JINGZE TIAN

Human-computer Interaction, VR/AR/MR, Human Factors and Ergonomics

jingzetian.com | tjz@seu.edu.cn | +86 13919328307

EDUCATION

Master of Design *Anticipated Completion: June. 2024*

Department of Industrial Design, Southeast University

Research Interests: Eye-based HCI, Text Entry, Virtual Reality

Advisor: Assoc. Prof. Yafeng Niu and Prof. Chengqi Xue

Bachelor of Mechanical Engineering *Sept. 2017 - June. 2021*

School of Mechanical Engineering, Southeast University, Nanjing, China

PROFESSIONAL EXPERIENCE

Computational Media and Arts Thrust, The Hong Kong University of Science and Technology (Guangzhou)

Internship, Research Assistant, Project Leader *June. 2023 - Sept. 2023*

- With the instruction of Asst. Prof. Mingming Fan, as the leader of the project, succeeded in conducting a user study to improve VR accessibility for people with motor impairment, specifically those with Spinal Muscular Atrophy, using participatory design.
- As the first author, my paper: *Designing Gaze-Assisted Upper-Body Gesture Interaction with and for People with Spinal Muscular Atrophy in VR* has submitted to **CHI'24**

Institute for Network Sciences and Cyberspace, Tsinghua University

Internship, Remote Research Assistant *May. 2023 – Present*

- With the instruction of Asst. Prof. Xin Yi, collaborated with a PhD student to explore human factors research in mixed reality environments created through passthrough mode via literature review, analysis, and discussions.
- Independently proposed a research idea: *Expanding Interactive Space in Mixed Reality Through Fusion of Physical and Virtual Environments*

THESIS & PAPERS

[1] Niu, Y., **Tian, J.**, Han, Z., Qu, M., Tong, M., Yang, W., & Xue, C. (2022). Enhancing User Experience of Eye-Controlled Systems: Design Recommendations on the Optimal Size, Distance and Shape of Interactive Components from the Perspective of Peripheral Vision. *International Journal of Environmental Research and Public Health*, 19(17), 10737.
(Q1, IF=4.614, supervisor as 1st author)

- **Main Work:** Conducted an ergonomic experiment to analyze the impact of three factors: size, position, and metaphor of interaction elements in peripheral vision on the performance of gaze gestures.

[2] Tong, M., Chen, S., Niu, Y., Wu, J., **Tian, J.**, & Xue, C. (2022). Visual search during dynamic displays: Effects of velocity and motion direction. *Journal of the Society for Information Display*, 30(8), 635-647. (Q3， IF=2.2)

- **Main Work:** Studied how motion direction and velocity impact visual search in dynamic environments using two experiments.

[3] Zuo, H. R., Niu, Y. F., **Tian, J. Z.**, Yang, W. J., & Xue, C. Q. (2023). Study on the brightness and graphical display object directions of the Single-Gaze-Gesture user interface. Displays, 80, 102537. (Q1， IF=4.3)

- **Main Work:** Explored design recommendations for gaze gesture interfaces, considering background brightness, brightness contrast, target brightness, and GDO placement to enhance interaction performance and user experience.

[4] Li, Z., Zhou, Z., Wang, Y., **Tian, J.**, Yang, W., & Niu, Y. (2023). Enhancement Characteristics of Visual Stimulus Elements in SSVEP-BCI System. *Intelligent Human Systems Integration (IHSI 2023): Integrating People and Intelligent Systems*, 69(69).

- **Main Work:** Explored impact of auxiliary stimulus particle quantity on SSVEP-BCI efficiency and user satisfaction.

[5] **Master Thesis:** Multimodal Text Interaction based on Eye-tracking Technology.

- **Main Work:** Focused on three issues in the Eye-controlled interaction system: Midas Touch, low spatial precision, fatigue, proposed innovative interaction design methods to enhance eye-based text entry performance and user experience.

[6] **Bachelor Thesis:** Research on Visual Representation of Interactive Elements for Eye-controlled User Interface

- **Main Work:** Developed an experimental platform using Unity and C#, and recruit 20 participants to conduct an ergonomic experiment

through this platform.

PATENTS

[1] **Jingze Tian**, Yafeng Niu, Yiyan Wang, Jiaxin He, Weichi Huang, Eye-movement password input method, system and device: Chinese Patent. 2023103654660.

- **Main Work:** Proposed an eye-based password input method using Smooth pursuit to prevent shoulder-surfing, along with the suggested modules for implementation on mobile phones and ATMs.

[2] Xiaofan Li, Mengqian Tian, Yaming Wan, **Jingze Tian**, A portable wearable pneumatic massager: Chinese Patent. 202010514257.4.

- **Main Work:** Proposed a portable wearable pneumatic massager comprising massager units and a jacket. Users can place the units anywhere on the jacket to facilitate massaging any desired area.

OTHER PROJECT EXPERIENCE

VR Development of Lunar base simulation *2022*

· With the instruction of Assoc. Prof. Yafeng Niu, developed a VR simulation platform for lunar base work scenarios using Unity3D (C#) and VR Interaction Framework, suitable for ergonomics experiments.

User Interface Design, Nanjing Daquan Electric Research Institute *2021-2022*

· Joined a team of engineers, designed the user interface for Daquan Company's industrial park management system using Figma, creating over 30 webpages and delivering to frontend engineers.

TEACHING & MENTORING

Teaching Assistant: Undergraduate Senior Thesis, Southeast University *Oct. 2022 - May .2023*
Teaching Assistant: Master Lesson, Neuro-design, Southeast University *Sept. 2022 - Feb. 2023*
Teaching Assistant: Undergraduate Lesson, Conceptual design of products, Southeast University *Sept. 2022 - Feb. 2023*
Invited Lecturer, Proceedings of the Symposium on Design Ergonomics, Zhejiang Province

Visual Representation of Interface Elements based on Gaze Gesture Interaction *Sept. 2022*

HONORS & AWARDS

· Wang Yanqing Scholarship, Lead Intelligence (8000RMB, Top 10% by grade) *2022*
· Excellent Master Graduation Project Proposal, Southeast University *2022*
· Excellent Graduation Project, Southeast University *2021*
· Outstanding Award, Metallographic Competition, Southeast University *2018*

SKILLS & COMPETENCIES

· **Skillset:**
  - **Research:** Conducting user studies, designing experiments, statistical analysis (SPSS, Minitab), and extensive experience in writing papers.
  - **Development:** Proficiency in programming languages (C#, Python, Matlab, HTML/CSS/Javascript). Proficient in Unity and UE4 (Blueprint). Quick prototyping and experiment platform establishment. Familiarity with the APIs of eye-tracking (Tobii) and XR devices (Oculus Quest 2, Hololens 2, Varjo).
  - **Design:** Skilled in Design Thinking and the Double Diamond model, covering UI/UX, product, and graphic design. Proficient in Figma, Adobe Illustrator, Blender, Rhino, Keyshot, and SolidWorks for graphic and 3D design.
· **Proficient in English:** IELTS 6.5(6.0), CET 4/6.