HAIYAN JIANG

Email: jianghybit@163.com TEL:+86-18810783293
Address: No. 5, South Street, Zhongguancun, Haidian District, Beijing

EDUCATION

Ph.D. candidate, Optical Engineering *Sep 2020 - Present*
Beijing Institute of Technology, Beijing, China.

M.E., Optical Engineering *Sep 2016 - Jun 2019*
Beijing Institute of Technology, Beijing, China. GPA: 84.2/100

B.E., Optical Information and Technology *Sep 2012 - Jun 2016*
Beijing Institute of Technology, Beijing, China. GPA: 87.5/100

RESEARCH INTERESTS

Virtual/mixed/synchronized reality (VR/MR/SR), human-computer interaction (HCI), artificial intelligence.

RESEARCH EXPERIENCE

Research Assistant, Beijing Engineering Research Center of Mixed Reality and Advanced Display *Sep 2016 – Present*

- **Synchronized reality (mapping virtual and physical reality)** *2019 – Present*
  Facilitate seamless house-scale experience creation with real-life haptic feedback and rich visual experience for scanned surfaces by considering the affordance of objects.
- **Intelligent selection for VR** *2022– Present*
  Develop an intelligent object retrieval system by taking into account the commonsense knowledge of human grasping and scene contexts, allowing users to retrieve objects based on their experience of grasping physical objects.
- **Hand manipulation motion synthesis** *2020 – 2022*
  As many physical proxies have been used to provide feedback for virtual objects in VR, we propose a neural network-based finger generation approach, enabling the generation of dexterous hand manipulation motions interacting with virtual objects which are controlled by a physical proxy.
- **Modular haptic proxy system** *2019 – 2022*
  Propose haptic proxy systems to provide feedback for virtual pets in VR; A mechanical arm with several haptic modules is used to provide passive and active feedback for diverse virtual pets; Passive props are used to construct various pets with limited modules; Design interaction methods for these virtual pets.
- **Text entry for VR** *2018 – 2021*
  Propose text entry methods for VR based on the physical keyboard and the circular touchpad; Proposed text entry methods for mobile scenarios based on the hand by leveraging the pinch gesture and other information.
- **Long-term immersive system & mixed reality office system** *2017 – 2019*
  Develop a long-term immersive system for working based on Maslow's Hierarchy of Needs by considering Physiological needs, safety needs, emotional needs, presence needs and functional needs; Conduct an 8-hour long-term exposure experiment.
- **Virtual comfortable in head-mounted displays (HMDs)** *2016 – 2019*
  Investigate the causes of visual comfort in HMDs; Investigate the effects of age, immersion time, virtual environments and devices on visual comfort; Propose methods to alleviate visual fatigue.

Research Internship, Beijing Institute for General Artificial Intelligence (BIGAI) *Jul 2022 – Present*

- Focus on the studies that understand and map the physical and virtual environments, and design intelligent interactions in synchronized reality.

Research Internship, Innovation Center for Industrial Big Data Co., Ltd *Jul 2018 – Oct 2018*

- Propose a prototype system with HoloLens applied to industrial maintenance.

PUBLICATIONS

[1] **H. Jiang**, D. Weng, Z. Song, X. Dongye and Z. Zhang. "DexHand: Dexterous Hand Manipulation Motion Synthesis for Virtual Reality." Virtual reality, 2023. (Accept subject to minor revisions)

[2] **H. Jiang**, D. Weng, X. Dongye, et al. "A Commonsense Knowledge-based Object Retrieval Approach for Virtual Reality," 2023 IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops (VRW), 2023.

[3] **H. Jiang**, D. Weng, X. Dongye and Y. Liu. PinchText: One-Handed Text Entry Technique Combining Pinch Gestures and Hand Positions for Head-Mounted Displays, International Journal of Human–Computer Interaction, 2022.

[4] **H. Jiang**, D. Weng, X. Dongye and Y. Liu. "A Pinch-based Text Entry Method for Head-mounted Displays," 2022 IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops (VRW), 2022, pp. 646-647.

[5] **H. Jiang**, D. Weng, X. Dongye and C. Yu. "Enriched Thumb-to-fingertip Gesture Based Input for Virtual Environments," 2021 International Conference on Virtual Reality and Visualization (ICVRV), 2021.

[6] **H. Jiang** and D. Weng, "HiPad: Text entry for Head-Mounted Displays Using Circular Touchpad," 2020 IEEE Conference on Virtual Reality and 3D User Interfaces (VR), 2020, pp. 692-703, doi: 10.1109/VR46266.2020.00092.

[7] **H. Jiang**, D. Weng, Z. Zhang, and F. Chen, "HiFinger: One-Handed Text Entry Technique for Virtual Environments Based on Touches between Fingers, " Sensors, vol. 19, no. 14, p. 3063, Jul. 2019, doi: 10.3390/s19143063.

[8] **H. Jiang**, D. Weng, Z. Zhang, et al, "HiKeyb: High-Efficiency Mixed Reality System for Text Entry," 2018 IEEE International Symposium on Mixed and Augmented Reality Adjunct (ISMAR-Adjunct), 2018, pp. 132-137.

[9] L Luo, D. Weng, J Hao, Z Tu, B Liang and **H. Jiang**. "A Robotic Arm-based Telepresence for Mixed-Reality Telecollaboration System," 2023 IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops.

[10] Q. Du, D. Weng, **H. Jiang** and et al. "A Stroop-based Long-term Cognitive Training Game for the Elderly in Head-mounted Displays," 2022 IEEE International Symposium on Mixed and Augmented Reality Adjunct (ISMAR-Adjunct).

[11] H. Fang, D. Weng, J. Guo, R. Shen, **H. Jiang** and Z. Tu, "Potential Effects of Dynamic Parallax on Eyesight in Virtual Reality System," 2020 IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops (VRW), 2020, pp. 784-785, doi: 10.1109/VRW50115.2020.00243.

[12] J. Guo, D. Weng, Z. Zhang, **H. Jiang**, et al., "Mixed Reality Office System Based on Maslow's Hierarchy of Needs: Towards the Long-Term Immersion in Virtual Environments," 2019 IEEE International Symposium on Mixed and Augmented Reality (ISMAR), 2019, pp. 224-235, doi: 10.1109/ISMAR.2019.00019.

[13] R. Shen, D. Weng, J. Guo, H. Fang, **H. Jiang**. "The effect of dynamic parallax on visual fatigue when watching video in HMDs, " The 14th Conference on Application of Image and Graphics Technology, 2019.

[14] Y. Xue, D. Weng, **H. Jiang**. "MMRPet: Modular Mixed Reality Pet System Based on Passive Props," The 14th Conference on Application of Image and Graphics Technology, 2019.

[15] Z. Zhang, D. Weng, **H. Jiang**, Y. Liu and Y. Wang, "Inverse Augmented Reality: A Virtual Agent's Perspective," 2018 IEEE International Symposium on Mixed and Augmented Reality Adjunct (ISMAR-Adjunct), 2018, pp. 154-157.

[16] X. Yu, D. Weng, J. Guo, **H. Jiang** and Y. Bao, "Effect of Using HMDs for One Hour on Preteens Visual Fatigue," 2018 IEEE International Symposium on Mixed and Augmented Reality Adjunct (ISMAR-Adjunct), 2018, pp. 93-96.

OTHERS

- **Patents**

  15 patents have been applied for (as the second inventor for 10 patents and the first inventor is my supervisor), including 6 granted patents.

- **Honors**

  - The national silver award in industry track in the 7th China International College Students' 'Internet+' Innovation and Entrepreneurship Competition, October 2021.
  - The first prize of Beijing in industry track in the 7th China International College Students' 'Internet+' Innovation and Entrepreneurship Competition, October 2021.
  - The first prize of Beijing in the 7th China International College Students' 'Internet+' Innovation and Entrepreneurship Competition, August 2021.
  - The silver award in "BIT Entrepreneurship Cup" Innovation and Entrepreneurship Competition, December 2021.