

Curriculum Vitae

Sungchul Jung

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Department of Software Engineering and Game Design and Development
Kennesaw State University
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EDUCATION

Ph.D. 2018 Computer Science and Engineering, University of Central Florida, Orlando, FL, USA
M.S. 2016 Computer Science and Engineering, University of Central Florida, Orlando, FL, USA
M.S. 2012 Computer Science and Engineering, Chung-Ang University, Korea
B.S. 2009 Computer Science and Engineering, Hanyang University, Korea

ACADEMIC EXPERIENCE

2021-Present Assistant Professor at the Department of Software Engineering and Game Design and Development (SWEGD), Kennesaw State University, Marietta, GA, USA

2018-2021 Post Doctoral Fellow at the Human Interface Technology Laboratory NZ, University of Canterbury, Christchurch, New Zealand
Topic: Sensory Surround System for Immersive Simulations

2017-2018 Graduate Research Assistant at Institute for Simulation and Training, SREAL Lab, University of Central Florida, Orlando, FL, USA

2013-2017 Graduate Teaching Assistant in Department of Computer Science and Engineering, University of Central Florida, Orlando, FL, USA

2010-2013 Research Assistant in Visualization Laboratory in Department of Computer Science and Engineering, Chung-Ang University, Seoul, Korea

2010-2011 Research Assistant in Department of Research Institute for Energy & Environment, Chung-Ang University, Seoul, Korea

FUNDED GRANT

2022 \$10,000, Office of Research Summer Research Fellows, Office of Research, KSU
2020 July \$5,000 NZD, Equipment fund supporting for Marsden preliminary research proposal
2020-2022 \$200,000 NZD, NSC Science for Technological Innovation Seed Projects, Effective telediagnostic-platform with rich communicational information in the sensitive situation, (PI: **Sungchul Jung**)

RESEARCH INTERESTS

XR and HCI

Virtual Body Ownership, Embodied Avatars, Virtual Agents, Perception and Cognition, Multisensory, User Study Design and Analysis, Immersive Storytelling and Gaming, Affective VR, Collaboration and Communication in VR, Asymmetric VR, VR in Education, Personalized Immersive Experience

ACADEMIC Supervisions

University of Canterbury, Christchurch, NZ

Current

2021 - Present Ph.D., Dilshani Kumarapeli, *Privacy in VR* (Co-supervisor)

Graduated

2018 - 2021 Ph.D., Kien Tran Pham Thai, *Environment awareness for a long-term VR* (Co-supervisor)
2018 - 2021 Ph.D., Yuanjie Wu, *Fully articulated avatar creation for VR* (Co-supervisor)
2018 - 2020 Ph.D., Bhuvanewari Sarupuri, *Locomotion in VR* (Co-supervisor)
2019 - 2020 M.S., Aishvarya Gopalakrishnan, *Teacher training in VR* (Co-supervisor)
2019 - 2020 M.S., Gonzalo Suarez, *Leadership training in VR* (Co-supervisor)
2018 - 2019 M.S., Natalie McHugh, *Cybersickness in VR* (Co-supervisor)

TEACHING EXPERIENCE

Kennesaw State University, GA, USA

2022 Spring AdvTpcs:ImmersiveGaming&Eval, CGDD 4490
2022 Spring 3D Modeling and Animation, CGDD 4113
2022 Spring Software Testing & QA, SWE 3643

2021 Fall 3D Modeling and Animation, CGDD 4113
2021 Fall Mobile & Casual Game Development, CGDD 4203

University of Canterbury, Christchurch, NZ

2020 Spring Mixed Reality, DATA 475
2019 Spring Design and Evaluation, MHIT 602
2019 Spring Mixed Reality, DATA 475

University of Central Florida, Orlando, USA

2016 Fall-2017 Spring Computer Science I (Data Structures and Algorithms), COP 3502,
2016 Summer Object Oriented Programming, COP 3330
2014 Fall-2016 Spring Programming Languages, COP 4020
2014 Summer Programming Languages, COP 4020, Systems Software, COP 3402
2013 Fall-2014 Spring Discrete Structures II, COT 4210

PROFESSIONAL EXPERIENCE

2017 Summer Technical Intern - Advanced Technology Interactives at Universal Resort, Orlando, FL, USA

INVITED TALK

2021 “Toward A Fully Immersive, Interactive, and Supportive Experience in XR”, Korea Advanced Institute of Science & Technology (KAIST), Daejeon, South Korea.
2018 “See, sense, and work with your own body in VR/MR: Immersive Illusion in Computer-Generated Domains”, New Jersey Institute and Technology, NJ, USA.

PROFESSIONAL SERVICES

Program Committee

2022 FLAIRS-35 conference, Hutchinson Island, FL, USA
2021 IEEE International Conference on Intelligent Reality
2020-Present IEEE Conference on Virtual Reality and 3D User Interfaces (Journal Track)
2020-Present International Symposium on Visual Computing
2019 IEEE Conference on Virtual Reality and 3D User Interfaces (Conference Track)
2019 Demo Chair, ACM Symposium on Spatial User Interaction

2018-2019	ACM Conference on Virtual Reality Software and Technology
<u>Journal Editor</u>	
2021-Present	(Lead) Guest Associate Editor, <i>Frontiers in Virtual Reality, Multi-user Collaboration and Learning in Extended Reality: Evaluating User Experience and Performance</i>
2021-Present	Guest Associate Editor, <i>Frontiers in Virtual Reality, Everyday Virtual and Augmented Reality: Methods and Applications, Volume II</i>

Reviewer

2021	ACM CHI Conference on Human Factors in Computing Systems
2020-Present	Review Editor, <i>Frontiers in Virtual Reality</i>
2021	IEEE International Symposium on Mixed and Augmented Reality (Journal Track)
2020	MDPI Multimodal Technologies and Interaction (MTI)
2020	ACM CHI Conference on Human Factors in Computing Systems
2020	The Journal of Virtual Reality, Springer
2020	ACM Conference on Virtual Reality Software and Technology
2020	IEEE Transactions on Visualization and Computer Graphics
2018	IEEE Conference on Virtual Reality and 3D User Interfaces
2017	IEEE Conference on Virtual Reality and 3D User Interfaces
2016	ACM Conference on Virtual Reality Software and Technology

AWARDS and Honors

2018	Best Paper Award, ACM Symposium on Spatial User Interaction, 2018
2017 Fall	UCF Graduate Dean's Dissertation Completion Fellowship for Spring, 2018
2015-2017	UCF Graduate Presentation Fellowships
2011	Scholarship for Leading Research Team
2010	Assistant Scholarship
2008	Excellent Creativity Work Prize in 2008 Hanyang University, CAPSTONE DESIGN FAIR

Media

2019	https://www.sftichallenge.govt.nz/our-research/our-researchers/dr-sungchul-jung/
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RESEARCH PUBLICATIONS

Conference Papers

- [1] All Shook Up: The Impact of Floor Vibration in Symmetric and Asymmetric Immersive Multi-user VR Gaming Experiences. **Sungchul Jung**, Yuanjie Wu, Ryan McKee, Robert W. Lindeman, *The 29th IEEE Conference on Virtual Reality and 3D User Interfaces (IEEE VR 2022), Conference track. (21.5%)*
- [2] On the Use of Jumping Gestures for Immersive Teleportation in VR. Lucie Kruse, **Sungchul Jung**, Richard Li, Robert W. Lindeman, *The 30th International Conference on Artificial Reality and Telexistence and the 25th Eurographics Symposium on Virtual Environments (ICAT-EGVE 2020), Orlando, Florida, USA.*
- [3] The Impact of Multi-sensory Stimuli on Confidence Levels for Perceptual-cognitive Tasks in VR, **Sungchul Jung**, Andrew Limmer-Wood, Simon Hoermann, Pram Abhayawardhana, Robert W. Lindeman, *The 27th IEEE Conference on Virtual Reality and 3D User Interfaces (IEEE VR 2020), Atlanta, GA, USA. (21.4%)*
- [4] Exploring the Use of a Robust Depth-sensor-based Avatar Control System and its Effects on Communication Behaviors. Yuanjie Wu, Yu Wang, **Sungchul Jung**, Simon Hoermann, Robert W. Lindeman, *The 25th ACM Symposium on Virtual Reality Software and Technology (VRST 2019), Sydney, Australia. (20.85%)*
- [5] Investigating a Physical Dial as a Measurement Tool for Cybersickness in Virtual Reality, Natalie McHugh, **Sungchul Jung**, Simon Hoermann, Robert W. Lindeman, *The 25th ACM Symposium on Virtual Reality Software and Technology (VRST 2019), Sydney, Australia. (20.85%)*

- [6] Redirected Jumping: Perceptual Detection Rates for Curvature Gains. **Sungchul Jung**, Christoph W. Borst, Simon Hoermann, Robert W. Lindeman. *32nd ACM User Interface Software and Technology Symposium (UIST 2019), New Orleans, USA. (24.4%)*
- [7] MDI: A Multi-channel Dynamic Immersion Headset for Seamless Switching between Virtual and Real World Activities. Kien T. P. Tran, **Sungchul Jung**, Simon Hoermann, Robert W. Lindeman. *The 26th IEEE Conference on Virtual Reality and 3D User Interfaces (IEEE VR 2019), Osaka, Japan. (21.5%)*
- [8] Creating a Stressful Decision Making Environment for Aerial Firefighter Training in Virtual Reality. Rory M.S. Clifford, **Sungchul Jung**, Simon Hoermann, Mark Billingham, Robert W. Lindeman. *The 26th IEEE Conference on Virtual Reality and 3D User Interfaces (IEEE VR 2019), Osaka, Japan. (21.5%)*
- [9] Over My Hand: Using a Personalized Hand in VR to Improve Object Size Estimation, Body Ownership, and Presence. **Sungchul Jung**, Gerd Bruder, Pamela J. Wisniewski, Christian Sandor, Charles E. Hughes. *Proceedings of the 6th ACM Symposium on Spatial User Interaction (SUI 2018), Berlin, Germany, October 13-14, 2018. (31%) **Best Paper Award*
- [10] In Limbo: The Effect of Gradual Visual Transition between Real and Virtual on Virtual Body Ownership Illusion and Presence, **Sungchul Jung**, Pamela J. Wisniewski, Charles E. Hughes, *The 25th IEEE Conference on Virtual Reality and 3D User Interfaces (IEEE VR 2018), Reutlingen, Germany. (20.6%)*
- [11] RealME: The Influence of Body and Hand Representations on Body Ownership and Presence, **Sungchul Jung**, Christian Sandor, Pamela J. Wisniewski, Charles E. Hughes, *The 5th ACM Symposium on Spatial User Interaction (SUI 2017), Brighton, UK. pages 107-114. (35%)*
- [12] Pilot Study: The Effect of Real User Body Cues on The Perception of Virtual Body, **Sungchul Jung**, Christian Sandor, Charles E. Hughes, *The 30th Conference on Computer Animation and Social Agents (CASA 2017), Seoul, South Korea. pages 47-50.*
- [13] The Effects of Indirect Real Body Cues of Irrelevant Parts on Virtual Body Ownership and Presence, **Sungchul Jung**, Charles E. Hughes, *The 26th International Conference on Artificial Reality and Telexistence and the 21st Eurographics Symposium on Virtual Environments (ICAT-EGVE 2016), Little Rock, Arkansas, USA. pages 107-114.*
- [14] Pilot Study for Telepresence with 3D-model in Mixed Reality, **Sungchul Jung**, Charles E. Hughes, *In Proceeding on HCI International (HCII 2015), Los Angeles, CA, USA. In Lecture Notes in Computer Science, Volume 9179, Virtual, Augmented and Mixed Reality. Chapter 3, pages 22-29.*
- [15] Representing Realistic Pavement Blocks, **Sung Chul Jung**, Chi-Hyoung Rhee, Chang Ha Lee, *In Proceeding on Information Science and Technology (IST 2012), pages 378-382, 2012.*
- [16] Realistic Pavement Blocks using Displacement Mapping on GPU, **Sung Chul Jung**, Chang Ha Lee, *In Proceeding on Korea Computer Graphics Society, pages 115-116, 2011.*

Journal Papers

- [1] Floor-vibration VR: Mitigating Cybersickness Using Whole-body Tactile Stimuli in Highly Realistic Vehicle Driving Experiences. **Jung, S.**, Li, R., McKee, R., Whitton, M. C., & Lindeman, R. W. (2021). *IEEE transactions on visualization and computer graphics*, 27(5), 2669–2680
- [2] Perspective: Does Realism Improve Presence in VR? Suggesting a Model and Metric for VR Experience Evaluation. **Jung S** and Lindeman RW, *Front. 2021, Virtual Real.* <https://doi.org/10.3389/frvir.2021.693327>
- [3] On the Use of Multi-sensory cues in Symmetric and Asymmetric Shared Collaborative Virtual Spaces, **Jung, Sungchul** and Karki, Nawam and Slutter, Max and Lindeman, Robert W., *Proc. ACM Hum.-Comput. Interact.*

- 5, Article 72 (April 2021), 25 pages. <https://doi.org/10.1145/3449146>
- [4] Evaluating Virtual Human Role-Players for the Practice and Development of Leadership Skills. Suárez, Gonzalo and **Jung, Sungchul** and Lindeman, Robert. W, 2021, *Frontiers in Virtual Reality*.
- [5] Using a Fully Expressive Avatar to Collaborate in Virtual Reality: Evaluation of Task Performance, Presence, and Attraction. Wu, Yuanjie., Wang, Yu., **Jung, Sungchul.**, Hoermann, Simon., Lindeman, Robert.W, 2021 *Frontiers in Virtual Reality*.
- [6] Clifford, R.M.S., Engelbrecht, H., **Jung, S.** et al. Aerial firefighter radio communication performance in a virtual training system: radio communication disruptions simulated in VR for Air Attack Supervision. *Vis Comput* (2020). <https://doi.org/10.1007/s00371-020-01816-6>
- [7] Towards an articulated avatar in VR: Improving body and hand tracking using only depth cameras. Wu, Yuanjie., Wang, Yu., **Jung, Sungchul.**, Hoermann, Simon., Lindeman, Robert.W. *Entertainment Computing*. Vol. 31, May, 2019.
- [8] Displacement Mapping with an Augmented Patch Mesh. **Sung Chul Jung** and Chang Ha Lee. *IEICE TRANSACTIONS on Information and Systems*. 98, 3. 741-744. 2015.
- [9] Representing a realistic pavement with an interactive crack pattern generation. **Sung Chul Jung** and Chang Ha Lee. *International Journal of Multimedia and Ubiquitous Engineering*. Vol. 8, No. 4, July, 2013.
- [10] Representing uneven pavement blocks using displacement mapping. **Sung Chul Jung** and Chang Ha Lee. *Korean Institute of Information Technology*. 9, 11. 231-237. 2011.

Book Chapters

- [1] **Jung, S.**, & Hughes, C. E. (2015). Pilot Study for Telepresence with 3D-model in Mixed Reality. *HCI International 2015 (HCII 2015)*, Las Vegas, NV, July 21-26. In *Lecture Notes in Computer Science*, Volume 9179, *Virtual, Augmented and Mixed Reality*. Chapter 3, 22-29. DOI: 10.1007/978-3-319-21067-4_3.

Workshop

- [1] Behaviour Privacy: Non-verbal Threats in Avatar-based VR Systems. Dilshani Rangana Kumarapeli, **Sungchul Jung**, and Robert W. Lindeman, Workshop on Socially Intelligent Virtual Agents (SIVA), *The 29th IEEE Conference on Virtual Reality and 3D User Interfaces (IEEE VR 2022)*.
- [2] Action Units: Directorial Cues for Immersive Storytelling in Swivel-Chair Virtual Reality. Lingwei Tong, **Sungchul Jung**, Robert W. Lindeman, SeatedVR: Workshop on Seated Virtual Reality, *The 27th IEEE Conference on Virtual Reality and 3D User Interfaces (IEEE VR 2020)*, Atlanta, GA, USA.
- [2] On the use of "Active Breaks" to Perform Eye Exercises for More Comfortable VR Experiences. Kien T. P. Tran, **Sungchul Jung**, Robert W. Lindeman, WISP: 2nd Annual Workshop on Immersive Sickness Prevention, *The 27th IEEE Conference on Virtual Reality and 3D User Interfaces (IEEE VR 2020)*, Atlanta, GA, USA.

Poster/Doctoral Consortium

- [1] Emotional Avatars: Facial Emotion Identification Methodology for Avatar Based Systems. Dilshani Rangana Kumarapeli, **Sungchul Jung**, and Robert W. Lindeman. 2021. *The 29th IEEE Conference on Virtual Reality and 3D User Interfaces (IEEE VR 2022)*
- [2] Introduce Floor Vibration to Virtual Reality. Richard Chen Li, **Sungchul Jung**, Ryan Douglas McKee, Mary C. Whitton, and Robert W. Lindeman. 2021. *In Symposium on Spatial User Interaction (SUI '21)*. Association for Computing Machinery, USA, Article 21, 1–2. DOI:<https://doi.org/10.1145/3485279.3485299>
- [3] Self-Avatars in Virtual Reality: A Study Protocol for Investigating the Impact of the Deliberateness of Choice and the Context-Match, Andrea Bartl; **Sungchul Jung**; Peter Kullmann; Stephan Wenninger; Jascha

Achenbach; Erik Wolf; Christian Schell; Robert W. Lindeman; Mario Botsch; Marc Erich Latoschik 2021 *IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops (VRW)*, 2021, pp. 565-566, doi: 10.1109/VRW52623.2021.00165.

- [4] Action Units: Directing User Attention in 360-degree Video based VR, Lingwei Tong, **Sungchul Jung**, Robert W. Lindeman, *In Proceeding on ACM Symposium on Virtual Reality Software and Technology (VRST 2019)*, Sydney, AU.
- [5] Over My Hand: Using a Personalized Hand in VR to Improve Object Size Estimation, Body Ownership, and Presence. **Sungchul Jung**, Gerd Bruder, Pamela J. Wisniewski, Christian Sandor, Charles E. Hughes. *Proceedings of the 31st ACM Symposium on User Interface Software and Technology (UIST)*, Berlin, Germany, October 2018. (Invited)
- [6] The Effects of Indirectly Implied Real Body Cues to Virtual Body Ownership and Presence in a Virtual Reality Environment, **Sungchul Jung**, Charles E. Hughes, *In Proceeding on ACM Symposium on Virtual Reality Software and Technology (VRST 2016)*, Munich, Germany. (Poster). 363-364.
- [7] Body Ownership and Immersive Collaboration in Virtual Reality, **Sungchul Jung**, *In Proceeding on International Conference on Collaboration Technologies and Systems (CTS 2016)*, Orlando, Florida, USA (Doctoral Consortium).
- [8] Physical Presence Aided by Body Ownership, **Sungchul Jung**, *In Proceeding on IEEE Virtual Reality 2016*, Greenville, SC, USA (Doctoral Consortium).

Completed Research Projects

2018 - 2020	Sensory Surround System for Immersive Simulations.
2017 - 2018	Software Development for TeachLive system, a mixed-reality teaching environment supporting teacher practice in classroom
2015 - 2018	Implementing a Person-Specific Hand for Virtual Hand Body Ownership
2013 - 2015	Body ownership when controlling remote physical surrogates
2012 - 2013	Techniques for reproducing the background and lighting environments of filming locations and scene compositing in a virtual studio
2010 - 2011	Non-Photorealistic Rendering, National Research Foundation of Korea
2010 - 2011	Virtual reality platform using 3D stereoscopic displays and haptic devices, National Research Foundation of Korea