

# **2016 IEEE International Conference on Computational Photography (ICCP 2016)**

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13 – 15 May 2016**



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## Program

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### Morning Session - Norris University Center - Friday, 13 May 2016

**8:30 - 9:30**    **Breakfast/Registration**

**9:30 - 9:40**    **Welcome**

**9:40 - 10:40**    **Session 1 - 3 talks (15 minute talk + 5 minute Q&A)**

3D Reconstruction of Mirror-type Objects using Efficient Ray Coding . . . . . 1  
*Siu-Kei Tin, Jinwei Ye, Mahdi Nezamabadi, Can Chen*

Invited Talk: The 3D Motion Picture Camera - About Single-Shot, High Resolution 3D-Imaging  
*Florian Wullitzer (University of Erlangen-Nuremberg)*

Correcting Perceived Perspective Distortions Using Object Specific Planar Transformations . . . . . 12  
*Mahdi Abbaspour Tehrani, Aditi Majumder, M. Gopi*

**10:40 - 11:00**    **Coffee Break**

**11:00 - 12:00**    **Keynote 1**

Computational Imaging of Cultural Heritage  
*Marc Walton (NU-ACCESS)*

**12:00 - 1:30**    **Lunch**

## Afternoon Session - Norris University Center - Friday, 13 May 2016

- 1:30 - 2:30      Session 2 - 3 talks (15 minute talk + 5 minute Q&A)**
- Invited Talk: Seeing “More” with Clarity using Patterned Illumination  
*Prasanna Rangarajan (Southern Methodist University)*
- In-Situ Multi-View Multi-Scattering Stochastic Tomography . . . . . 22  
*Vadim Holodovsky, Yoav Y. Schechner, Anat Levin, Aviad Levis, Amit Aides*
- Invited Talk: Super-resolution Interpolation using Library Based Plug & Play Priors  
*Charles Bouman (Purdue University)*
- 2:30 - 3:30      Keynote 2**
- IceCube and the Discovery of High-Energy Cosmic Neutrinos  
*Francis Halzen (IceCube, University of Wisconsin-Madison)*
- 3:30 - 3:45      Coffee Break**
- 3:45 - 4:45      Session 3 - 3 talks (15 minute talk + 5 minute Q&A)**
- Blind Dehazing using Internal Patch Recurrence . . . . . 34  
*Yuval Bahat, Michal Irani*
- Learning Joint Demosaicing and Denoising Based on Sequential Energy Minimization . . . . . 43  
*Teresa Klatzer, Kerstin Hammernik, Patrick Knöbelreiter, Thomas Pock*
- Invited Talk: Advances in Computational Microscopy are Facilitating Accurate Screening Techniques for Multiple Early-Stage Human Cancers  
*Allen Taftlove (Northwestern University)*
- 5:30 - 10:30    Reception - Anita Dee Charters Dinner Yacht Cruise**

## Morning Session - Harris Building - Saturday, 14 May 2016

- 8:30 - 9:30      Breakfast**
- 9:30 - 10:30    Session 4 - 3 talks (15 minute talk + 5 minute Q&A)**
- 4D Light Field Segmentation with Spatial and Angular Consistencies . . . . . 54  
*Hajime Mihara, Takuya Funatomi, Kenichiro Tanaka, Hiroyuki Kubo, Hajime Nagahara, Yasuhiro Mukaigawa*
- Fast, High Dynamic Range Light Field Processing for Pattern Recognition . . . . . 62  
*Scott McCloskey, Ben Miller*
- Invited Talk: High-speed High-dimensional Imaging with Light Field Microscopy  
*Qionghai Dai (Tsinghua University)*

## Morning Session (cont.) - Harris Building - Saturday, 14 May 2016

**10:30 - 10:45 Coffee Break**

**10:45 - 11:45 Keynote 3**

Computational Microscopy, Sensing and Diagnostics  
*Aydogan Ozcan (University of California, Los Angeles)*

**11:45 - 12:45 Session 5 - 3 talks (15 minute talk + 5 minute Q&A)**

A Picture is Worth a Billion Bits: Real-time Image Reconstruction from Dense Binary Threshold Pixels . . . . . 72  
*Tal Remez, Or Litany, Alex Bronstein*

High-Speed Imaging using CMOS Image Sensor with Quasi Pixel-Wise Exposure 81  
*Toshiki Sonoda, Hajime Nagahara, Kenta Endo, Yukinobu Sugiyama, Rin-ichiro Taniguchi*

Invited Talk: Nanoscale Imaging With X-Rays and Computation  
*Chris Jacobsen (Argonne National Labs, Northwestern University)*

**12:45 - 2:00 Lunch - Parkes Building**

## Afternoon Session - Harris Building - Saturday, 14 May 2016

**2:00 - 3:00 Keynote 4**

Computational Imaging: How Much Imaging - How Much Computation?  
*Gerd Häusler (University of Erlangen-Nuremberg)*

**3:00 - 4:00 Session 6 - 3 talks (15 minute talk + 5 minute Q&A)**

Towards Flexible Sheet Cameras: Deformable Lens Arrays with Intrinsic Optical Adaptation . . . . . 92  
*Daniel C. Sims, Yonghao Yue, Shree K. Nayar*

Sensor-level Privacy for Thermal Cameras . . . . . 103  
*Francesco Pittaluga, Aleksandar Zivkovic, Sanjeev J. Koppal*

Invited Talk: Highly Sensitive 2D and 3D Imaging in the Infrared  
*Hooman Mohseni (Northwestern University)*

**4:00 - 7:00 Poster Session (68 posters and demos) - Hardin Hall**

**9:00 - 11:00 Dearborn Observatory Tour - Dearborn Observatory**

## Morning Session - Harris Building - Sunday, 15 May 2016

**8:30 - 9:30 Breakfast**

**9:30 - 10:30 Session 7 - 3 talks (15 minute talk + 5 minute Q&A)**

Do-It-Yourself Lighting Design for Product Videography . . . . . 115  
*Ivaylo Boyadzhiev, Jiawen Chen, Sylvain Paris, Kavita Bala*

White Balance under Mixed Illumination using Flash Photography . . . . . 124  
*Zhuo Hui, Aswin C. Sankaranarayanan, Kalyan Sunkavalli, Sunil Hadap*

Invited Talk: Enabling Unconventional Imaging Pipelines through Physical Simulation  
*Matthias Hullin (University of Bonn)*

**10:30 - 10:45 Coffee Break**

**10:45 - 11:45 Keynote 5**

Relighting Pictures  
*David Forsyth (University of Illinois at Urbana-Champaign)*

**11:45 - 12:45 Session 8 - 3 talks (15 minute talk + 5 minute Q&A)**

Single-Shot Diffuser-Encoded Light Field Imaging . . . . . 134  
*Nicholas Antipa, Sylvia Nacula, Ren Ng, Laura Waller*

Passive Light and Viewpoint Sensitive Display of 3D Content . . . . . 145  
*Anat Levin, Haggai Maron, Michal Yarom*

Invited Talk: Computational Microscopy  
*Laura Waller (UC Berkeley)*

**12:45 - 1:45 Lunch - Parkes Building**

## Afternoon Session - Harris Building - Sunday, 15 May 2016

**1:45 - 2:45 Session 9 - 3 talks (15 minute talk + 5 minute Q&A)**

Shape and Reflectance from Two-Bounce Light Transients . . . . . 160  
*Chia-Yin Tsai, Ashok Veeraraghavan, Aswin C. Sankaranarayanan*

Occlusion-Robust 3D Sensing Using Aerial Imaging . . . . . 170  
*Masahiko Yasui, Yoshihiro Watanabe, Masatoshi Ishikawa*

Invited Talk: APERTURE, A Large Space Telescope Using Magnetostriction For Post Deployment Corrections  
*Mel Ulmer (Northwestern University)*

**2:45 - 3:00 Awards Announcement and Closing Remarks**