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The Engineering Reality of Virtual Reality 2021

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Editors:

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The Engineering Reality of Virtual Reality 2021

TUESDAY 19 JANUARY 2021

PLENARY: DEEP INTERNAL LEARNING—DEEP LEARNING WITH ZERO EXAMPLES

Session Chair: Charles Bouman, Purdue University (United States)
10:00 11:10

Deep internal learning—Deep learning with zero examples
Michal Irani, *professor, Department of Computer Science and Applied Mathematics, Weizmann Institute of Science (Israel)*

Michal Irani is a professor at the Weizmann Institute of Science. Her research interests include computer vision, AI, and deep learning. Irani's prizes and honors include the Maria Petrou Prize (2016), the Helmholtz "Test of Time Award" (2017), the Landau Prize in AI (2019), and the Rothschild Prize in Mathematics and Computer Science (2020). She also received the ECCV Best Paper Awards (2000 and 2002), and the Marr Prize Honorable Mention (2001 and 2005).

THURSDAY 21 JANUARY 2021

PLENARY: THE DEVELOPMENT OF INTEGRAL COLOR IMAGE SENSORS AND CAMERAS

Session Chair: Jonathan B. Phillips, Google Inc. (United States)
10:00 11:10

The development of integral color image sensors and cameras
Kenneth A. Parulski, *expert consultant: mobile imaging (United States)*

Kenneth Parulski is an expert consultant to mobile imaging companies and leads the development of ISO standards for digital photography. He joined Kodak in 1980 after graduating from MIT and retired in 2012 as research fellow and chief scientist in Kodak's digital photography division. His work has been recognized with a Technical Emmy and other major awards. Parulski is a SMPTE fellow and an inventor on more than 225 US patents.

IMMERSIVE EXPERIENCES   **JOINT SESSION**

Moderator: Ian McDowall, Intuitive Surgical / Fakespace Labs (United States) / **Session Chair:** Margaret Dolinsky, Indiana University (United States)
13:30 14:30

This session is jointly sponsored by: The Engineering Reality of Virtual Reality 2021 and Stereoscopic Displays and Applications XXXII.

13:30   ERVR-167
Interdisciplinary immersive experiences within artistic research, social and cognitive sciences, *Adnan Hadzi, University of Malta (Malta)*

14:10   ERVR-168

Predicting VR discomfort, *Vasilii Marshev, Jean-Louis de Bougrenet de la Tocnaye, and Vincent Nourrit, IMT Atlantique Bretagne-Pays de la Loire - Campus de Brest (France)*

CONFERENCE INTRODUCTION

Conference Chairs: Ian McDowall, Intuitive Surgical/Fakespace Labs (United States) and Margaret Dolinsky, Indiana University (United States)

18:00 – 18:15

VR AND 3D APPLICATIONS   JOINT SESSION

Moderator: Margaret Dolinsky, Indiana University (United States) / **Session Chair:** Ian McDowall, Intuitive Surgical/Fakespace Labs (United States)

18:15 – 19:15

This session is jointly sponsored by: The Engineering Reality of Virtual Reality 2021, and Stereoscopic Displays and Applications XXXII.

18:15   ERVR-177

Situational awareness of COVID pandemic data using virtual reality, *Sharad Sharma, Bowie State University (United States)*

18:35   ERVR-178

Virtual reality instructional (VRI) module for training and patient safety, *Sharad Sharma, Bowie State University (United States)*

18:55   ERVR-179

Server-aided 3D DICOM viewer for mobile platforms, *Menghe Zhang and Jürgen Schulze, University of California San Diego (United States)*

CONFERENCE DEMONSTRATION

19:15 – 19:45

                                                                                              ERVR-179D

ERVR DEMO: "Server-aided 3D DICOM viewer for mobile platforms", *Menghe Zhang and Jürgen Schulze, University of California San Diego (United States)*

In the ERVR demo, following up the oral presentation of the same title, Menghe Zhang will present the DICOM Viewer application on a Samsung s10 device. The process includes browsing/loading data, user interaction, and share view with the app on other devices.

MONDAY 25 JANUARY 2021

PLENARY: MAKING INVISIBLE VISIBLE
Session Chair: Jonathan B. Phillips, Google Inc. (United States)
10:00   11:10

Making invisible visible
Ramesh Raskar, *associate professor, MIT Media Lab (United States)*

Ramesh Raskar is an associate professor at MIT Media Lab and directs the Camera Culture research group. His focus is on AI and imaging for health and sustainability. They span research in physical (e.g., sensors, healthtech, digital (e.g., automated and privacy-aware machine learning), and global (e.g., geomaps, autonomous mobility) domains. He received the Lemelson Award (2016), ACM SIGGRAPH Achievement Award (2017), DARPA Young Faculty Award (2009), Alfred P. Sloan Research Fellowship (2009), TR100 Award from MIT Technology Review (2004), and Global Indus Technovator Award (2003). He has worked on special research projects at Google (X) and Facebook and co-founded/advised several companies.

WEDNESDAY 27 JANUARY 2021

PLENARY: REVEALING THE INVISIBLE TO MACHINES WITH NEUROMORPHIC VISION SYSTEMS: TECHNOLOGY AND APPLICATIONS OVERVIEW
Session Chair: Radka Tezaur, Intel Corporation (United States)
10:00   11:10

Revealing the invisible to machines with neuromorphic vision systems: Technology and applications overview
Luca Verre, *CEO and co-founder, Prophesee (France)*

Luca Verre is co-founder and CEO of Prophesee, the inventor of the world's most advanced neuromorphic vision systems. Verre is a World Economic Forum technology pioneer. His experience includes project and product management, marketing, and business development roles at Schneider Electric. Prior to Schneider Electric, Verre worked as a research assistant in photonics at the Imperial College of London. Verre holds a MSc in physics, electronic and industrial engineering from Politecnico di Milano and Ecole Centrale and an MBA from Institut Européen d'Administration des Affaires, INSEAD.