Lei Zhang

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Research Interests

Human-Computer Interaction, Virtual/Augmented Reality, Content Creation Tools

Education

University of Michigan, Ann Arbor   2018 - present
Ph.D. in Information Science   Ann Arbor, USA
Advisors: Steve Oney and Anhong Guo

Shanghai Jiao Tong University   2014 - 2018
B.Eng. in Software Engineering   Shanghai, China

Academic Experiences

University of Michigan, Ann Arbor   09/2018 - present
Graduate Student Researcher   Ann Arbor, USA
Topics: Authoring Tools for Creating Immersive Experiences [2, 3, 5, 7]

Snap Research   05/2022 - 08/2022
Research Intern   Santa Monica, CA, USA
Mentors: Andrés Monroy-Hernández and Rajan Vaish
Topic: Authoring immersive storytelling experiences with Augmented Reality and Internet of Things [6]

Snap Research   05/2021 - 08/2021
Research Intern   Remote
Mentors: Fannie Liu and Rajan Vaish
Topic: Encouraging effortful communication through authoring Augmented Reality experiences [4]

Shanghai Jiao Tong University   09/2016 - 07/2018
Undergraduate Research Assistant   Shanghai, China
Topic: 3D Registration on Augmented Reality Headsets

University of Illinois Urbana-Champaign   05/2017 - 08/2017
Undergraduate Research Assistant   Urbana, IL, USA
Topic: A Gamification Platform for Training Students' Spatial Reasoning Skills [1]

Awards and Honors

Best Paper Award, ACM CSCW	2022
Best Short Paper Award, IEEE VL/HCC	2019
Rong Chang Science and Technology Innovation Scholarship, Shanghai Jiao Tong University	2017
Academic Excellence Scholarship, Shanghai Jiao Tong University	2017

Peer-Reviewed Conference and Journal Papers

[6] **Lei Zhang**, Daekun Kim, Youjean Cho, Ava Robinson, Yu Jiang Tham, Rajan Vaish, and Andrés Monroy-Hernández. 2024. Jigsaw: Authoring Immersive Storytelling Experiences with Augmented Reality and Internet of Things. In Proceedings of the CHI Conference on Human Factors in Computing Systems (CHI '24). Association for Computing Machinery, New York, NY, USA, Article 87, 1–14. https://doi.org/10.1145/3613904.3642744

[5] **Lei Zhang**, Ashutosh Agrawal, Steve Oney, and Anhong Guo. 2023. VRGit: A Version Control System for Collaborative Content Creation in Virtual Reality. In Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems (CHI '23). Association for Computing Machinery, New York, NY, USA, Article 36, 1–14. https://doi.org/10.1145/3544548.3581136

[4] **Lei Zhang**, Tianying Chen, Olivia Seow, Tim Chong, Sven Kratz, Yu Jiang Tham, Andrés Monroy-Hernández, Rajan Vaish, and Fannie Liu. 2022. Auggie: Encouraging Effortful Communication through Handcrafted Digital Experiences. Proc. ACM Hum.-Comput. Interact. 6, CSCW2, Article 427 (November 2022), 25 pages. (CSCW '22) https://doi.org/10.1145/3555152 (🏆 **Best Paper Award**)

[3] **Lei Zhang** and Steve Oney. 2020. FlowMatic: An Immersive Authoring Tool for Creating Interactive Scenes in Virtual Reality. In Proceedings of the 33rd Annual ACM Symposium on User Interface Software and Technology (UIST '20). Association for Computing Machinery, New York, NY, USA, 342–353. https://doi.org/10.1145/3379337.3415824

[2] **Lei Zhang** and Steve Oney, "Studying the Benefits and Challenges of Immersive Dataflow Programming," 2019 IEEE Symposium on Visual Languages and Human-Centric Computing (VL/HCC), Memphis, TN, USA, 2019, pp. 223-227, doi: 10.1109/VLHCC.2019.8818856. (🏆 **Best Short Paper Award**)

[1] Ziang Xiao, Helen Wauck, Zeya Peng, Hanfei Ren, **Lei Zhang**, Shiliang Zuo, Yuqi Yao, and Wai-Tat Fu. 2018. Cubicle: An Adaptive Educational Gaming Platform for Training Spatial Visualization Skills. In 23rd International Conference on Intelligent User Interfaces (IUI 2018). ACM, New York, NY, USA, 91-101.

Invited Talks

The Democratiazation of Virtual and Augmented Reality via Content Creation Tools

Tsinghua University, Beijing, China	June 2023
Shanghai Jiao Tong University, Shanghai, China	June 2023
Hong Kong University of Science and Technology (Guangzhou), Guangzhou, China	June 2023

Academic Service

Peer Review (30+)

2024	CHI*
2023	CHI*, UIST, ISMAR, IEEE VR
2022	CHI, UIST*, CSCW, NordiCHI
2021	CHI, UIST, VRST
2020	CHI, UIST
2019	CHI, TEI

Recognition for Highly Useful or Outstanding Reviews

Volunteering

2023	CHI	Student Volunteer
2020	UIST	Student Volunteer
2019	UIST	Student Volunteer

University of Michigan Interactive and Social Computing (MISC) Student Coordinator | 2023-2024

Teaching Experience

Introduction to AR/VR Fall 2023
Graduate Student Instructorr, University of Michigan
Introduction to Programming Fall 2020 & Fall 2021
Graduate Student Instructorr, University of Michigan
Developing AR/VR Experiences Winter 2020
Graduate Student Instructorr, University of Michigan
Needs Assessment and Usability Evaluation Fall 2019
Graduate Student Instructorr, University of Michigan

Mentoring

Jacob Gettig, Undergrad at University of Michigan, 2023
Jin Pan, Undergrad at University of Michigan, 2023. First position M.S. at University of Wisconsin, Madison.
Bella Palumbi, Undergrad at University of Michigan, 2022
Ashutosh Agrawal, Masters at University of Michigan, 2022, First position UX Designer at Beam Finance
Zach Behrman, Undergrad at University of Michigan, 2021
Yufei Quan, Undergrad at University of Michigan, 2021
Yifei Wang, Undergrad at University of Michigan, 2021

Patent

[11] **Zhang, Lei**, Youjean Cho, Daekun Kim, Ava Robinson, Yu Jiang Tham, Rajan Vaish, and Andrés Monroy-Hernández. "Virtual ar interfaces for controlling iot devices using mobile device orientation sensors." U.S. Patent Application 17/901,568, filed March 7, 2024.

[10] **Zhang, Lei**, Daekun Kim, Youjean Cho, Ava Robinson, Yu Jiang Tham, Rajan Vaish, and Andrés Monroy-Hernández. "Authoring tools for creating interactive ar experiences." U.S. Patent Application 17/901,540, filed March 7, 2024.

[9] **Zhang, Lei**, Ava Robinson, Daekun Kim, Youjean Cho, Yu Jiang Tham, Rajan Vaish, and Andrés Monroy-Hernández. "Recording following behaviors between virtual objects and user avatars in ar experiences." U.S. Patent Application 17/901,611, filed March 7, 2024.

[8] **Zhang, Lei**, Youjean Cho, Daekun Kim, Ava Robinson, Yu Jiang Tham, Rajan Vaish, and Andrés Monroy-Hernández. "Interaction recording tools for creating interactive ar stories." U.S. Patent Application 17/901,589, filed March 7, 2024.

[7] Kim, Daekun, **Lei Zhang**, Youjean Cho, Ava Robinson, Yu Jiang Tham, Rajan Vaish, and Andrés Monroy-Hernández. "Co-located full-body gestures." U.S. Patent Application 17/901,483, filed March 7, 2024.

[6] Kim, Daekun, **Lei Zhang**, Youjean Cho, Ava Robinson, Yu Jiang Tham, Rajan Vaish, and Andrés Monroy-Hernández. "Character and costume assignment for co-located users." U.S. Patent Application 17/901,518, filed March 7, 2024.

[5] Cho, Youjean, **Lei Zhang**, Daekun Kim, Ava Robinson, Yu Jiang Tham, Rajan Vaish, and Andrés Monroy-Hernández. "Virtual interfaces for controlling iot devices." U.S. Patent Application 17/901,630, filed March 7, 2024.

[4] Chen, Tianying, Timothy Chong, Sven Kratz, Fannie Liu, Andrés Monroy-Hernández, Olivia Seow, Yu Jiang Tham, Rajan Vaish, and **Lei Zhang**. "Handcrafted augmented reality effort evidence." U.S. Patent Application 17/888,601, filed March 2, 2023.

[3] Chen, Tianying, Timothy Chong, Sven Kratz, Fannie Liu, Andrés Monroy-Hernández, Olivia Seow, Yu Jiang Tham, Rajan Vaish, and **Lei Zhang**. "Augmented reality prop interactions." U.S. Patent Application 17/888,948, filed March 2, 2023.

[2] Chen, Tianying, Timothy Chong, Sven Kratz, Fannie Liu, Andrés Monroy-Hernández, Olivia Seow, Yu Jiang Tham, Rajan Vaish, and **Lei Zhang**. "Handcrafted augmented reality experiences." U.S. Patent Application 17/887,817, filed March 2, 2023.

[1] Chen, Tianying, Timothy Chong, Sven Kratz, Fannie Liu, Andrés Monroy-Hernández, Olivia Seow, Yu Jiang Tham, Rajan Vaish, and **Lei Zhang**. "Physical action-based augmented reality communication exchanges." U.S. Patent Application 17/887,891, filed March 2, 2023.