Xincheng Huang

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RESEARCH INTERESTS

I am interested in enabling novel interactive techniques in Mixed Reality (MR). So far, I have explored sharing physical surfaces and creating virtual replicas for remote MR collaboration [J3], 360° Video VR telepresence with 5G millimeter-wave and edge computing [J2], and tracking assembly tasks (e.g., Lego, furniture) with UHF-RFID sensing and Bayesian inference [J1]. Recently, I am trying to enhance the interactivity of 360° Video VR telepresence with the increasingly popular Neural Radiance Field (NeRF).

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 and ad-hoc virtual replica creation for remote MR collaboration [J3], and 360° Video VR telepresence with 5G millimeter wave and multi-access edge computing [J2].

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

[J3] Xincheng Huang and Robert Xiao. 2023. SurfShare: Lightweight Spatially Consistent Physical Surface and Virtual Replica Sharing with Head-mounted Mixed-Reality. Accepted and will appear on *Proc. ACM Interact. Mob. Wearable Ubiquitous Technol*. 7, 4 (December 2023).

[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.* (*equal contribution)

[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.*

TEACHING

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".

PROFESSIONAL EXPERIENCE

Assistant Software Engineer, *PwC Service Deliver Center, Shanghai* July 2018 – Oct 2018
SAP Department. Developed SAP-based APIs for financial reports, material, and storage management using ABAP and OpenSQL.

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).

ACADEMIC SERVICE

Reviewer, CHI 2024, UIST 2023, CHI 2023

AWARDS

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