

# Fengyuan Zhu

PHD CANDIDATE · DYNAMIC GRAPHICS PROJECT

University of Toronto, Canada

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## Education

### University of Toronto

Toronto, Canada

#### PH.D. IN HUMAN COMPUTER INTERACTION, COMPUTER SCIENCE

2018.09 - Present

- Advisor: [Tovi Grossman](#) (NESRC Fellow, NSERC/Autodesk Industrial Research Chair in Human Computer Interaction)
- Investigating interactive techniques for AR/VR systems, focusing on seamless cross-device interactions.
- Conducted research on adapting 2D interaction paradigms for spatial environments, enhancing usability in VR/AR interfaces.

### New York University

New York, USA

#### MASTER, INTERACTIVE TELECOMMUNICATION PROGRAM

2015.09 - 2017.06

- Advisor: [Ken Perlin](#) (Academy Award for Technical Achievement)
- Research in Interactive Art Installations, Physical Computing, Multi-person VR Experience
- As a distinguished representative of the master's program, I led the open-source project 'Holokit' for mixed reality devices. Invited to the 2017 China-US Young Maker Summit, our work received commendation from Liu Yandong, the then Vice Premier of the State Council of China, and was featured in a report by [China News Service](#).
- Art installation projects I contributed to were featured in prestigious media outlets including [Forbes Tech](#) and [Vice](#)

### Peking University

Beijing, China

#### BACHELOR OF SCIENCE

2011.09 - 2015.06

- Major in Physics, GPA: 3.7; Minor in Arts, GPA: 3.8
- Directed the film "The Transformation of Li Qun," which achieved a rating of 8.2 on [Douban](#).
- Selected as an exemplary student representative for a government-sponsored exchange program at the University of Hong Kong, from September 2013 to January 2014.

## Professional Experience

### Google Labs

San Francisco, CA

#### STUDENT RESEARCHER

2023.05 -

- Supervised by [Ruofei Du](#) and [David Kim](#)
- Lead Research & Development with Multi-Device Interaction in XR environment
- UI understanding and automation with Multi-Modal Foundation Models and Large Language Models (LLM)
- Lead 2 patents in provisional stage and 1 first author research papers submitted to top tier academic conference, currently under peer review

### Huawei Technologies

Shenzhen, China

#### RESEARCH INTERN

2021.05 - 09

- Supervised by [Zhaopeng Gu](#), [Wei Li](#), and [Xuan Zhou](#)
- Lead and deployed an Automotive Simulator in Virtual Reality to support the design evaluation process for the Project AITO
- Awarded the 2021 Innovation Pioneer President's Prize by Huawei's Central Research Institute.

### Nvidia Research

Durham, NC

#### RESEARCH INTERN

2018.04 - 09

- Supervised by [Josef Spjut](#), [Morgan McGuire](#), [David Luebke](#) and [Turner Whitted](#)
- Designed and deployed the ARSIM, a system that simulate the optical see-through augmented reality device using ray tracing
- Demo Video for the project: <https://youtu.be/fUINfV1vJeE>
- Arxiv descriptions for the Demo: <https://arxiv.org/pdf/2202.06726.pdf>

### Project Holokit

New York, NY

#### INVENTOR

Release in 2017.05

- Designed and Open-sourced Holokit, a Low Cost 6 DOF Optical See-through HMD solution. Github 100+ stars
- Reported by Techcrunch, Gizmodo, China News Service, etc
- Authorized to Netease for further development; The new version is called Holokit X (but not related to me)
- Demo Videos: [Overview](#), [Promotion](#) (over 3.6k views)

- Invented, Designed and deployed co-located multi-person VR Experience. Lead by [Ken Perlin](#) from NYU.
- Demo Video for the project: <https://youtu.be/kEkLONt3TN4>
- Designed and deployed a mobile phone spectator using mixed reality techniques. [Introduction Webpage](#), [Demo Video](#)

## Publications

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One first author submission in process

Two extra patents currently under provisional stage

### FULL CONFERENCE PAPERS

- Fengyuan Zhu**, Mauricio Sousa, Ludwig Sidenmark, Tovi Grossman. “PhoneInVR: An Evaluation of Spatial Anchoring and Interaction Techniques for Smartphone Usage in Virtual Reality.” *In Proceedings of the 2024 CHI Conference on Human Factors in Computing Systems (CHI '24)*. Association for Computing Machinery, 14 pages. doi:[10.1145/3313831.3376233](#)
- Fengyuan Zhu**, Ludwig Sidenmark, Mauricio Sousa, and Tovi Grossman. “PinchLens: Applying Spatial Magnification and Adaptive Control Display Gain for Precise Selection in Virtual Reality.” *2023 IEEE International Symposium on Mixed and Augmented Reality (ISMAR)*, Sydney, Australia, 2023, pp. 1221-1230, doi:[10.1109/ISMAR59233.2023.00139](#)
- Fengyuan Zhu**, Zhuoyue Lyu, Mauricio Sousa, and Tovi Grossman. “Touching the Droid: Understanding and Improving Touch Precision with Mobile Devices in Virtual Reality.” *2022 IEEE International Symposium on Mixed and Augmented Reality (ISMAR '22)*, Singapore, Singapore, 2022, pp. 807-816, doi:[10.1109/ISMAR55827.2022.00099](#)
- Fengyuan Zhu** and Tovi Grossman. “BISHARE: Exploring Bidirectional Interactions Between Smartphones and Head-Mounted Augmented Reality.” *In Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems (CHI '20)*. Association for Computing Machinery, 1–14. doi:[10.1145/3313831.3376233](#)
- Peiliang Li, Tong Qin, Botao Hu, **Fengyuan Zhu** and Shaojie Shen. “Monocular visual-inertial state estimation for mobile augmented reality.” *2017 IEEE international symposium on mixed and augmented reality (ISMAR '17)*, Nantes, France, 2017 pp. 11-21. doi:[10.1109/ISMAR.2017.18](#)
- Xiaojuan Ma, Ke Fang, and **Fengyuan Zhu**. “From Breakage to Icebreaker: Inspiration for Designing Technological Support for Human-Human Interaction.” *In Proceedings of the 2016 ACM Conference on Designing Interactive Systems (DIS '16)*. Association for Computing Machinery, New York, NY, USA, 403–414. doi:[10.1145/2901790.2901800](#)

### PATENTS

- Ken Perlin, **Fengyuan Zhu**. “Head Mounted Display and Method.” US Patent 11,635,627
- Ken Perlin, **Fengyuan Zhu**. “System for a Spectator to View a Virtual Reality of a Performer and Method.” US Patent 11836285

### EXTENDED ABSTRACTS

- Zhenyi He, **Fengyuan Zhu**, and Ken Perlin. “PhyShare: Sharing Physical Interaction in Virtual Reality.” *In Adjunct Publication of the 30th Annual ACM Symposium on User Interface Software and Technology (UIST '17)*. Association for Computing Machinery, New York, NY, USA, 17–19. doi:[10.1145/3131785.3131795](#)
- Perlin, Ken, Zhenyi He, and **Fengyuan Zhu**. “Chalktalk vr/ar.” *International SERIES on Information Systems and Management in Creative eMedia (CreMedia) 2017/2 (2018)*: 30-31.
- Fengyuan Zhu**, Ke Fang, and Xiaojuan Ma. “Exploring the Effects of Strategy and Arousal of Cueing in Computer-Human Persuasion.” *In Proceedings of the 2017 CHI Conference Extended Abstracts on Human Factors in Computing Systems (CHI EA '17)*. Association for Computing Machinery, New York, NY, USA, 2276–2283. doi:[10.1145/3027063.3053122](#)
- Fengyuan Zhu**, Wangshu Sun, Carrie Zhang, and Rebecca Ricks. “BoomChaCha: a rhythm-based, physical role-playing game that facilitates cooperation among players.” *In proceedings of the 2016 CHI conference extended abstracts on human factors in computing systems (CHI EA '16)*, pp. 184-187. 2016. doi:[doi.org/10.1145/2851581.2890368](#)

## Awards, Fellowships, & Grants

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- 2023 **Doctoral Completion Award**, University of Toronto
- 2021 **Innovation Pioneer President's Prize**, Huawei Technologies
- 2017 **Distinguish Represent for the 2017 China-US Young Maker Summit**, New York University
- 2016, 2017 **Annual Departmental Scholarship for Outstanding Academic Works**, Tisch School of the Arts, New York University
- 2016 **Annual NYU Prototype Funding for Academic Works**, New York University
- 2012, 2013 **Annual Departmental Scholarship for Outstanding Academic Works**, School of Physics, Peking University
- 2012 **Annual Social Work Award**, Peking University

## Teaching

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- Fall 2023 **The Design of Interactive Computational Media**, Teaching Assistant
- Fall 2022 **Topics in Interactive Computing**, Teaching Assistant
- Fall 2019, Fall 2020 **Introduction to Human Computer Interaction**, Teaching Assistant

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## Mentoring

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- 2019-2021 **Zhuoyue Lyu**, Student Researcher, University of Toronto.
- 2016-2017 **Wangshu Sun**, Student Researcher, New York University
- 2014-2015 **Xu Tongda, Luo Yang, Wang Anqi, Zhang Cunjun**, Project [STAR](#), Tsinghua University