Haoyu Tan

735 Raymond Avenue, Apt 312, Saint Paul, MN
(+1)631-202-7200 • tan00213@umn.edu • github.com/Haoyu-Tan

EDUCATION

University of Minnesota, Twin Cities **Minneapolis, MN, USA**
PhD in Computer Science | Advisor: Dr.Victoria Interrante *Sep 2023 - May 2028 (expected)*

- GPA: 4.0/4.0

University of Minnesota, Twin Cities **Minneapolis, MN, USA**
M.S in Computer Science | Advisor: Dr.Evan Suma Rosenberg(PhD co-advise) *Sep 2020 - May 2026*

- GPA: 4.0/4.0

State University of New York at Stony Brook(Stony Brook University) **Stony Brook, NY, USA**
B.S in Computer Science *Aug 2015 - Dec 2019*

- GPA: 3.77/4.0

RESEARCH INTERESTS

Augmented reality (AR) and virtual reality (VR); user interface design for AR/VR; human computer interaction (HCI) in AR/VR; cybersickness in VR; depth perception in VR/AR; intelligent virtual agent

Publication

[1] **Haoyu Tan**, Tongyu Nie, Evan Suma Rosenberg. *Invisible Mesh: Effects of X-Ray Vision Metaphors on Depth Perception in Optical-See-Through Augmented Reality.* 2024 IEEE Conference Virtual Reality and 3D User Interfaces (VR), Orlando, FL, USA, 2024, pp. 376-386, doi: 10.1109/VR58804.2024.00059. [**website**]

[2] Ville Cantory, Darya Biparva, **Haoyu Tan**, Tongyu Nie, John Schroeder, Ruofei Du, Victoria Interrante, and Piotr Didyk. *Enhancing Foveated Rendering with Weighted Reservoir Sampling.* In The 18th ACM SIGGRAPH Conference on Motion, Interaction, and Games (MIG '25), December 03–05, 2025, Zurich, Switzerland. ACM, New York, NY, USA, 12 pages. [**arXiv version**]

Other Research Experience

Using Motion Vectors for Cybersickness Mitigation
Dr.Victoria Interrante & Dr.Evan Suma Rosenberg *Mar 2024 - Present*

- Compared and analyzed the difference between dense-optical flow and motion vectors
- Conducted pixel-level analysis along motion vectors in an HLSL shader
- Designed and implemented multiple post-processing visual effects based on pixel-level analysis results to mitigate cybersickness using Unity C# and compute shaders
- Expected paper to be submitted to ISMAR 2026

Meta-Analysis of Carryover Effects in Cybersickness Research
Dr.Victoria Interrante & Dr.Evan Suma Rosenberg *June 2024 - May 2025*

- Collaborated in defining literature review goals, formulating research questions, and determining the criteria for paper selection
- Performed an exhaustive search and selected papers meeting the criteria from leading journals and conferences (e.g., IEEE VR, ISMAR, ACM CHI, IEEE TVCG).
- Participated in data processing and analysis in R
- Paper in submission to TVCG

Paxos Algorithm
Advisor: Prof. Paul Fodor *Aug 2018 - Dec 2018*

- Took part in group research of Paxos algorithm, a family of protocols that solves consensus issue on distributed system
- Brainstormed and suggested potential research topics and questions
- Discussed and assisted in the implementation of various types of Paxos algorithms in Java and Python

Peer Reviews

- IEEE VR 2024, 2025, 2026
- IEEE ISMAR 2025

Volunteer

- IEEE VR 2024 student volunteer

OTHER EXPERIENCE

Software Developer Intern
Information Department, Iron & Steel Group Co., LTD, Liuzhou, Guangxi, China *Jul 2017 - Aug 2017*

- Added methods to retrieve and store data between front-end and back-end database in Java
- Participated in the implementation of front-end user interface using vue.js framework

SKILLS

Programming Languages: C#, C++, CSS, HTML, Java, JavaScript, Python, Perl, LaTeX
Tools: Unity, Phaser, Processing, OpenGL, Blender, Android Studio, Git, PyTorch, HuggingFace, GPT
XR Tools: XR Interaction Toolkit, OpenXR, Microsoft Mixed Reality Toolkit(MRTK)