

Contents

Multi-dimensional Interaction

Evaluating 3D Sculpting Through Natural User Interfaces Across Multiple Devices.	3
<i>Bradley Wesson and Brett Wilkinson</i>	
Interactive Four-dimensional Space Exploration Using Viewing Direction Control Based on Principal Vanishing Points Operation	21
<i>Takanobu Miwa, Yukihito Sakai, and Shuji Hashimoto</i>	
Touch the 3rd Dimension! Understanding Stereoscopic 3D Touchscreen Interaction	47
<i>Ashley Colley, Jonna Häkkinen, Johannes Schöning, Florian Daiber, Frank Steinicke, and Antonio Krüger</i>	
Designing for Hover- and Force-Enriched Touch Interaction.	68
<i>Seongkook Heo, Jaehyun Han, and Geehyuk Lee</i>	

Video Gaming

Enhancing Spatial Perception and User Experience in Video Games with Volumetric Shadows	91
<i>Tuukka M. Takala, Perttu Hämäläinen, Mikael Matveinen, Taru Simonen, and Jari Takatalo</i>	
A Non-domain Specific Spatial Ability Test for Gamers Using Drawing and a Mental Rotation Task	114
<i>Theodor Wyeld and Benedict Williams</i>	
Differentiating Cognitive Complexity and Cognitive Load in High and Low Demand Flight Simulation Tasks	133
<i>Jemma Harris, Mark Wiggins, Ben Morrison, and Natalie Morrison</i>	

Spatial Learning

MolyPoly: A 3D Immersive Gesture Controlled Approach to Visuo-Spatial Learning of Organic Chemistry.	153
<i>Winyu Chinthammit, SooJeong Yoo, Callum Parker, Susan Turland, Scott Pedersen, and Wai-Tat Fu</i>	

Sustaining Cognitive Diversity in Collaborative Learning Through Shared
Spatially Separated Virtual Workspaces on Mobile Devices 171
Mark Reilly, Haifeng Shen, Paul Calder, and Henry Duh

Physical Spatial Interaction

Cataloguing Physicality Values Using Physical Quantitative
Evaluation Method 197
Mahmood Ashraf and Masitah Ghazali

The Cognitive Perception of a Multi-room Music System
with Spatial Interaction 215
*Henrik Sørensen, Jesper Kjeldskov, Mikael B. Skov,
and Mathies G. Kristensen*

Glossary 237

Author Index 239

Computer-Human Interaction. Cognitive Effects of
Spatial Interaction, Learning, and Ability
25th Australian Computer-Human Interaction
Conference, OzCHI 2013, Adelaide, SA, Australia,
November 25-29, 2013. Revised and Extended Papers
Wyeld, T.; Calder, P.; Shen, H. (Eds.)
2015, XII, 239 p. 95 illus., Softcover
ISBN: 978-3-319-16939-2