2023 IEEE International Symposium on Mixed and **Augmented Reality Adjunct** (ISMAR-Adjunct 2023)

Sydney, Australia 16-20 October 2023

Pages 1-428



IEEE Catalog Number: ISBN:

CFP23D63-POD 979-8-3503-0582-1

Copyright © 2023 by the Institute of Electrical and Electronics Engineers, Inc. All Rights Reserved

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

*** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.

 IEEE Catalog Number:
 CFP23D63-POD

 ISBN (Print-On-Demand):
 979-8-3503-0582-1

 ISBN (Online):
 979-8-3503-2891-2

ISSN: 2771-1102

Additional Copies of This Publication Are Available From:

Curran Associates, Inc 57 Morehouse Lane Red Hook, NY 12571 USA Phone: (845) 758-0400

Fax: (845) 758-2633

E-mail: curran@proceedings.com Web: www.proceedings.com



2023 IEEE International Symposium on Mixed and Augmented Reality Adjunct (ISMAR-Adjunct)

ISMAR-Adjunct 2023

Table of Contents

Workshops Tutorials	xxviii xxxiii
W1 – WoRXR: 3rd Workshop on Replication in Extended	Reality
Zeitgebers, Time Judgments, and VR: A Constructive Replication Study	1
VR for Remote Monitoring of Automated Vehicles: Replications Across Follow-Up Snehanjali Kalamkar (Coburg University of Applied Sciences and Arts, Germany), Verena Biener (Coburg University of Applied Sciences and Arts, Germany), and Jens Grubert (Coburg University of Applied Sciences and Arts, Germany)	p Evaluations 3
W2 – JWCR: 1st Joint Workshop on Cross Reality	
Driving Cross-Reality Experiences for Future Mobility Andreas Riegler (University of Applied Sciences Upper Austria), Ye Eun Song (Technische Hochschule Ingolstadt), Tamara von Sawitzky (Technische Hochschule Ingolstadt, Johannes Kepler University Linz), and Andreas Riener (Technische Hochschule Ingolstadt)	5
Colibri: A Toolkit for Rapid Prototyping of Networking Across Realities	9
Affordance-Guided User Elicitation of Interaction Concepts for Unimodal Gaze Concepts Holographic 3D UIs in Automotive Applications	

Uncertainty Unveiled: Revealing the Uncertainty of Distribution Visualization Through Cross Reality	. 20
Alexander Gall (University of Applied Sciences Upper Austria; TU Wien, Austria; University Passau, Germany), Anja Heim (University of Applied Sciences Upper Austria; TU Wien, Austria), Bernhard Fröhler (University of Applied Sciences Upper Austria, Austria), and Christoph Heinzl (University Passau, Germany)	
Promises and Design-Challenges of Mobile Transitional Interfaces	. 25
HOCTOPUS: An Open-Source Cross-Reality Tool to Augment Live-Streaming Remote Classes Luca Asunis (University of Bologna), Andrea Cirina (University of Bologna), Lorenzo Stacchio (University of Bologna), and Gustavo Marfia (University of Bologna)	29
The Actuality-Time Continuum: Visualizing Interactions and Transitions Taking Place in Cross-Reality Systems	35
Exploring the use of Mobile Devices as a Bridge for Cross-Reality Collaboration	. 41
Serious Cross Reality - using CR to Enhance Analytics Workflow	. 44
Cross-Device Augmented Reality Systems for Fire and Rescue Based on Thermal Imaging and Live Tracking	. 50
Supporting Artefact Awareness in Partially-Replicated Workspaces Emran Poh (National University of Singapore, Singapore), Anthony Tang (Singapore Management University, Singapore), Jeannie S. Lee (Singapore Institute of Technology, Singapore), and Zhao Shengdong (National University of Singapore, Singapore)	, 55
Visual Metaphors for Notification into Virtual Environments Fabian Pointecker (University of Applied Sciences Upper Austria), David Oberögger (University of Applied Sciences Upper Austria), and Christoph Anthes (University of Applied Sciences Upper Austria)	60

Exploring Collaboration for Data Analysis in Augmented Reality for Multiple Devices	65
An Asynchronous Hybrid Cross Reality Collaborative System	70
Reality Stack I/O: A Versatile and Modular Framework for Simplifying and Unifying XR Applications and Research	74
W3 – ISA: 2nd Workshop on Immersive and Situated Analytics	
Enhancing Cultural Education Through Integrating Restoration and VR Storytelling Exploration	77
ImmersiveIML – Immersive interactive machine learning for 3D point cloud classification: the neural network at your fingertips	81
TimeQuestAR: Unfolding Cultural Narratives via Situated Visualizations Ningning Xu (Zhejiang Wanli University, China), Yu Liu (Xi'an Jiaotong-Liverpool University, China), Zhichao Zhang (Xi'an Jiaotong-Liverpool University, China), and Lingyun Yu (Xi'an Jiaotong-Liverpool University, China)	86
PSA: A Cross-Platform Framework for Situated Analytics in MR and VR Ashwini G. Naik (University of Illinois Chicago) and Andrew E. Johnson (University of Illinois Chicago)	92
Designing Situated Dashboards: Challenges and Opportunities	97

Immersive Visualization of The Multifaceted Uncertainties of Hurricane Prediction Ensembles
ImmerView: Adaptive Multi-View Layout for Immersive Situated Visualizations
Towards More Effective Interactions: A Hybrid Embodied Interaction Approach in Stereoscopic Displays
BerryScope: AR Strawberry Picking Aid
W4 – PCCU: 1st Joint Workshop on Perception, Cognition, Comfort, and User Safety
User Safety Comparing Perceptual Thresholds of Size Perception Under Different Distances in Augmented Reality
User Safety Comparing Perceptual Thresholds of Size Perception Under Different Distances in Augmented Reality
Comparing Perceptual Thresholds of Size Perception Under Different Distances in Augmented Reality

W5 – XR-SPro: 2nd International Workshop on XR Solutions for Smart Production

Augmented Reality for Quality Inspection: A User-Centred Systematic Review of Use Cases, Trends and Technology	. 146
Using AR and YOLOv8-Based Object Detection to Support Real-World Visual Search in Industrial Workshop: Lessons Learned from a Pilot Study	. 154
Evaluation of Virtual Reality for Early-Stage Structure and Production Planning for Industrial Buildings Iana Podkosova (TU Wien, Austria), Jullia Reisinger (TU Wien, Austria), Maria Antonia Zahlbruckner (TU Wien, Austria), Iva Kovacic (TU Wien, Austria), and Hannes Kaufmann (TU Wien, Austria)	. 159
Comparative Evaluation of Virtual Reality and In-Person Onboarding for Assembly Trainings in Manufacturing Tanja Zigart (Technische Universität Wien, Austria), Felix Stürzl (Technische Universität Wien, Austria), Daniel Niedermayr (Fachhochschule Oberösterreich Campus Steyr, Austria), Josef Wolfartsberger (Fachhochschule Oberösterreich Campus Steyr, Austria), and Sabrina R. Sorko (Fachhochschule Joanneum Kapfenberg, Austria)	. 167
A Comparative Study on Optimizing Virtual Reality Experience through User Representations in Industry Martina	. 175
Virtual Reality for Industrial Assembly Training: The Impact of Tool Interaction Realism on Learning Outcomes Daniel Niedermayr (University of Applied Sciences Upper Austria, Austria), Josef Wolfartsberger (University of Applied Sciences Upper Austria, Austria), and Martina Maurer (University of Applied Sciences Upper Austria, Austria)	. 183

W6 – HybridUI: 1st Workshop on Hybrid User Interfaces: Complementary Interfaces for Mixed Reality Interaction

Challenges and Opportunities for Collaborative Immersive Analytics with Hybrid User Interfaces	191
Johannes Zagermann (University of Konstanz), Sebastian Hubenschmid (University of Konstanz), Daniel Immanuel Fink (University of Konstanz), Jonathan Wieland (University of Konstanz), Harald Reiterer (University of Konstanz), and Tiare Feuchtner (University of Konstanz; Aarhus University)	
Hybrid User Interfaces for Multiple Views: why Designer Intuition is not Enough	196
Hybrid User Interface for Audience Feedback Guided Asymmetric Immersive Presentation of Financial Data Matt Gottsacker (JPMorgan Chase & Co.), Mengyu Chen (JPMorgan Chase & Co.), David Saffo (JPMorgan Chase & Co.), Feiyu Lu (JPMorgan Chase & Co.), and Blair MacIntyre (JPMorgan Chase & Co.)	199
Towards Universal Interaction for Extended Reality	205
Exploring Hybrid User Interfaces for Surgery Planning	208
Single User Cross Reality Workflow for Reservoir Engineering Work in Progress	211
Opportunities and Challenges of Hybrid User Interfaces for Optimization of Mixed Reality Interfaces Abdelrahman Zaky (University of Konstanz, Germany), Johannes Zagermann (University of Konstanz, Germany), Harald Reiterer (University of Konstanz, Germany), and Tiare Feuchtner (University of Konstanz, Germany; Aarhus University, Denmark)	215
Transitional Blended Realities: Linking Between Video and Mixed Reality for Distributed Team Collaboration	220
Towards a Model for Space and Time in Transitional Collaboration	223
Where We Stand and Where to Go: Building Bridges Between Real and Virtual Worlds for Collaboration	228

Don't Pull the Balrog — Lessons Learned from Designing Wizualization: a Magic-Inspired	224
Data Analytics System in XR	. 234
(U.S. Bureau of Economic Analysis, U.S.), Panagiotis D. Ritsos (Bangor	
University, United Kingdom), and Niklas Elmqvist (Aarhus University,	
Denmark)	
Integrating View Magnification into an Augmented Reality Head-Mounted Display to Support	220
Surgery	238
(Advanced Aesthetics, Australia)	
Data-Driven Storytelling in Hybrid Immersive Display Environments	. 242
Xiaoyan Zhou (Colorado State University), Yalong Yang (Georgia	
Institute of Technology), Francisco Ortega (Colorado State	
University), Anil Ufuk Batmaz (Concordia University), and Benjamin Lee (University of Stuttgart)	
Fantastic Hybrid User Interfaces and How to Define Them	247
Marc Satkowski (TU Dresden, Germany) and Julián Méndez (TU Dresden,	
Germany)	
How Does Explainability Look in Hybrid User Interfaces?	251
Julián Méndez (TU Dresden, Germany), Marc Satkowski (TU Dresden,	
Germany), and Rufat Rzayev (TU Dresden, Germany)	
Discussing Facets of Hybrid User Interfaces for the Medical Domain	. 257
Katja Krug (TU Dresden, Germany), Ricardo Langner (TU Dresden,	
Germany), and Konstantin Klamka (TU Dresden, Germany)	
W7 – IGD: 1st Workshop on Technologies and Applications of	
Immersive Generative Design: Towards a Formal Research Agenda	
Envisioning Paramersive Design: An Immersive Approach to Architectural Design and Review	261
Adam Drogemuller (University of South Australia), Hamidreza Sakhaei (University of South Australia), Andrew Cunningham (University of	
South Australia), Rongrong Yu (University of South Australia), Ning Gu (University of South Australia), and Bruce H. Thomas (University of	
(University of South Australia), and Bruce H. Thomas (University of South Australia)	
	266
Generating Pseudo Random Volumes for Volumetric Research	266
Thomas J. Clarke (University of South Australia), Wolfgang Mayer (University of South Australia), Joanne E. Zucco (University of South	
Australia), and Ross T. Smith (University of South Australia)	
Australia), and Ross T. Smith (University of South Australia)	
Australia), and Ross 1. Smith (University of South Australia)	
W8 – UNAI: 3rd Workshop on Universal Augmented Interaction	
W8 – UNAI: 3rd Workshop on Universal Augmented Interaction Evaluating Observation Skill in Nursing Education Through Gaze-Based Objective Assessment	
W8 – UNAI: 3rd Workshop on Universal Augmented Interaction Evaluating Observation Skill in Nursing Education Through Gaze-Based Objective Assessment	271
W8 – UNAI: 3rd Workshop on Universal Augmented Interaction Evaluating Observation Skill in Nursing Education Through Gaze-Based Objective Assessment	. 271

The Impact of Different Virtual Work Environments on Flow, Performance, User Emotions, and Preferences	
Alicja Kiluk (University of Bayreuth, Germany), Viktorija Paneva (University of Bayreuth, Germany), Sofia Seinfeld (Universitat Oberta de Catalunya, Spain), and Jörg Müller (University of Bayreuth, Germany)	
A Framework for Automatic Generation of Augmented Reality Objects	
AiRcupid: Supporting Cucumber Picking for Intellectual Disabilities using Artificial Intelligence and Augmented Reality	
Assessment of Couriers' Workload for Trolley Push and Pull	
Building Social Presence for Transnational Families Through Mixed Reality Shared Experiences	
Is Virtual Reality Better than Desktop-Based Cognitive Training? A Neurobehavioral Evaluation of Visual Processing and Transfer Performance	
W9 – MARMH: 4th Workshop on Mixed/Augmented Reality for Menta Health	1
Designing Humanoid Avatars in Individualised Virtual Reality for Mental Health Applications	
Feel the Breeze: Promoting Relaxation in Virtual Reality using Mid-Air Haptics	
Emissary Educator Playmate Oracle (EEPO): A Human-Technology Framework and XR for Children's Well-Being	

High Frequency Event-Based Eye Tracking Towards Mental Health Diagnosis
Visualising Physiological Cues in Individualised Virtual Reality for Mental Health
Chenrezig Sadhana VR: A Novel Arousal-Based Virtual Reality Neurofeedback Meditation
System
of Hong Kong), and Alvaro Cassinelli (City University of Hong Kong)
A Mixed-Method Study Protocol of a Novel Psychological Intervention: Virtual Reality
Therapy for LGBT (LGBT-VRT)
Olive Kit Ling Woo (The University of Hong Kong), Huang Yu Te (The
University of Hong Kong), and Shelley L. Craig (The University of Toronto)
W10 – IDEATExR: 2nd Workshop on Inclusion, Diversity, Equity, Accessibility, Transparency, and Ethics in XR
Where do we Stand on Ethics, Privacy, and Security for Scenarios of Remote Collaboration Supported by eXtended Reality?
Consensual XR: A Consent-Based Design Framework for Mitigating Harassment and Harm Against
Marginalized Users in Social VR and AR
Mitigating Impacts of Appearance-Based Social Cues to Facilitate Balanced Participation in
Virtual Environments Across Age and Gender
Masahiro Ide (Tokyo City University; TIS Inc.), Junko Ichino (Tokyo City University), Hitomi Yokoyama (Okayama University of Science),
Hirotoshi Asano (Kogakuin University), Hideo Miyachi (Tokyo City
University), and Daisuke Okabe (Tokyo City University)
Posters
A Novel Approach for Virtual Locomotion Gesture Classification: Self-Teaching Vision Transformer for a Carpet-Type Tactile Sensor

HybridAvatar: Efficient Mesh-Based Human Avatar Generation from Few-Shot Monocular Images with Implicit Mesh Displacement	71
Dual Beaming Display for Extended Head Orientation and Projection Volume	77
ReAR - A Peripheral Indicator for Rear-Approaching Vehicles While Cycling	79
Gaze and Head Rotation Analysis in a Triadic VR Job Interview Simulation	31
A Dynamic and Scriptable Environment and Framework for Stimulus-Based Cognitive Research in Virtual Reality	87
The Benefits of Utilizing Augmented Reality as a Tool for Assessments	93
3D Slicer-AR-Bridge: 3D Slicer AR Connection for Medical Image Visualization and Interaction with AR-HMD	99
Stop Bad Real-Time Feedback!: Estimation of the Timing of Feedback that Negatively Impacts	05

Towards Seamless Egocentric Hand Action Recognition in Mixed Reality
SphereDRUNet: A Spherical Denoiser for Omnidirectional Images
Realistic Volume Rendering with Environment-Synced Illumination in Mixed Reality
Fiducial Markers Detection Trained Exclusively on Synthetic Data for Image-to-Patient Alignment in HMD-Based Surgical Navigation
Holistic Quantified-Self: An Integrated User Model for AR Glass Users
Beyond the Wizard of Oz: using Imperfect Machine Learning to Examine the Impact of Reliability of Augmented Reality Cues on Visual Search Performance
Effects of Different Facial Blendshape Combinations on Social Presence for Avatar-Mediated Mixed Reality Remote Communication
Towards using Generative AI for Facilitating Image Creation in Spatial Augmented Reality

Arradar: Arrow and Radar Driven HMD-Based Visual Guidance in Limited Field-of-View	444
Real-Time Alert of Excessive Force Based on Forearm Muscle Activity for Wall Climbing	450
A Revised and Extended Paradigm for Social and Non-Social Stress Elicitation in Psychological Research - A Feasibility Study in Virtual Reality	. 452
MR Microsurgical Suture Training System for Neurosurgeons Yuka Tashiro (Tokyo Institute of Technology), Shio Miyafuji (Tokyo Institute of Technology), Satoshi Kiyofuji (The University of Tokyo), Taichi Kin (The University of Tokyo), Takeo Igarashi (The University of Tokyo), and Hideki Koike (Tokyo Institute of Technology)	458
The UUXR-Framework: A Draft Classification for using Extended Reality in Usability and User Experience Research	.460
Video Analysis of Behavioral Patterns During Prolonged Work in VR Verena Biener (Coburg University of Applied Sciences and Arts, Germany), Forouzan Farzinnejad (Coburg University of applied sciences and arts, Germany), Rinaldo Schuster (Coburg University of applied sciences and arts, Germany), Seyedmasih Tabaei (Coburg University of applied sciences and arts, Germany), Leon Lindlein (Coburg University of applied sciences and arts, Germany), Jinghui Hu (University of Cambridge, United Kingdom), Negar Nouri (Coburg University of applied sciences and arts, Germany), John J. Dudley (University of Cambridge, United Kingdom), Per Ola Kristensson (University of Cambridge, United Kingdom), Jörg Müller (University of Bayreuth, Germany), and Jens Grubert (Coburg University of applied sciences and arts, Germany)	. 466
Manifest: Public Speaking Training using Virtual Reality	. 468

A Multilayer Component Pane 3D Layout Frame Design for Responsive Websites	474
EyeTTS: Evaluating and Calibrating Eye Tracking for Mixed-Reality Locomotion	479
Focus on the Motion: Designing Adaptive Subtitles for Online Fitness Videos to Support Ubiquitous Exercises Lutong Wang (Shandong University, China), Wei Gai (Shandong University, China), Hongqiu Luan (Shandong University, China), and Chenglei Yang (Shandong University, China)	481
Modeling Gaze Behavior for Real-Time Estimation of Visual Attention and Expertise Level in Augmented Reality	487
Investigating the Effects of Limited Field of View on Jamming Experience in Extended Reality Suibi Che-Chuan Weng (University of Colorado Boulder, United States), Torin Hopkins (University of Colorado Boulder, United States), Shih-Yu Ma (University of Colorado Boulder, United States), Chad Tobin (University of Colorado Boulder, United States), Amy Banic (Interactive Realities Lab, University of Wyoming), and Ellen Yi-Luen Do (University of Colorado Boulder, United States)	493
Utilizing a Robot to Endow Virtual Objects with Stiffness Jiepeng Dong (Northwestern Polytechnical University), Weiping He (Northwestern Polytechnical University), Bokai Zheng (Northwestern Polytechnical University), Yizhe Liu (Northwestern Polytechnical University), and Mark Billinghurst (ITMS, University of South Australia, Australia)	. 496
Interactive Registration Methods for Augmented Reality in Robotics: A Comparative Evaluation Tonia Mielke (Otto-von-Guericke University Magdeburg, Germany), Fabian Joeres (Otto-von-Guericke University Magdeburg; Use-Ing. GmbH, Germany), Danny Schott (Otto-von-Guericke University Magdeburg, Germany), and Christian Hansen (Otto-von-Guericke University Magdeburg, Germany)	. 501
Hands-Free Virtual Try-On using Untethered AR Glasses for Everyday Shopping Experiences Laura R. Luidolt (Snap Inc.) and Kai Zhou (Snap Inc.)	. 507
Enhancing VR Training: Impact of Information Transfer Methods	513

Gino .Aiki: Mixed Reality-Based Physical Motor Skill Training in Aikido	519
A Lightweight Haptic Feedback Glove Employing Normal Indentation, Lateral Skin Stretch and Both Softness and Hardness Rendering	. 525
The Invisible – Experienced: Developing and Verifying a VR Application for Understanding Air Pollution Perception and Attitudes	. 531
Acute Stress Classification with a Stroop Task and in-Office Biophilic Relaxation in Virtual Reality Based on Behavioral and Physiological Data Alexis Souchet (University of Southern California, Institute for Creative Technologies, Los Angeles, CA, United States & Alliance Sorbonne Université, UTC, CNRS, France), Mamadou Lamarana Diallo (Alliance Sorbonne Université, UTC, CNRS, France), and Domitile Lourdeaux (Alliance Sorbonne Université, UTC, CNRS, France)	. 537
Extending the World-in-Miniature Metaphor to Access Situated Information in a Pervasive Augmented Reality Environment	. 543
Compacting Singleshot Multi-Plane Image via Scale Adjustment Max Bergfelt (Lund University, Sweden; Keio University, Japan), Viktor Larsson (Lund University, Sweden), Hideo Saito (Keio University, Japan), and Shohei Mori (Graz University of Technology, Austria; Keio University, Japan)	. 549
Exploring the Appearance and Voice Mismatch of Virtual Characters Minsoo Choi (Purdue University), Alexandros Koilias (University of the Aegean), Matias Volonte (Clemson University), Dominic Kao (Purdue University), and Christos Mousas (Purdue University)	. 555
Augmented Reality for Interactive Path Planning in 3D	. 561

A Standalone Augmented Reality Tool for X-Ray-Like Vision: Harnessing Body Tracking and Sensor Capabilities of HoloLens 2	567
States), and Christoph Leuze (Nakamir Inc., United States) Tangible Avatar: Enhancing Presence and Embodiment During Seated Virtual Experiences with a Prop-Based Controller	572
Reproducing Ascending and Descending Sensations in Virtual Reality Through Crossmodal Interactions with a Slanted Handrail	578
Automated Text Simplification for the Task Guidance in Augmented Reality	585
OCTOPUS: Open-Vocabulary Content Tracking and Object Placement using Semantic Understanding in Mixed Reality	587
Study of Natural Language Dialog System for Avatar Communication in Metaverse	589
First on Scene: Practitioner Considerations for using Augmented and Virtual Reality for Recognizing and Treating Anaphylaxis	592
Swipe-it!: One-Handed Thumb-tip Interaction for Text Editing in AR	. 598

Influence of Cross-Modal Correspondence Between Auditory and Visual Stimuli on Vection Perception in Virtual Reality)4
A Modular Approach for 3D Reconstruction with Point Cloud Overlay)9
Towards Eco-Embodiment: Virtual Reality for Building Climate Change Awareness Within Education for Sustainable Development	11
Adaptive Volumetric Anatomy Visualization in VR with Tangible Control	13
Expanding Targets in Virtual Reality Environments: A Fitts' Law Study	15
Realistic Fusion of Virtual Materials and Hands for AR Through Intrinsic Decomposition	19
Deep Detector and Optical Flow-Based Tracking Approach of Facial Markers for Animation Capture	25

Augmented Reality Annotations in a Collaborative Time-Critical Task	531
Effect of Degrees of Freedom on the Quality of Use of Virtual Theatre Experiences	537
SwiftDepth: An Efficient Hybrid CNN-Transformer Model for Self-Supervised Monocular Depth Estimation on Mobile Devices	542
A Virtual Reality System for Gender Swapping to Increase Empathy Against Stereotype Threats in Computer Science Job Interviews	648
Feasibility Study of using Augmented Mirrors for Alignment Task During Orthopaedic Procedures in Mixed Reality	650
Project Corvus: A Virtual Reality Horror Tool for Improving Self-Efficacy	552
Subjective Evaluation on the Sense of "Being There" using Augmented Reality Room Acoustic Estimator (ARAE) Platform	657
ThumbJoy: using the Thumb's Metacarpophalangeal Joint as a Joystick Input Device	563
Virtual Journalist: Measuring and Inducing Cultural Empathy by Visualizing Empathic Perspectives in VR	567

Exploring Factors of VR-Based Wheelchair Simulation for Reducing Implicit Bias	73
Cardiac Visualisation Along the RV-Continuum - A High-Fidelity Pilot Study David Aigner (University of Applied Sciences Upper Austria, Austria), Nanjia Wang (University of Applied Sciences Upper Austria, Austria; University of Calgary, Canada), David Kielmayer (Keplerklinikum Linz, Austria), Jürgen Steiner (Keplerklinikum Linz, Austria), Julian Hochpöchler (Keplerklinikum Linz, Austria), Christoph Heinzl (University of Passau, German), Daniel Roth (Technical University of Munich, German; Klinikum rechts der Isar, German), Frank Maurer (University of Calgary, Canada), and Christoph Anthes (University of Applied Sciences Upper Austria, Austria)	<i>7</i> 5
Are You Aroused Enough to See the Difference? The Role of Physiological Arousal in Perceiving Realism of Virtual Scene	81
Cloud-Based Face Recognition for Augmented Reality Glasses	85
VIDES: Virtual Interior Design via Natural Language and Visual Guidance 60 Minh-Hien Le (University of Science, VNU-HCM, Vietnam), Chi-Bien Chu (University of Science, VNU-HCM, Vietnam), Khanh-Duy Le (University of Science, VNU-HCM, Vietnam), Tam V. Nguyen (University of Dayton, US), Minh-Triet Tran (University of Science, VNU-HCM, Vietnam), and Trung-Nghia Le (University of Science, VNU-HCM, Vietnam)	89
DM-VTON: Distilled Mobile Real-Time Virtual Try-On 69 Khoi-Nguyen Nguyen-Ngoc (University of Science, VNU-HCM, Vietnam), Thanh-Tung Phan-Nguyen (University of Science, VNU-HCM, Vietnam), Khanh-Duy Le (University of Science, VNU-HCM, Vietnam), Tam V. Nguyen (University of Dayton, US), Minh-Triet Tran (University of Science, VNU-HCM, Vietnam), and Trung-Nghia Le (University of Science, VNU-HCM, Vietnam)	95
Making Avatar Gaze Accessible for Blind and Low Vision People in Virtual Reality: Preliminary Insights	01

MRLabeling: Create RGB-D Datasets On-The-Fly using Mixed Reality Richard Nguyen (Université de Sherbrooke, Canada), Rani Baghezza (Université de Sherbrooke, Canada), Benjamin Georges (Université de Sherbrooke, Canada), Charles Gouin-Vallerand (Université de Sherbrooke, Canada), Kévin Bouchard (Université du Québec à Chicoutimi, Canada), and Maryam Amiri (VMware Canada, Canada)	706
The Acceptability of a Multisensory VR Game for Older Adults	712
Multimodal Physiological Analysis of Cognition and the Correlations with Emotion in VR	714
Folding Rays: A Bimanual Occluded Target Interaction Technique	716
Into the Portraits: Face Swapping System for Art Gallery Visitors Juwon Lee (ETRI), Jung-Jae Yu (ETRI), Seong Jae Yoo (TMONET), and Wonyoung Yoo (ETRI)	718
Sense of Convergence: Exploring the Artistic Potential of Cross-Modal Sensory Transfer in Virtual Reality Eugene Hwang (Graduate School of Culture Technology, KAIST), Joonhyung Bae (Graduate School of Culture Technology, KAIST), Wonil Kim (Graduate School of Culture Technology, KAIST), Juhan Nam (Graduate School of Culture Technology, KAIST), and Jeongmi Lee (Graduate School of Culture Technology, KAIST)	722
Displacement Projection Mapping: a Projection Method to Add Geometric Features Beyond the Boundary of the Real Object Arisa Kohtani (Tokyo Institute of Technology), Keishiro Uragaki (Tokyo Institute of Technology, Aoyama Gakuin University), Shio Miyafuji (Tokyo Institute of Technology), and Hideki Koike (Tokyo Institute of Technology)	727
MOSion: Situation-Dependent Mosaicing System using High-Speed Projection Arisa Kohtani (Tokyo Institute of Technology), Hidetaka Katsuyama (Tokyo Institute of Technology), Shio Miyafuji (Tokyo Institute of Technology), and Hideki Koike (Tokyo Institute of Technology)	. 732
GoGoHand+: Designing Haptic Feedback to Enhance the GoGoHand Interaction Technique	, 736

Comparison of Virtual Reality Teleportation Targeting Method Performance Depending on the Teleport Distance Jihyeon Lee (Korea Advanced Institute of Science and Technology, Republic of Korea), Jinwook Kim (Korea Advanced Institute of Science and Technology, Republic of Korea), and Jeongmi Lee (Korea Advanced Institute of Science and Technology, Republic of Korea)	. 742
Model-Aware 3D Eye Gaze from Weak and Few-Shot Supervisions Nikola Popovic (ETH Zurich, Switzerland), Dimitrios Christodoulou (ETH Zurich, Switzerland), Danda Pani Paudel (ETH Zurich, Switzerland; INSAIT, Sofia University, Bulgaria), Xi Wang (ETH Zurich, Switzerland), and Luc Van Gool (ETH Zurich, Switzerland; INSAIT, Sofia University, Bulgaria)	. 746
Networking AI-Driven Virtual Musicians in Extended Reality	. 752
Research Demos	
Testbed for Intuitive Magnification in Augmented Reality	. 757
Augmented Reality-Based Demo for Immersive Training in Horticultural Therapy Alessandro Luchetti (University of Trento, Italy), Stefania Zaninotto (University of Trento, Italy), Mariolino De Cecco (University of Trento, Italy), Giovanni Maria Achille Guandalini (Rehabilitation Unit, Italy), Fujimoto Yuichiro (Nara Institute of Science and Technology, Japan), and Kato Hirokazu (Nara Institute of Science and Technology, Japan)	. 759
InstantCopresence: A Spatial Anchor Sharing Methodology for Co-Located Multiplayer Handheld and Headworn AR Botao Hu (Holo Interactive), Yuchen Zhang (Holo Interactive), Sizheng Hao (Holo Interactive), and Yilan Tao (Holo Interactive)	. 762
Empowering Education Through EERP: A Customizable Educational VR Escape Room Platform . <i>Ali Darejeh (UNSW, Australia)</i>	. 764
MaskWarp: Visuo-Haptic Illusions in Mixed Reality using Real-Time Video Inpainting	. 767

Volumetric X-ray Vision using Illustrative Visual Effects Thomas J. Clarke (University of South Australia, Australia), Wolfgang Mayer (University of South Australia, Australia), Joanne E. Zucco (University of South Australia, Australia), Adam Drogmuller (University of South Australia, Australia), and Ross T. Smith (University of South Australia, Australia)	769
A Novel Split Rendering XR Framework with Occlusion Support	772
Hybrid Cross-Reality Collaborative System Hyunwoo Cho (University of South Australia), Eunhee Chang (University of South Australia), Zhuang Chang (University of Auckland), Jiashuo Cao (University of Auckland), Bowen Yuan (University of South Australia), Jonathon Derek Hart (University of South Australia), Gun A. Lee (University of South Australia), Thammathip Piumsomboon (University of Canterbury), and Mark Billinghurst (University of South	775
Australia) Doctoral Consortium	
Australia)	777
Australia) Doctoral Consortium Investigating Avatars' Impact on Shopper's Perception and Behaviour in an Immersive Virtual Store	
Australia) Doctoral Consortium Investigating Avatars' Impact on Shopper's Perception and Behaviour in an Immersive Virtual Store	781
Australia) Doctoral Consortium Investigating Avatars' Impact on Shopper's Perception and Behaviour in an Immersive Virtual Store	

Rehab-Immersive: Improving Upper Limb Rehabilitation for Spinal Cord Injury Patients Through Hand-Interactive Virtual Reality) 7
V. Herrera (University of Castilla-La Mancha (UCLM), Spain), J. Albusac (UCLM, Spain), A. Reyes (Hospital Nacional de Parapléjicos (HNPT), Spain), C. González (UCLM, Spain), J.J. Castro-Schez (UCLM), and D. Vallejo (UCLM)	
Competition	
The MagicBook Revisited)1
RealityGit: Cross Reality Version Control of R&D Optical Workbench)7
Immersive Tele-Guidance Towards Evoking Empathy with People who are Vision Impaired 80 Renan Guarese (RMIT University), Deb Polson (RMIT University), and Fabio Zambetta (RMIT University))9
Cross-Reality Interaction and Collaboration in Museums, Education, and Rehabilitation	.5
Reviving the Euston Arch: A Mixed Reality Approach to Cultural Heritage Tours	21
Gaze-It: Intelligent Multimodal AR Cross-Reality Control System Yunlei Ren (University of Electronic Science and Technology of China, China), Ning Xie (University of Electronic Science and Technology of China; Sichuan Digital Economy Research Institute, China), Sophyani Banaamwini Yussif (University of Electronic Science and Technology of China, Chengdu, China), Yifeng Peng (University of Electronic Science and Technology of China, Chengdu, China), and Guowei Wang (University of Electronic Science and Technology of China, Chengdu, China)	<u>!</u> 7

CoLT: Enhancing Collaborative Literature Review Tasks with Synchronous and Asynchronous	
Awareness Across the Reality-Virtuality Continuum	31
AICRID: AI-Empowered CR For Interior Design	37
AR.S.Space: An AR Casual Game for Social Engagement in Work Environments	42
Time Travellers: An Asynchronous Cross Reality Collaborative System	48
Author Index	55