2.0: Making virtual reality better than reality**, Gordon Wetzstein, Stanford University (United States)

*Gordon Wetzstein is an Assistant Professor of Electrical Engineering and, by courtesy, of Computer Science, at Stanford University, and leads the Stanford Computational Imaging Group. He received a PhD in computer science from the University of British Columbia (2011) where his doctoral dissertation focused on computational light modulation for image acquisition and display. In his talk, Wetzstein explores the frontiers of VR systems engineering. Eventually, VR/AR systems will redefine communication, entertainment, education, collaborative work, simulation, training, telesurgery, and basic vision research, as next-generation computational near-eye displays evolve to deliver visual experiences that are better than the real world.*

3:00 – 3:30 pm    Coffee Break

**Symposium Demonstration Session**

**5:30 – 7:30 pm**

Grand Peninsula Ballroom E