

# Virtual Environments 2025

## ICAT - EGVE

35th International Conference on Artificial Reality and Telexistence  
30th Eurographics Symposium on Virtual Environments

Posters & Demos

**Karlskrona, Sweden  
December 3 - 5, 2025**

**Blekinge Institute of Technology, Sweden**

### **General Chairs**

Veronica Sundstedt – Blekinge Institute of Technology, Sweden  
Michael Manzke – Trinity College Dublin, Ireland

### **Program Chairs**

Joaquim Jorge – University of Lisboa, Portugal  
Nobuchika Sakata – Ryukoku University, Japan

### **Poster & Demo Chairs**

Valeria Garro – Blekinge Institute of Technology, Sweden  
Gareth Young – Trinity College Dublin, Ireland  
Majed Elwardy – Blekinge Institute of Technology, Sweden

### **Technical Tour Chairs**

Yan Hu – Blekinge Institute of Technology, Sweden  
Tobias Larsson – Blekinge Institute of Technology, Sweden  
Andrea Nordwall – Blekinge Institute of Technology, Sweden  
Ryan Ruvald – Blekinge Institute of Technology, Sweden

### **Proceedings Production Editor**

Dieter Fellner (Graz University of Technology, Austria)

In-cooperation with EUROGRAPHICS Association

This work is subject to copyright.

All rights reserved, whether the whole or part of the material is concerned, specifically those of translation, reprinting, re-use of illustrations, broadcasting, reproduction by photocopying machines or similar means, and storage in data banks.

Copyright ©2025 by the Eurographics Association  
Postfach 2926, 38629 Goslar, Germany

Published by the Eurographics Association  
–Postfach 2926, 38629 Goslar, Germany–  
in cooperation with  
Institute of Visual Computing at Graz University of Technology  
and  
Fraunhofer Austria, Graz

ISBN 978-3-03868-279-0  
ISSN 1727-530X (Eurographics Symposium on Virtual Environments)

The electronic version of the proceedings is available from the Eurographics Digital Library at  
<https://diglib.eg.org>

## Table of Contents

### Posters and Demos

- egve.20251359 | An Auditory Approach to Pseudo Unseen Presence in the Metaverse Using HMD  
*Shiori Kinoshita and Kenji Funahashi*
- egve.20251360 | Exploring the Relationship between Personality and Difficulty Adaptation to Enhance Enjoyment and Self-Efficacy in a VR Game  
*Yusuke Goutsu and Tetsunari Inamura*
- egve.20251361 | Happiness Finder: Exploring User Experience in AI-Assisted Four-Leaf Clover Searches  
*Takeo Hamada, Anna Yokokubo, Tatsuya Ishizuka, Hiroaki Mori, and Noboru Koshizuka*
- egve.20251362 | Perception of Visual Realism and Acuity in Real vs. Immersive Virtual Reality Scenes  
*Nan Huang, Yan Hu, Veronica Sundstedt, Prashant Goswami, Muhammad Imran, and Anders Lundgren*
- egve.20251363 | VV-Studio: Volumetric-Video News and Storytelling on Mobile XR  
*Farzin Matin, Colm O’Fearghail, and John Dingliana*
- egve.20251364 | On-Device 3D Point Cloud Segmentation for Mixed Reality Applications  
*Andrzej Czajkowski, Marek Kowal, and Rafael Greszczyński*
- egve.20251365 | Spatial Body Augmentation for Destructive Interaction in Giant Avatar Embodiment using a Wearable Force Feedback Device  
*Ryunosuke Sawahashi, R. Nishihama, and T. Nakamura*
- egve.20251366 | Exploring Ownership of an Avatar’s Cat Ears through Visual, Auditory, and Haptic Multi-modal Feedback  
*Hiroo Yamamura, Ryota Kondo, Kuniharu Sakurada, Jean-Marie Normand, and Maki Sugimoto*
- egve.20251367 | Realistic Impact Method with Force Feedback in VR Space Using a Lower Limb Exoskeleton Device  
*Ogura Kanta, T. Shimizu, T. Sugino, R. Sawahashi, R. Nishihama, and T. Nakamura*
- egve.20251368 | Namako 2: Unity Plugin for Stress Visualization, Deformation Prediction and Haptic Rendering of Soft Objects  
*Kazuya Sase, Xiaoshuai Chen, Teppei Tsujita, and Atsushi Konno*

## Partner Organizers

ICAT-EGVE is organized with the support and cooperation of



European Association for Computer Graphics (Eurographics)



Virtual Reality Society of Japan (VRSJ)

Department of Computer Science (DIDA), Blekinge Institute of Technology (BTH)  
Human-Centered Intelligent Realities [HINTS] Profile Research Project  
Virtual Production Studio Lab – Infrastructure for research, education and collaboration [VPSL]

## Local Organizers

Veronica Sundstedt  
Valeria Garro  
Majed Elwardy  
Yan Hu  
Bo Peterson  
Svetlana Zivanovic  
Emma Johansson  
Nan Huang

Tharuka Kasthuriarachchige  
Bowen Qin  
Chaoming Wang  
Gauri Vinsha Singh  
Tobias Larsson  
Andrea Nordwall  
Ryan Ruvald

### **ICAT International Steering Committee**

Mark Billingham – University of South Australia, Australia  
Gerd Bruder – University of Central Florida, USA  
Sabine Coquillart – INRIA, France  
Carolina Crutz-Neira – University of Central Florida, USA  
John Dingliana – The University of Dublin, Ireland  
Andre Hinkenjann – H-BRS, Germany  
Masahiko Inami – The University of Tokyo, Japan  
Yoshifumi Kitamura – Tohoku University  
Kiyoshi Kiyokawa – NAIST, Japan [Chair]  
Ernst Kruijff – H-BRS, Germany  
Michael Manzke – The University of Dublin, Ireland  
Despina Michael – Grigoriou – Cyprus University of Technology, Cyprus  
Dirk Reiners – University of Central Florida, USA  
Hideo Saito – Keio University, Japan  
Ross T Smith – University of South Australia, Australia  
Anthony Steed – University College London, UK  
Maki Sugimoto – Keio University, Japan  
Susumu Tachi – The University of Tokyo, Japan [Honorary Chair]  
Haruo Takemura – Osaka University, Japan  
Bruce H. Thomas – University of South Australia, Australia  
Hiroaki Yano – University of Tsukuba, Japan  
Gabriel Zachmann – University of Bremen, Germany

### **EGVE International Steering Committee**

Sabine Coquillart – INRIA, France  
John Dingliana – Trinity College Dublin, Ireland  
Michael Manzke – Trinity College Dublin, Ireland  
Despina Michael-Grigoriou – Cyprus University of Technology, Cyprus  
Dieter Schmalstieg – University of Stuttgart  
Anthony Steed – University College London, UK  
Gabriel Zachmann – University of Bremen, Germany

## **International Program Committee**

Toshiyuki Amano – Wakayama University, Japan  
Franceschini Andrea – University of Padova, Italy  
Yuki Ban – The University of Tokyo, Japan  
Nicola Capece – University of Basilicata, Italy  
Valerio De Luca – University of Salento, Italy  
Majed Elwardy – Blekinge Institute of Technology, Sweden  
Francesco Ferrise – Politecnico di Milano, Italy  
Yuichiro Fujimoto – Nara Institute of Science and Technology, Japan  
Okura Fumio – The University of Osaka, Japan  
Valeria Garro – Blekinge Institute of Technology, Sweden  
Daiki Hagimori – NTT DOCOMO, INC., Japan  
Yutaro Hirao – Nara Institute of Science and Technology, Japan  
Robin Horst – RheinMain University of Applied Sciences, Germany  
Yan Hu – Blekinge Institute of Technology, Sweden  
Daisuke Iwai – University of Osaka, Japan  
Naoya Koizumi – The University of Electro-Communications, Japan  
Ernst Kruijff – Bonn-Rhine-Sieg University, Germany  
Takeshi Kurata – AIST, Japan  
Isogawa Mariko – Keio University, Japan  
Kanbara Masayuki – Konan University, Japan  
Shio Miyafuji – Tokyo Institute of Technology, Japan  
Marie Morita – Ritsumeikan University, Japan  
Christos Mousas – Purdue University, USA  
Fumihiko Nakamura – Ritsumeikan University, Japan  
Kizashi Nakano – Tokyo University, Japan  
Noriyasu Obushi – The University of Tokyo, Japan  
Eimei Oyama – Toyama Prefectural University, Japan  
Étienne Peillard – IMT Atlantique, France  
Satoshi Saga – Kumamoto University, Japan  
Fumihisa Shibata – Ritsumeikan University, Japan  
Maki Sugimoto – Keio University, Japan  
Amesaka Takashi – The University of Osaka, Japan  
Kazuki Takashima – Shibaura Institute of Technology, Japan  
Ogawa Takefumi – The University of Tokyo, Japan  
Theophilus Teo – University of South Australia, Australia  
Inoue Tomoo – University of Tsukuba, Japan  
Yuki Uranishi – The University of Osaka, Japan  
Jiayi Xu – The University of Tokyo, Japan  
Hiroaki Yano – University of Tsukuba, Japan  
Hiroi Yuichi – Cluster Metaverse Lab, Japan  
Mikawa Yuri – The University of Tokyo, Japan  
Gabriel Zachmann – University of Bremen, Germany

## **External Reviewers**

Anwar, Muhammad Shahid – King Fahd University of Petroleum and Minerals

Dingliana, John – Trinity College Dublin

Moharana, Bhagyabati – Technological University of the Shannon

Mousas, Christos – Purdue University

Peillard, Etienne – IMT Atlantique

Zielasko, Daniel – Technical University of Denmark

## Author Index

Chen, Xiaoshuai .....	1368	Kowal, Marek .....	1364
Czajkowski, Andrzej .....	1364	Lundgren, Anders .....	1362
Dingliana, John .....	1363	Matin, Farzin .....	1363
Funahashi, Kenji .....	1359	Mori, Hiroaki .....	1361
Goswami, Prashant .....	1362	Nakamura, T. ....	1365, 1367
Goutsu, Yusuke .....	1360	Nishihama, R. ....	1365, 1367
Greszczyński, Rafael .....	1364	Normand, Jean-Marie .....	1366
Hamada, Takeo .....	1361	O'Fearghail, Colm .....	1363
Hu, Yan .....	1362	Sakurada, Kuniharu .....	1366
Huang, Nan .....	1362	Sase, Kazuya .....	1368
Imran, Muhammad .....	1362	Sawahashi, Ryunosuke .....	1365, 1367
Inamura, Tetsunari .....	1360	Shimizu, T. ....	1367
Ishizuka, Tatsuya .....	1361	Sugimoto, Maki .....	1366
Kanta, Ogura .....	1367	Sugino, T. ....	1367
Kinoshita, Shiori .....	1359	Sundstedt, Veronica .....	1362
Kondo, Ryota .....	1366	Tsujita, Teppei .....	1368
Konno, Atsushi .....	1368	Yamamura, Hiroo .....	1366
Koshizuka, Noboru .....	1361	Yokokubo, Anna .....	1361

## Keynote

### **Beyond Reality: Data and AI in the Future of Games and VR**

*Johanna Pirker*

Technical University of Munich / Graz University of Technology (TUG)

#### **Short Biography**

Johanna Pirker is a computer scientist specializing in game development, research, and education, and she is an advocate for the indie development community. With experience in designing, developing, and evaluating games and VR experiences, she champions their use as tools for enhancing learning, fostering collaboration, and solving real-world problems. Johanna began her career in the industry at EA and continues to consult studios on games user research and initiated her research and development of VR experiences at the Massachusetts Institute of Technology. Currently, she is a Full Professor for n-dimensional user experiences at the Technical University of Munich and an Associate Professor of games engineering at Graz University of Technology (TUG) and was a professor of media informatics at the Ludwig Maximilian University of Munich and a visiting professor at ETH Zürich. Her research focuses on environments with an emphasis on AI, HCI, data analysis, and VR technologies. Johanna is also a member of the Austrian Research Council FORWIT and was involved in the founding of the Interdisciplinary Transformation University Austria. She was recognized on the Forbes 30 Under 30 list for science professionals.

## Keynote

### **AI-based Volumetric Content Creation for Immersive XR Experiences and Production Workflows**

*Aljosa Smolic*

Lucerne University of Applied Sciences and Arts

#### **Short Biography**

Aljosa Smolic is Professor in the Computer Science Department of the Lucerne University of Applied Sciences and Arts in Switzerland and Co-Head of the Immersive Realities Research Lab. Before he was Professor of Creative Technologies at Trinity College Dublin heading the research group V-SENSE, Senior Research Scientist and Group Leader at Disney Research Zurich, and Scientific Project Manager and Group Leader at Fraunhofer HHI. He is also a Co-Founder of the company Volograms, which commercializes volumetric video technology. Prof. Smolic's expertise is in the broad area of visual computing (covering image/video processing, computer vision, computer graphics) with a focus on immersive XR technologies. He published 300+ scientific papers and book chapters, holds 35+ patents and received several awards and recognitions for his research.

## Keynote

### **Pixels and Probabilities: Fusing AI, Computer Graphics and Visualization**

*Jonas Unger*

Linköping University

#### **Short Biography**

Jonas Unger is a professor in computer graphics at Linköping University, where he serves as the head of the Visual AI group. The research focus of the group lies at the intersection of computer graphics, machine learning, and visualization, and the development of new theories for computational imaging, specifically focusing on the convergence of advanced AI with scientific visualization to create intelligence augmentation systems. By developing human-centered tools and interactive interfaces, the work enables the intuitive exploration of complex AI models to accelerate scientific discovery in a range of fields. Unger, who received his PhD from Linköping University in 2009 and spent significant time as a visiting researcher at the University of Southern California, has received honors such as the Chester Carlsson Award from the Royal Swedish Academy of Engineering Sciences. In addition to his academic work, he is an active entrepreneur and has co-founded several companies, including IrysTec, 7DLabs, and Sparsit AB, translating research into industrial applications for perceptual displays, autonomous systems, and compressed sensing.