

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

The Engineering Reality of  
Virtual Reality 2016

San Francisco, California, USA  
14 – 18 February 2016

**Editors:**

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## The Engineering Reality of Virtual Reality 2016

**Conference grouping:** Image and Video Processing, Quality, and Systems

### 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)

## The Engineering Reality of Virtual Reality 2016

### Conference Chairs and Committee

Margaret Dolinsky, Indiana Univ. (USA)  
Ian E. McDowall, Fakespace Labs, Inc. (USA)

## Wednesday, February 17, 2016

### ERVR/SD&A: Virtual Reality and 3D Joint Session

Session Chairs: Margaret Dolinsky, Indiana University (USA) and Chris Ward, Lightspeed Design, Inc. (USA)

### 3:30 – 5:30 pm

Continental Ballroom 5

This session is jointly sponsored by: Stereoscopic Displays and Applications XXVII, and The Engineering Reality of Virtual Reality 2016.

3:30 SDA-039

**LEIA 3D: Holographic reality**, David Fattal, LEIA Inc. (USA)

3:50 SDA-040

**Effect of inter-lens distance on fusional limit in stereoscopic vision**

**using a simple smartphone head-mounted display**, Hiroyuki Morikawa<sup>1,2</sup>, Yoshihiro Banchi<sup>2</sup>, Shota Tsukada<sup>2</sup>, Yusuke Hasegawa<sup>2</sup>, Suguru Takahashi<sup>2</sup>, Kaiji Ohta<sup>3</sup>, and Takashi Kawai<sup>2</sup>; <sup>1</sup>Aoyama Gakuin University, <sup>2</sup>Waseda University, and <sup>3</sup>International Christian University (Japan)

4:10 SDA-041

**Investigating intermittent stereoscopy: Its effects on perception and visual fatigue**, Ari Bouaniche and Laure Leroy, Université Paris 8 (France)

4:30 SDA-042

**Stereoscopy-based procedural generation of virtual environments**,

Manlio Scalabrin, Laura Anna Ripamonti, Dario Maggiorini, and Davide Gadia, University of Milan (Italy)

4:50 ERVR-043

**Beyond fun and games: VR as a tool of the trade**, Carolina Cruz-Neira and Dirk Reiners, University of Arkansas (USA)

5:10

**SD&A Conference Closing Remarks**

**EI 2016 Symposium Interactive Papers Session**

**5:30 – 7:00 PM**

Continental Ballroom 6

## Thursday, February 18, 2016

### Workshop: Introduction to Unity for Use in Virtual Reality Development

Instructors: Margaret Dolinsky, Indiana University and Chauncey Eugene Frend, Indiana University (USA)

### 8:50 – 11:30 am

Continental Ballroom 3

As the popularity of virtual reality grows in studios, institutes, and industry the Unity game engine has emerged as a trusted tool. VR developers find that Unity along with 3rd party plugins can easily target all types of VR systems. Artists and coders may utilize the Unity editor in productive ways that make them comfortable due to the dynamic interface. This workshop will be presented in two parts. The first part of this workshop will be a fundamental introduction to the Unity Editor and how to best understand how the tool works. The second part of the workshop will focus on how Unity projects can be configured for CAVE systems as well as the Oculus

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Rift system. If you would like to follow along during these workshops please bring a laptop with Unity 5 installed. The free personal edition of Unity can be downloaded from this page <https://unity3d.com/get-unity>.

10:20 – 10:40 am Coffee Break

### Shifting Perceptions in VR

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Session Chair: Ian McDowall, Intuitive Surgical / Fakespace Labs (USA)

**11:30 am – 12:30 pm**

Continental Ballroom 3

11:30 ERVR-412

**Perceptual calibration in virtual reality applications**, Daniel Mestre, Aix-Marseille Univ. (France)

11:50 ERVR-413

**Mobius Floe: an immersive virtual reality game for pain distraction**, Diane Gromala, Xin Tong, Chris Shaw, Ashfaq Amin, Servet Ulas, and Gillian Ramsay, Simon Fraser University (Canada)

12:10 ERVR-515

**Immersive analytics**, Todd Margolis, Qlik (USA)

12:30 – 1:50 pm Lunch Break

### Moving & Shaking in VR

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Session Chair: Margaret Dolinsky, Indiana University (USA)

**1:50 – 3:30 pm**

Continental Ballroom 3

1:50 ERVR-415

**Towards naturally grabbing and moving objects in VR**, Jonathan Lin and Jürgen Schulze, UCSD (USA)

2:10 ERVR-416

**Camera pose estimation by vision-inertial sensor fusion: an application to augmented reality books**, Juan Li<sup>1</sup>, Hamid Aghajan<sup>2,3</sup>, José R. Casar<sup>1</sup> and Wilfried Philips<sup>2</sup>; <sup>1</sup>Technical University of Madrid (Spain), <sup>2</sup>Ghent University (Belgium), and <sup>3</sup>Stanford University (USA)

2:30 ERVR-417

**Implementing native support for Oculus and leap motion in a commercial engineering visualization and analysis platform**, Anastacia MacAllister<sup>1</sup>, Tsung-Pin Yeh<sup>2</sup>, and Eliot Winer<sup>1</sup>; <sup>1</sup>Iowa State University and <sup>2</sup>Siemens PLM Software (USA)

2:50 ERVR-418

**Turning presence inside-out: metanarratives**, Max Parola, Samuel Johnson, and Ruth West, University of North Texas (USA)

3:10 ERVR-419

**Virtual reality system as an affective medium to induce specific emotion: a validation study**, Di Wu, Dongdong Weng, and Song Xue, Beijing Institute of Technology (China)

3:30 – 3:50 pm Coffee Break

### Art & Stories in VR

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Session Chair: Ian McDowall, Intuitive Surgical / Fakespace Labs (USA)

**3:50 – 5:00 pm**

Continental Ballroom 3

3:50 ERVR-420

**Paper-Thin: a virtual platform for art exhibition**, Cameron Buckley and Daniel Smith, Indiana University (USA)

4:10 ERVR-421

**Storyworld, Gesamtkunstwerk, art ecology: creating narrative geographies in the metavers**, Elif Ayiter, Sabanci University (Turkey)

4:30 ERVR-422

**Visual knowledge feedback through multi-camera vision system aided by augmented reality**, Josué-Rafael Montes, Teresa Hernández-Díaz, Alberto Vázquez-Cervantes, Juan-M García-Huerta, Leonardo Barriga-Rodríguez, JA Soto-Cajiga, and Hugo Jiménez-Hernández, Centro de Ingeniería y Desarrollo Industrial (Mexico)

4:50

**The Engineering Reality of Virtual Reality 2016: Wrap-up**