QINGQIN LIU

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EDUCATION

University of Science and Technology of China (USTC) 09.2021 - 07.2023(Expected)
Master of Journalism and Communication, Department of Communication of Science and Technology, Advisor: Prof. Yanxiang Zhang

University of Science and Technology of China 07.2019 - present
Research Assistant in Digital Art Lab, Supervisor: Prof. Yanxiang Zhang

University of Science and Technology of China 09.2015 - 07.2019
Bachelor of Natural Science in Astronomy, Department of Astronomy, School of Physical Sciences

PUBLICATIONS

[1] Y. Zhang, **Q. Liu** and Y. Wang, "Redirected Walking in 360° Video: Effect of Environment Size on Detection Thresholds for Translation and Rotation Gains," *2022 IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops (VRW)*, 2022, pp. 830-831, doi: 10.1109/VRW55335.2022.00266.

[2] Y. Zhang, Y. Wang and **Q. Liu**, "Touch the History in Virtuality: Combine Passive Haptic with 360° Videos in History Learning," *2022 IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops (VRW)*, 2022, pp. 824-825, doi: 10.1109/VRW55335.2022.00263.

[3] Y. Zhang, J. Wu and **Q. Liu**, "The Sloped Shoes: Influence Human Perception of the Virtual Slope," *2022 IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops (VRW)*, 2022, pp. 826-827, doi: 10.1109/VRW55335.2022.00264.

RESEARCH EXPERIENCES

Metafictional Interaction Design and Player Experience in Virtual Reality 08.2022 - present
Master Degree Thesis, Supervisor: Prof. Yanxiang Zhang

- Conducting formal analysis of VR and non-VR metafictional games, focusing on the interactions of these games to achieve breaking the fourth wall effect, currently expanding the number of games being analyzed.
- Designed and developed a prototype of VR metafictional game, wrote game scripts and game plots.
- Implemented in-game interactions (applying eye tracking and motion sensing), using Unity and plugins.
- Currently evaluating the player experience of my designed VR metafictional game in a within-subjects user study (using SUS, GEQ and semi-structured interview).

Video Game Network Based on User-generated Tags on Steam Platform 03.2022 - 05.2022
Course project of Social Network Analysis (by *Prof. Noshir Contractor* & *Prof. Mengxiao Zhu*), **Team Leader**

- Proposed the project idea and investigated the correlations of user rating and other game attributes.
- Applied Bayesian ALAAM to analyze one-mode video game network based on Steam tags.
- Collaborated with the team on writing the report, planning the analysis and interpreting the results.
- Provided final presentation and got 99/100 score in this course.

Redirected Walking (RDW) in 360° Video, User Perception and Applications 07.2021 - 01.2022
Supported by National Social Science Foundation of China, PI: *Prof. Yanxiang Zhang*, **Team Leader**

- Collaborated with the team on selecting scenes, and capturing 360° videos with various equipment.
- Designed and developed a VR system to control the playback of 360° video according to user's walking.

- Conducted the experiment to investigate user perception in RDW (using SSQ, 2AFC and semi-structured interview)
- Analyzed and interpreted data, wrote reports and research papers

Combine Passive Haptic with 360° Videos in Augmented Virtuality 09.2021 - 01.2022

Supported by National Social Science Foundation of China, PI: *Prof. Yanxiang Zhang*

- Jointly selected scenery and captured 360° videos, developed cube space projection method to tackle perspective distortion in 360° videos.
- Developed a VR program and an experimental system enabling users to virtually and physically touch objects in historical learning.
- Verified the utilization of passive haptic in historical learning in a user study (using PQ).

Human Perception of Slope Walking in Virtual Reality 09.2021 - 01.2022

Supported by National Social Science Foundation of China, PI: *Prof. Yanxiang Zhang*

- Developed a VR program to simulate people walking uphill or downhill.
- Built the experimental environment, using shoes of different slopes to investigate their effects on user perception.
- Proposed and co-design the experimental procedure to make users think they walk physically on slopes.

Application of Augmented Reality in Web and Mobile Applications 06.2018 – 05.2019

Undergraduate Research Project, supported by Innovation and Practice Plan for Undergraduates of USTC (2018), Supervisor: *Prof. Yanxiang Zhang*

- Investigated and sorted out the WebAR and MobileAR applications academically and commercially.
- Built a WebAR system for demonstrating space satellites, which was used for the illustration in a storybook magazine.
- Co-designed and developed an AR library system for collaborative annotation.

TEACHING EXPERIENCES

HS1584.01: Contemporary Sci-Tech ART Fall 2021

Teaching Assistant at USTC, Instructor: Prof. Yanxiang Zhang

- Designed exercises for all chapters, uploaded them to the online class system and maintained them.
- Planned and organized undergraduates to give presentations in class, co-evaluated their presentations with the instructor.
- Provided grades and feedback on the students' assignments and project reports.
- Led seven students to submit their outstanding coursework to Digital Photography Competition at USTC (2021), with all recommended students awarded eventually.

NNM1501.01: Creative Design and Application of VR/AR/MR Technology Fall 2021

Teaching Assistant at USTC, Instructor: Prof. Yanxiang Zhang

- Introduced and demonstrated the use of VR/AR/MR devices to undergraduates, organized and arranged for students to experience the devices
- Worked closely with students and assisted them in using these devices to complete their coursework, providing applications, toolkits, manuals, etc.

HONORS & AWARDS

Academic Scholarship of USTC (First Class, top 15%) 09.2022

Academic Scholarship of USTC (Second Class, top 30%) 09.2021

Outstanding Freshman Scholarship of USTC (Grade 3, top 50%) 09.2015

EXTRACURRICULAR ACTIVITIES

Science Experiment Exhibition and Performances in Anhui Province (2021) 04.2021 - 05.2021

Our team produced a popular science play about "Using Antibiotics Scientifically"

- Jointly wrote scripts and lines, designed character actions, and crafted costumes by hand.
- Played multiple roles as one of the stars.

National Science Experiment Exhibition and Performances (2019) 09.2019

An activity using science experiments and competitions to popularize scientific knowledge to the society

- Collaborated with the team on presenting an experiment on air pressure.
- Competed with other teams on general experimental skills, such as circuit experiments, preparation of chemical solutions, and CPR simulation.

China International College Students' "Internet+" Innovation Entrepreneurship Competition (2018)

Project: New Style of AR Globe - a product based on WebAR, **Team Leader** 07.2018 - 09.2018

- Proposed the product idea, developed the demo of the AR Globe, and collaborated closely with team members on market research of similar products.
- Presented our product and business plan, eventually gained an Outstanding Award at the USTC level.

Selected Volunteer Activities:

Science and Technology Week of USTC (2021) 05.2021

- Presented a four-minute video of "Using Antibiotics Scientifically" on school website for the public.

Science and Technology Week of USTC (2019) 05.2019

- Developed an AR application of the Solar System based on body tracking, and exhibited this multi-user interactive application in one of the main science popularization areas at USTC.
- Served hundreds of K-12 students and their parents during the two-day exhibition, including explaining the Astronomy knowledge, demonstrating the interactive models, and answering visitors' questions.

TECHNICAL SKILLS

- **Programming:** C, C#, Python, R, MATLAB/Octave, HTML, JavaScript
- **Platforms and Tools:** Unity, Origin, SPSS, SteamOS
- **Languages:** Chinese, English, Cantonese