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# Shufan Yu

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## EDUCATION

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**2019 – 2023 Ph.D. student in Educational Technology. Advisor: Dr. Qingtang Liu**

Virtual Learning Lab, Central China Normal University, Wuhan, China

**2021 – 2022 Visiting Scholar in cognitive psychology. Advisor: Dr Mina C. Johnson-Glenberg**

Embodied Games Lab, Arizona State University, Tempe, AZ, USA

**2016 – 2019 M.S. in Educational Technology. Advisor: Dr. Qingtang Liu**

Virtual Learning Lab, Central China Normal University, Wuhan, China

**2012 – 2016 B.E. in Digital Media Technology, 2016**

Yancheng Teachers University, Yancheng, China

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## RESEARCH

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### *Interest*

- XR-based Learning
- Virtual experiment
- Embodied cognition
- Computer supported collaborative learning (CSCL)

### *Research project*

**2022-2023 Research on the effect of level of embodiment and external representation of a virtual real mixed electric circuit on students' learning performance** (funded by excellent doctoral dissertation project of Central China Normal University; Grant No: 2022YBZZ025)

**PI:** Investigate the effects of some design factors (e.g., embodiment, representation) of an AR-based electric circuit learning tool on students' learning.

**2020-2021 Research on Key Technologies of constructing Virtual and Real Fusion Experimental Environment** (funded by excellent doctoral dissertation project of Central China Normal University; Grant No: 2020YBZZ037)

**PI:** Investigate the key technology to develop assemble and deducible experimental components for an AR-based electrical experiment.

**2019-2020 Research on the development and implementation of an AR-based magnetism learning tool** (funded by innovation project of graduate students of Central China Normal University; Grant No: 2019CXZZ038)

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**PI:** Investigate the key technology to develop a virtual-real mixed magnetism learning tool and conduct a quasi-experiment to explore its effects.

**2018-2020    Research on development system for virtual and real fusion experiments of multimodal natural interaction** (funded by self-determined researcher funds of CCNU from the colleges' basic research and operation of Ministry of Education in China; Grant No: CCNU18JCXK03)

**Co-PI:** Design, develop, and assessment the AR/VR-based instructional virtual experiments.

**2016-2019    Key Technology Research and Demonstration of Tujia music culture digital protection and display** (funded by Chinese National Key Technology Research and Development Program of the Ministry of Science and Technology of China; Grant No: 2015BAK03B03)

**Co-PI:** Design and develop the Tujia virtual dance teaching system based on Kinect

### ***Journal articles***

- J1. **Yu, S.**, Liu, Q., Liu, J., Ma, J., & Yang, Y. (2023). Integrating augmented reality into acoustics learning and examining its effectiveness: a case study of Doppler effect. *Education and Information Technologies*. <https://doi.org/10.1007/s10639-023-12091-y>
- J2. Liu, J., Liu, Q., **Yu, S.**, Ma, J., Liu, M., & Wu, L. (2023). How do autonomy and learner characteristics combine to influence learners' learning outcomes and cognitive load in virtual reality learning environments? A fuzzy-set qualitative comparative analysis approach. *Education and Information Technologies*, 0123456789. <https://doi.org/10.1007/s10639-023-12262-x>
- J3. Gong, X., **Yu, S.**, Xu, J., Qiao, A., & Han, H. (2023). The effect of PDCA cycle strategy on pupils' tangible programming skills and reflective thinking. *Education and Information Technologies*, 0123456789. <https://doi.org/10.1007/s10639-023-12037-4> (**Corresponding author**)
- J4. Johnson-Glenberg, M. C., Yu, C. S. P., Liu, F., Amador, C., Bao, Y., **Yu, S.**, & LiKamWa, R. (2023). Embodied mixed reality with passive haptics in STEM education: randomized control study with chemistry titration. *Frontiers in Virtual Reality*, 4(July), 1–20. <https://doi.org/10.3389/frvir.2023.1047833>
- J5. **Yu, S.**, Liu, Q., Johnson-Glenberg, M. C., Han, M., Ma, J., Ba, S., & Wu, L. (2023). Promoting musical instrument learning in virtual reality environment: Effects of embodiment and visual cues. *Computers & Education*, 198, 104764. <https://doi.org/10.1016/j.compedu.2023.104764>
- J6. Liu, Q., Ma, J., **Yu, S.**, Wang, Q., & Xu, S. (2023). Effects of an Augmented Reality-Based Chemistry Experiential Application on Student Knowledge Gains, Learning Motivation, and Technology Perception. *Journal of Science Education and Technology*, 32, 153–167. <https://doi.org/10.1007/s10956-022-10014-z>
- J7. **Yu, S.**, Liu, Q., Ma, J., Le, H., & Ba, S. (2022). Applying Augmented reality to enhance physics laboratory experience: does learning anxiety matter? *Interactive Learning Environments*, 1–16. <https://doi.org/10.1080/10494820.2022.2057547>
- J8. Wang, C., & **Yu, S.** (2023). Tablet-to-student ratio matters: Learning performance and mental experience of collaborative inquiry. *Journal of Research on Technology in Education*, 55(4), 646–662. <https://doi.org/10.1080/15391523.2021.2015018> (Corresponding author)
- J9. Liu, Q., **Yu, S.**, Chen, W., Wang, Q., & Xu, S. (2021). The effects of an augmented reality based

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magnetic experimental tool on students' knowledge improvement and cognitive load. *Journal of Computer Assisted Learning*, 37(3), 645–656. <https://doi.org/10.1111/jcal.12513>  
(Corresponding author)

- J10. Yang, W., Qingtang, L., Haoyi, H., Hairu, Y., **Shufan, Y.**, Huixiao, L., & Yangyang, Y. (2018). Personal Active Choreographer: Improving the Performance of the Tujia Hand-Waving Dance. *IEEE Consumer Electronics Magazine*, 7(4), 15–25.

### **Conference proceedings**

- C1. Liu, Q., Sun, L., Ma, J., **Yu, S.**, & Wu, L. (2023). Geometry Wall: An Embodied Gesture-based Game for Supporting Spatial Ability. *2022 IEEE International Conference on Teaching, Assessment and Learning for Engineering (TALE)*, 258–263.
- C2. Johnson-Glenberg, M. C., Kapadia, A., Liu, F., Likamwa, R., **Yu, S.**, Bennett, A., Kosa, M., Bao, Y., Balanzat, D., & Yu, C. S. P. (2022). XR - Titration and Civil Engineering: Design Issues & Preliminary Results. Poster presented at the American Educational Research Association (AERA), San Diego, CA. April, 2022.
- C3. Liu, J., Liu, Q., **Yu, S.**, Ma, J., Liu, M., & Wu, L. (2022). Which Types of Learners Are Suitable for the Virtual Reality Environment: A fsQCA Approach. *2022 8th International Conference of the Immersive Learning Research Network (ILRN)*, 1–5.  
<https://doi.org/10.23919/iLRN55037.2022.9815913>
- C4. Qingtang, L., Yuwei, J., Jindian, L., Miaomiao, H., Jingjing, M., & **Shufan, Y.** (2021). Design and Implementation of Virtual Sanxian Teaching System. *2021 IEEE International Conference on Engineering, Technology & Education (TALE)*, 938–943.  
<https://doi.org/10.1109/TALE52509.2021.9678770>
- C5. **Shufan, Y.**, Qingtang, L., Suxiao, X., Yuanyuan, Y., & Linjing, W. (2018). Design and Practice of Exploratory Virtual Experiment in Physics Discipline. *Proceedings of the 2018 IEEE International Conference on Teaching, Assessment, and Learning for Engineering (TALE)*, Wollongong, Australia. (presentation)
- C6. Liu, Q., **Yu, S.**, Lin, L., Xu, S., & Wu, L. (2018). Design and Implementation of an Immersive Virtual Reality Biological Courseware—Miraculous Eyeball. *Proceedings of the 2018 International Conference on Blended Learning (ICBL)*, Kansai, Japan. (presentation)
- C7. Liu, Q., **Yu, S.**, Wang, Y., Le, H., & Yuan, Y. (2017). A hand-waving dance teaching system based on kinect. *Proceedings of the 2017 International Conference on Blended Learning (ICBL)*, Hongkong, China. (presentation)
- C8. Liu, Q., Xu, S., **Yu, S.**, Yang, Y., Wu, L., & Ba, S. (2019). Design and implementation of an ar-based inquiry courseware - Magnetic field. *Proceedings of the 2019 International Symposium on Educational Technology (ISET)*, Hradec Králové, Czech Republic.
- C9. Zhai, X. M., Meng, N., & **Yu, S.** (2019). Investigating Using Behaviors of E-dictionary with Multiple Design: A Perspective from the Integration of Eye-Tracking Technique and Stimulated Recall. *Proceedings of the 2018 IEEE International Conference on Teaching, Assessment, and Learning for Engineering (TALE)*, Wollongong, Australia.
- C10. Yang, Y., Liu, Q., Wu, L., Xu, S., **Yu, S.**, & Zhang, N. (2019). Design and development of mobile augmented reality for mathematical experiments. *Proceedings of the 2019 International Symposium on Educational Technology (ISET)*, Hradec Králové, Czech

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Republic.

### ***Software Copyright***

An education game based on Leapmotion -- cellular immunity

A Tujia Hand-waving dance teaching system based on kinect

A Tujia Sayeerhe dance teaching system based on kinect

A virtual experiment platform based on AR technology

Experimental system of light polarization based on augmented reality technology

### ***Chinese National Invention Patent***

A Computational Method and System for an Assemblable Virtual-Real Fusion Experimental Circuit (2023)

A magnetic field visualization method, system, and equipment for virtual-real fusion experiments (2022)

A teaching method and system for virtual dance (2019)

An assessment method for virtual dance system (2018)

## **HONORS AND AWARDS**

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National Scholarship for Graduate Students, Ministry of Education of the PRC, 2021.

First prize, the 3rd “iTeach” National College Students Digital Education Application Innovation Competition, Ministry of Education of the PRC, 2019.

Second Prize, the “Internet+” competition of the school of Educational information technology, CCNU, 2018

National Scholarship for Graduate Students, Ministry of Education of the PRC, 2018.

The scholarship for outstanding graduates, CCUN, 2017

## **PROFESSIONAL MEMBERSHIP**

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Modern Educational Technology Branch of Chinese Institute of Electronics

Immersive Learning Research Network (iLRN)

## **REVIEWER**

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Journal of computer assisted learning

IEEE transactions on learning technology

Computers & Education

Education and information technologies

Journal of Research on Technology in Education

Journal of educational computing research

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Universal Access in the Information Society

International Journal of Human–Computer Interaction

## **PROFESSIONAL SKILL**

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Specialized software: SPSS, Visual Studio, Mplus, Photoshop, Premiere, 3DS max etc

Data analysis: statistics, HLM, Network analysis (ENA, ONA), sequential analysis (LSA)

Programing language: C, C #, R, HTML, Jekyll

3D game engine technology (UNITY)

XR development: Vuforia, VR\_TK