Xincheng Huang

Phone: 734-263-4841 | Email: xincheng.peterhuang@gmail.com | Website: https://xincheng.me

RESEARCH INTERESTS

My current research focuses on bridging the physical and virtual worlds in remote AR/VR collaboration. To do so, I create novel interactive techniques in Mixed Reality by combining state-of-the-art technologies from machine learning and sensing. From sharing a slice of physical surfaces to fully immersive environments, I hope my endeavor will make future telepresence and remote collaboration more seamless and natural. My research along this target has led to publications to IMWUT, TVCG, and UIST. Recently, I have been trying to incorporate emerging technologies such as neural rendering and generative AI into remote collaboration.

EDUCATION

University of British Columbia, Vancouver, BC — Sept 2021 – present
Ph.D. in Computer Science
Advisor: Dr. Robert Xiao

University of Michigan, Ann Arbor, MI — Aug 2019 – April 2021
M.S. in Computer Science and Engineering
Advisors: Dr. Nikola Banovic and Dr. Alanson Sample

New York University Shanghai, Shanghai, China — Aug 2015 – May 2019
B.S. with double major in Computer Science and Interactive Media Arts
Graduated with Magna Cum Laude

RESEARCH EXPERIENCE

Graduate Research Assistant. *University of British Columbia, Vancouver, BC* — Sept 2021 - present
X Lab. Advised by Dr. Robert Xiao
Enhancing the multi-modal interactivity of remote shared experience in AR/VR. So far, I have explored physical surface sharing [J3], 360° Video VR telepresence systems with 5G mmW MEC assistance [J2], and enhancing the interactivity in remote 360° Video AR/VR collaboration [C1].

Research Assistant. *University of Michigan, Ann Arbor, MI* — Mar 2020 – April 2021
Computational HCI Lab. Advised by Dr. Nikola Banovic and Dr. Alanson Sample
Conducted a research project as the first author on inferring assembly structures from user behaviors [J1]. This work utilized UHF-RFID sensing to profile the movement data of building blocks during assembly tasks, and then inferred the structures being built in real-time given the movement profile with Markov Chain Monte Carlo.

Research Assistant. *University of Michigan, Ann Arbor, MI* — Jan 2020 – April 2020, Jan 2021 – April 2021
Secure Cloud Manufacturing Group. Advised by Dr. Kira Barton
Created an educational Virtual Manufacture Space in VR for the Detroit Area Pre-college Engineering Program (DAPCEP). Presented two iterations of the project, based on VR and WebGL, on DAPCEP 2020 and DAPCEP 2021.

Undergraduate Research Assistant. *New York University, New York City, NY* — Jan 2018 – Dec 2018
New York University – Guggenheim. Conserving Computer-based Art Initiative. Advised by Prof Deena Engel
Conducted code analysis for a software-based art: *Color Panel*, by John F. Simon Jr. 1998. Compiled the results of code analysis and suggestions for conservation in a 20-page report archived by the Guggenheim Museum.

PUBLICATIONS

[C1] 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.

[J3] 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.

[J2] 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.

[J1] 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.

[T2] Zhanghao Chen*, Xincheng Huang*. 2019. 3D Point Cloud Registration Algorithms for the Telewindow. *Undergraduate thesis for Computer Science at New York University Shanghai*. *Advised by Dr. Olivier Marin and Prof. Michael Naimark.*

[T1] Xincheng Huang. 2019. Immersive Strategies: A First-Person Perspective Chess Game in VR. *Undergraduate thesis for Interactive Media Arts at New York University Shanghai*. *Advised by Dr. Alison De Fren.*

(*: equal contribution)

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".

Undergraduate Mentoring
University of British Columbia, Vancouver, BC
Dieter Frehlich, undergraduate student at *University of British Columbia*
Junkai (Kelvin) Ding, undergraduate student at *University of British Columbia*
James Riddell, undergraduate student at *University of British Columbia*, then M.S. at *University of Waterloo*
Keylonnie Miller, undergraduate student at *University of Michigan*, then *Facebook*

ACADEMIC SERVICE

Student Volunteer: ISS 2024

Reviewed 17 papers in various journals and conferences: UIST 2023, CHI 2023-2025, IMWUT 2024, IEEEVR 2025, ISMAR 2024, SUI 2024, VRST 2024, EICS 2025, CHI Play 2024
Received Reviewer Recognitions for CHI 2025, CHI Play 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 60000 CAD.

Latin Award, Magna Cum Laude, New York University Shanghai 2019
Awarded to top 15% of the graduated class

Dean's List for Academic Year, NYU Shanghai 2015 – 2016, 2016 – 2017, 2017 – 2018, 2018 – 2019
Awarded to top 30% for each academic year

University Recognition Award, NYU Shanghai 2017 – 2018

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* a*ward* in ENACTUS social innovation competition of East China, and an 80000 CNY (~12000 USD) grant from the Chinese Charity Association (Shenzhen).