Tongyu Nie

Curriculum Vitae

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Education

2020–Current **Ph.D. in Computer Science**, *University of Minnesota*, Minneapolis, MN, USA.
Advisor: Evan Suma Rosenberg.

2019–2020 **M.Sc. in Computer Science**, *University of Minnesota*, Minneapolis, MN, USA.
Transferred to PhD program

2014–2018 **B.Eng. in Information Security**, *Harbin Institute of Technology*, Weihai, Shandong, China.

2017 **Visiting International Student**, *University of Wisconsin-Madison*, Madison, WI, USA.

Publications

*Asterisk denotes equal contribution.

In VR, the IEEE Conference Virtual Reality and 3D User Interfaces (IEEE VR) is the top conference (Acceptance rate around 25%), and IEEE Transactions on Visualization and Computer Graphics (TVCG) is the top journal. Starting in 2023, IEEE VR recommends higher-scoring conference papers for TVCG publication (Acceptance rate around 12%).

Journal Paper

2025 **Tongyu Nie**, Courtney Hutton Pospick, Ville Cantory, Danhua Zhang, Jasmine Joyce DeGuzman, Victoria Interrante, Isayas Berhe Adhanom, and Evan Suma Rosenberg. Peripheral teleportation: A rest frame design to mitigate cybersickness during virtual locomotion. *IEEE Transactions on Visualization and Computer Graphics (Special Issue on IEEE VR 2025, Accepted)*, volume 30, pages 1–10, 2025.

Conference Papers

2025 Jasmine Joyce DeGuzman*, Kaori Hirano*, Tabitha Peck, Alice Guth, Evan Suma Rosenberg, and **Tongyu Nie**. Reduction of motion complexity as an objective indicator of cybersickness in virtual reality. In *2025 IEEE Conference Virtual Reality and 3D User Interfaces (VR) (Accepted)*, 2025.

2024 Haoyu Tan, **Tongyu Nie**, and Evan Suma Rosenberg. Invisible Mesh: Effects of X-Ray Vision Metaphors on Depth Perception in Optical-See-Through Augmented Reality. In *2024 IEEE Conference Virtual Reality and 3D User Interfaces (VR)*, pages 376–386, 2024.

2023 **Tongyu Nie**, Isayas Berhe Adhanom, and Evan Suma Rosenberg. Like a Rolling Stone: Effects of Space Deformation During Linear Acceleration on Slope Perception and Cybersickness. In *2023 IEEE Conference Virtual Reality and 3D User Interfaces (VR)*, pages 658–668, 2023.

Extended Abstracts

2024 Jasmine Joyce DeGuzman, Erik DeVries Smith, Samyok Nepal, Kalinda Miller, Courtney Hutton Pospick, **Tongyu Nie**, and Evan Suma Rosenberg. Walk Me Through It: Using Impossible Spaces to Embody Graph Traversal Algorithms. In *2024 IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops (VRW)*, pages 1092–1093, 2024.

2024 Catherine Borisova*, Ruth Mesfin*, **Tongyu Nie**, and Evan Suma Rosenberg. Build Your Own Trigonometric Adventure in Virtual Reality. In *2024 IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops (VRW)*, pages 1094–1095, 2024.

2021   **Tongyu Nie** and Evan Suma Rosenberg. Redirected Tilting: Eliciting Postural Changes with a Rotational Self-Motion Illusion. In *2021 IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops (VRW)*, pages 178–182, 2021.

Research Experience

08/2020 – present
Graduate Research Assistant, *Illusioneering Lab*, University of Minnesota.
- Developed two novel cybersickness mitigation techniques using shaders in HLSL in collaboration with multi-disciplinary researchers in Kinesiology.
- Explored the use of geometry deformation on cybersickness and uneven terrain simulation.
- Designed a rest frame using content from the same virtual environment users immersed in and achieved state of the art cybersickness mitigation effect.
- Investigated methods that can objectively measure cybersickness based on motion complexity.
- Conducted a meta-analysis to provide guidance for cybersickness experimental design.
- Mentored multiple undergraduate and graduate students, leading to publications in premier venues like IEEE VR.

06/2024 – 08/2024
NSF REU Mentor, *REU Site: Human-Centered Computing for Social Good*, University of Minnesota.
- Supervised 12 undergraduate students from underrepresented groups during their summer research experiences; served as a point of contact and intermediary between students, the department, and supervising professors.
- Helped students on individual projects in graphics, visualization, virtual reality, robotics, and human-computer interaction; wrote and taught 8 weekly modules covering the research process, data analysis, and scientific writing.
- Organized a graduate student panel to answer students' questions about graduate school.

05/2021 – 08/2021
Research Intern, *Institute of Creative Technology*, University of Southern California.
- Designed novel uncertainty visualization metaphors for augmented reality display.
- Conducted an online human-subject study to evaluated the effectiveness of visualization techniques.

Academic Activities

Peer Reviewing

Program Committee.

IEEE VR 2025 Poster Program Committee

IEEE VR 2021, 23, 24, 25 Workshop on Immersive Sickness Prevention Program Committee

Reviewer.

2023-25	IEEE Conference on Virtual Reality and 3D User Interfaces (VR)	*15 reviews*
2023-24	IEEE International Symposium on Mixed and Augmented Reality (ISMAR)	*10 reviews*
2024	IEEE Visualization Conference (VIS)	*1 review*
2025	IEEE Pacific Visualization Conference (PacificVis)	*2 reviews*
2024-25	ACM CHI Conference on Human Factors in Computing Systems (CHI)	*6 reviews*
2025	ACM Conference on Computer-Supported Cooperative Work (CSCW)	*1 review*
2023-24	ACM Symposium on Virtual Reality Software and Technology (VRST)	*4 reviews*
2024	ACM Symposium on Spatial User Interaction (SUI)	*3 reviews*
2023-24	IEEE Transactions on Visualization and Computer Graphics (TVCG)	*3 reviews*

Special Recognitions.

CHI 2025   Special Recognitions for Outstanding Reviews

Academic Service

Student Volunteer.

IEEE VR 2020, IEEE VR 2024, IEEE ISMAR 2024

University/Department Service.

2024 Human Centered Computing Seminar: Student Coordinator

2022 Council of Graduate Students Grants Review Committee: Reviewer

2021 Empowering Women in Science - A Friend in STEM Mentoring Program: Mentor

Invited Presentation

Invited Talk.
- Virtual Experiences Research Group Lab Meeting Invited Talk. "Understanding and Mitigating Cybersickness." University of Florida (Virtual). Feb 17, 2025.
- Workshop on Immersive Sickness Prevention. "Peripheral Teleportation: A Rest Frame Design to Mitigate Cybersickness." IEEE VR 2024 (Orlando, FL). Mar 16, 2024.

Guest Lecture.
- CSCI 5619 Guest Lecture. "Motion Filtering." University of Minnesota. Oct 13, 2023.
- CSCI 1913 Guest Lecture. "Version Control System and Git." University of Minnesota. Apr 15, 2021.

Mentoring Experience

Master's Students

		Accomplishment
2024-Present	Simone Angelo Toribio	
2022-2024	Haoyu Tan (Now: PhD at UMN)	*First author paper at IEEE VR 2024*

Undergraduate Students

2021-2025	Jasmine Joyce DeGuzeman (Now: PhD at UCF)	*Multiple publications at IEEE VR 2024 & 25*
2024	Kaori Hirano	*Co-first author paper at IEEE VR 2025*
2024	Shauntavia Hooper	*Poster at Summer Undergraduate Research Expo*
2023-2024	Catherine Borisova	*3DUI Contest entry at IEEE VR 2024*
2023-2024	Ruth Mesfin	*3DUI Contest entry at IEEE VR 2024*
2022	Christian Halvorson	*Poster at Spring Undergraduate Research Symposium*
2022	Caleb Calomarde	*Poster at Summer Undergraduate Research Expo*

Teaching Experience

Graduate Teaching Assistant, *University of Minnesota*.

Spring, 2025	CSCI 1933: Introduction to Algorithms and Data Structures
Fall, 2024	CSCI 1933: Introduction to Algorithms and Data Structures
Fall, 2023	CSCI 5619: Virtual Reality and 3D Interaction
Spring, 2022	CSCI 5552: Sensing and Estimation in Robotics
Fall, 2021	CSCI 1913: Introduction to Algorithms, Data Structures, and Program Development
Spring, 2021	CSCI 1913: Introduction to Algorithms, Data Structures, and Program Development
Fall, 2020	CSCI 5619: Virtual Reality and 3D Interaction