

Xincheng Huang

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RESEARCH STATEMENT

My research in Human-Computer Interaction develops immersive and intelligent AR/VR systems using neural scene representations (NeRF, Gaussian Splatting) and AI models (LLMs, VLMs). My thesis focuses on interactive and intelligent telepresence: efficient photorealistic capture, interactive shared surfaces and 3D object exchange, and AI-driven spatial understanding for adaptive collaboration. My work has been published at top Human-Computer Interaction and AR/VR venues such as UIST, CHI, IMWUT/UbiComp, and IEEE TVCG.

EDUCATION

Doctor of Philosophy in Computer Science University of British Columbia, Vancouver, BC <i>Advisor: Dr. Robert Xiao</i>	Sept 2021 – Aug 2027
Master of Science in Computer Science and Engineering University of Michigan, Ann Arbor, MI <i>Advisors: Dr. Nikola Banovic and Dr. Alanson Sample</i>	Aug 2019 – April 2021
Bachelor of Science in Computer Science New York University Shanghai, China <i>Graduated with Magna Cum Laude, and a secondary major in Interactive Media Arts</i>	Aug 2015 – May 2019

RESEARCH EXPERIENCE

Student Researcher <i>Google, Waterloo, BC</i> <i>Google XR. Mentors: Ruofei Du and Zhongwei Zhao</i>	May 2026 – Aug 2026
Graduate Research Assistant <i>University of British Columbia, Vancouver, BC</i> <i>XLab. Advisor: Dr. Robert Xiao</i>	Sept 2021 – present
Research Assistant <i>University of Michigan, Ann Arbor, MI</i> <i>Computational HCI Lab. Advisors: Dr. Nikola Banovic and Dr. Alanson Sample</i>	Mar 2020 – April 2021
Research Assistant <i>University of Michigan, Ann Arbor, MI</i> <i>Secure Cloud Manufacturing Group. Advisor: Dr. Kira Barton</i>	Jan 2020 – April 2020, Jan 2021 – April 2021
Undergraduate Research Assistant. <i>New York University, New York City, NY</i> <i>NYU – Guggenheim Computer-based Art Conservation Initiative. Advisor: Prof. Deena Engel</i>	Jan 2018 – Dec 2018

PUBLICATIONS

Top-tier publications in HCI and AR/VR appear in ACM/IEEE conference proceedings such as CHI, UIST, Ubicomp, IEEEVR, and ISMAR. Ubicomp has a hybrid structure with journal papers appearing in IMWUT. IEEEVR and ISMAR accept top submissions (~10%) to the journal-track and publish them to IEEE TVCG.

Conference Proceedings (Refereed)

[C.5] Hongyu Zhou, Xincheng Huang, Winston Wijaya, Yi Fei Cheng, David Lindlbauer, Eduardo Velloso, Andrea Bianchi, Zhanna Sarsenbayeva, and Anusha Withana. 2026. One Body, Two Minds: Alternating VR Perspective During Remote Teleoperation of Supernumerary Limbs. In Proceedings of the 2026 CHI Conference on Human Factors in Computing Systems (CHI '26), April 13–17, 2026, Barcelona, Spain. ACM, New York, NY, USA, 20 pages. <https://doi.org/10.1145/3772318.3791433>. (Acceptance rate: 25.3%, To Appear)

[C.4] Xu Fan, Xincheng Huang, and Robert Xiao. 2025. TangiAR: Markerless Tangible Input for Immersive Augmented Reality with Everyday Objects. In *31st ACM Symposium on Virtual Reality Software and Technology (VRST '25), November 12–14, 2025, Montreal, QC, Canada*. ACM, New York, NY, USA, 11 pages. <https://doi.org/10.1145/3756884.3766028>. (Acceptance rate: 27%)

[C.3] Xincheng Huang, Dieter Frehlich, Ziyi Xia, Peyman Gholami, and Robert Xiao. 2025. GaussianNexus: Room-Scale Real-Time AR/VR Telepresence with Gaussian Splatting. In *The 38th Annual ACM Symposium on User Interface Software and Technology (UIST' 25), September 28–October 1, 2025, Busan, Korea*. ACM, New York, NY, USA, 18 pages. <https://doi.org/10.1145/3746059.3747693>. (Acceptance rate: 22%)

[C.2] Ziyi Xia, Xincheng Huang, Sidney S Fels, and Robert Xiao. 2025. HaloTouch: Using IR Multi-Path Interference to Support Touch Interactions with General Surfaces. In *Proceedings of the 2025 CHI Conference on Human Factors in Computing Systems (CHI '25)*. Association for Computing Machinery, New York, NY, USA, Article 548, 1–17. <https://doi.org/10.1145/3706598.3714179>. (Acceptance rate: 24.9%)

[C.1] Xincheng Huang, Michael Yin, Ziyi Xia, Robert Xiao. 2024. VirtualNexus: Enhancing 360-Degree Video AR/VR Collaboration with Environment Cutouts and Virtual Replicas. In *The 37th Annual ACM Symposium on User Interface Software and Technology (UIST '24), October 13–16, 2024, Pittsburgh, PA, USA*. ACM, New York, NY, USA, 12 pages. <https://doi.org/10.1145/3654777.3676377>. (Acceptance rate: 24%)

Journal Articles (Refereed)

[J.5] Ritik Vatsal, Xincheng Huang, and Robert Xiao. 2026. “Look2React: Making VR NPCs Come Alive with Dynamic Vision-Guided Reactions”, in *IEEE Transactions on Visualization and Computer Graphics*. (To Appear)

[J.4] Bu Li, Xincheng Huang, and Robert Xiao. 2025. VibRing: A Wearable Vibroacoustic Sensor for Single-Handed Gesture Recognition. *Proc. ACM Hum.-Comput. Interact.* 9, 4, Article EICS006 (June 2025), 25 pages. <https://doi.org/10.1145/3733052>.

[J.3] Xincheng Huang and Robert Xiao. 2023. SurfShare: Lightweight Spatially Consistent Physical Surface and Virtual Replica Sharing with Head-mounted Mixed-Reality. *Proc. ACM Interact. Mob. Wearable Ubiquitous Technol.* 7, 4, Article 162 (December 2023), 24 pages. <https://doi.org/10.1145/3631418>.

[J.2] Xincheng Huang, James Riddell, and Robert Xiao. 2023. “Virtual Reality Telepresence: 360-Degree Video Streaming with Edge-Compute Assisted Static Foveated Compression”, in *IEEE Transactions on Visualization and Computer Graphics*, doi: [10.1109/TVCG.2023.3320255](https://doi.org/10.1109/TVCG.2023.3320255). (Acceptance rate: 20%)

[J.1] Xincheng Huang, Keylonnie L. Miller, Alanson P. Sample, and Nikola Banovic. 2023. StructureSense: Inferring Constructive Assembly Structures from User Behaviors. *Proc. ACM Interact. Mob. Wearable Ubiquitous Technol.* 6, 4, Article 204 (December 2022), 25 pages. <https://doi.org/10.1145/3570343>.

Posters/Demo (Reviewed/Juried)

[P.1] Dieter Frehlich, Xincheng Huang, Junkai Ding, Robert Xiao. 2025. MultiSphere: Latency Optimized Multi-User 360° VR Telepresence with Edge-Assisted Viewport Adaptive IPv6 Multicast. In *31st ACM Symposium on Virtual Reality Software and Technology (VRST '25), November 12–14, 2025, Montreal, QC, Canada*. ACM, New York, NY, USA, 2 pages. <https://doi.org/10.1145/3756884.3770539>

Patents

Xincheng Huang, Dieter Frehlich, Ziyi Xia, Peyman Gholami, Robert Xiao. (2025). Mixed Reality System for Real-Time AR/VR Telepresence. Patent Application filed September, 2025. Patent pending.

Xincheng Huang, James Riddell, Ailin Saggau-Lyons, Robert Xiao. (2024). System and apparatus for video display on a portable display device. Patent Application filed October, 2024. Patent pending.

TEACHING AND MENTORING

Graduate Teaching Assistant

Sept 2022 – Dec 2022

University of British Columbia, Vancouver, BC

CPSC 554X – Machine Learning and Signal Processing.

Duties: grading and responding to student questions.

Learning Assistant

Feb 2019 – May 2019

New York University Shanghai, Shanghai, China

CSCI-SHU 101 Introduction to Computer Science.

Duties: holding tutoring office hours, conducting review sessions, and facilitating class activities. Received award for “Excellent Tutoring” and “Most Appointed Office Hour”.

Mentoring

Ritik Vatsal, master’s student at *UBC*, currently a lab member at *UBC*

Dieter Frehlich, undergrad at *UBC*, currently a lab member at *UBC*

Junkai (Kelvin) Ding, undergrad at *UBC*, then master’s at *the Northeastern University*

James Riddell, undergrad at *UBC*, then master’s at *the University of Waterloo*

Keylonnie Miller, undergrad at *Umich*, then *Facebook*

INVITED PRESENTATIONS/DEMOS

“**Together from Afar: Toward Immersive, Interactive, and Intelligent Spatial Telepresence**”. Online Guest Lecture at Oxford Brookes University, U.K. Hosted by Prof. Fridolin Wild, February 24th, 2026.

“Together from Afar: Toward More Natural Spatial Telepresence”. Research Talk at the University of Texas at Dallas, USA. Hosted by Prof. Jin Ryong Kim, October 31st, 2025.

“Together from Afar: Toward More Natural Spatial Telepresence”. Research Talk at Tsinghua University, Beijing, China. Hosted by Prof. Xin Yi, October 20th, 2025.

“VirtualNexus: Enhancing 360-Degree Video AR/VR Collaboration with Environment Cutouts and Virtual Replicas”. Live demo at the 2nd *Beyond Connectivity Research Summit* by Rogers Communications Inc. Vancouver, Canada, July 2024.

“Virtual Reality Telepresence: 360-Degree Video Streaming with Edge-Compute Assisted Static Foveated Compression”. Live demo at the 1st *Beyond Connectivity Research Summit* by Rogers Communications Inc. Vancouver, Canada, June 2023.

ACADEMIC SERVICE

Program Committee: CHI 2025 Late-Breaking Work

Session Chair: UIST 2025

External Reviewer (47 papers in various journals and conferences)

UIST 2023, 2025, CHI 2023-2026, IMWUT 2024-2025, IEEEVR 2025-2026, ISMAR 2024-2025, TVCG 2025, IJHCS 2025, DIS 2026, SUI 2024-2025, VRST 2024-2025, EICS 2025, CHI Play 2024-2025, IMX 2025

Received Excellent Review Recognitions for CHI 2025-2026, UIST 2025-2026, CHI Play 2024

Student Volunteer: ISS 2024

AWARDS

MITACS Accelerate

2023-2024

Conducting Project *Rich, Immersive AR/VR communication* in collaboration with *Rogers Communications Canada Inc.* with a [Mitacs Accelerate](#) award with 30000 CAD.

Latin Award, Magna Cum Laude

2019

Awarded to top 15% of the graduated class at New York University Shanghai

Dean’s List for Academic Year

2015 – 2016, 2016 – 2017, 2017 – 2018, 2018 – 2019

Awarded to top 30% for each academic year at New York University Shanghai

LEADERSHIP

ENACTUS NYU Shanghai, Vice President

2016 - 2017

Led the NYU Shanghai’s branch of [ENACTUS](#), a world-wide social entrepreneurial student organization. Participated in the user interviews, product design, and prototyping for our project: “A Third Eye: A Digital Blind Crutch”. Won the *First prize* and the *Best technology innovation award* in ENACTUS social innovation competition of East China, and an 80000 CNY (~12000 USD) grant from the Chinese Charity Association (Shenzhen).

SKILLS

Programming: Experienced with C#, Python, Java, C/C++, OpenGL, HLSL.

AR/VR Development: Proficient in Unity, Mixed Reality Tool Kit, and XR Interaction Toolkit. Experienced with Meta Quest and Microsoft HoloLens development.

Machine Learning & AI: Experienced with OpenCV and PyTorch.

Prototyping: Experienced with Arduino, Raspberry Pi, Processing.js, and p5.js.

Design Software: Experienced with Adobe Photoshop, Premiere Pro, and Illustrator. Familiar with Maya, Cinema4D, and Blender.