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Electronic Imaging

SCIENCE AND TECHNOLOGY

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PROCEEDINGS

The Engineering Reality of Virtual Reality 2016

Editors: **Margaret Dolinsky,** Indiana Univ. (USA), and
Ian E. McDowall, Fakespace Labs, Inc. (USA)

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held February 14-18, 2016, at the Hilton San Francisco, Union Square in San Francisco, CA.

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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[1,2], Yoshihiro Banchi[2], Shota Tsukada[2], Yusuke Hasegawa[2], Suguru Takahashi[2], Kaiji Ohta[3], and Takashi Kawai[2]; [1]Aoyama Gakuin University, [2]Waseda Univiersity, and [3]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

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

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

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[1], Hamid Aghajan[2,3], José R. Casar[1] and Wilfried Philips[2]; [1]Technical University of Madrid (Spain), [2]Ghent University (Belgium), and [3]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[1], Tsung-Pin Yeh[2], and Eliot Winer[1]; [1]Iowa State University and [2]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

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