Yan Xiang

🌐 https://yx-hci.github.io/ | ✉ yanxiang@sjtu.edu.cn | 🔗 Yan Xiang | 📱 +(86) 18565304687

Research Interests

My broad research interests include **Human-Computer Interaction (HCI)**, **Human-AI Interaction (HAI)**, **Augmented and Virtual Reality (AR & VR)**, and their application to multi-modal human perception and engagement, pervasive computing, biofeedback in cognitive neuroscience, Emotion AI, as well as data-driven approach to human centered computing and design.

Education

Shanghai Jiao Tong University (SJTU), Shanghai, China   Sep. 2021 - Mar. 2024 (Expected)
Master of Engineering in International Industrial Design Engineering (English Program), School of Design.
GPA: 3.92/4.0, **Rank**: 2/39 (**Top 5%**), **Outstanding Graduate Scholarship (Top 0.5%)**

Northeastern University (NEU), Shenyang, China   Sep. 2016 - Jun. 2021
Bachelor of Engineering in Architecture, School of Architecture.
GPA: 88.20/100, **Rank**: 3/66 (**Top 5%**), **Provincial Outstanding Graduate (Top 1%)**

Singapore University of Technology and Design (SUTD), Singapore   Sep. 2023 - Dec. 2023
Visiting Student, Data-Driven Innovation Lab, Engineering Product Development Pillar

Seoul National University (SNU), Seoul, South Korea   Sep. 2018 - Jun. 2019
Exchange student, Architecture, Department of Architecture & Architectural Engineering
GPA: 3.83/4.3 (94.30/100)

Bauhaus-Universität Weimar, Weimar, Germany   Jun. 2019 - Aug. 2019
Summer Institute, Architecture and Urbanism

Publications

DIS '23 WiP   **Xiang, Y.**, Fan, Q., Qian, K., Li, J., Tang, Y., & Gao, Z. (2023). "Decentralized Governance for Virtual Community (DeGov4VC): Optimal Policy Design of Human-plant Symbiosis Co-creation." In *DIS'23 Companion: Companion Publication of the 2023 ACM Designing Interactive Systems Conference* (pp.207-212). https://doi.org/10.1145/3563703.3596621.

ISTE '22   **Xiang, Y.**, Chang, D., Yao, Y., Wang, L., Chen, A., & Li, J. (2022). "Usability Evaluation of Elder-Friendly Design: Application to Take Alipay App." In *Transdisciplinarity and the Future of Engineering* (pp. 154-163), IOS Press. https://doi.org/10.3233/ATDE220642

IJERPH   Chang, D., **Xiang, Y.**, Zhao, J., Qian, Y., & Li, F. (2022). "Exploration of Brain-Computer Interaction for Supporting Children's Attention Training: A Multimodal Design Based on Attention Network and Gamification Design.", *International Journal of Environmental Research and Public Health, 19(22),* 15046. (SCI, IF=4.614, JCR Q1, First student author). https://doi.org/10.3390/ijerph192215046

IEEM '23   **Xiang, Y.**, Chang, D., Feng, X. (2023). "Leveraging Urban Big Data for Informed Business Location Decisions: A Case Study of Starbucks in Tianhe District, Guangzhou City.", In *2023 IEEE International Conference on Industrial Engineering and Engineering Management (IEEM),* IEEE. (Accepted).

IEEM '23   **Xiang, Y.**, Chang, D., Cheng, J. (2023). "Exploring the Correlation between Urban Microclimate Simulation and Urban Morphology: A Case Study in Yeongdeungpo-gu, Seoul.", In *2023 IEEE International Conference on Industrial Engineering and Engineering Management (IEEM),* IEEE (Accepted).

CHI '24 Zhang, J.*, **Xiang, Y.***, Zhao, Y.*, Jin, X., Sun, J., Fan, M., Tong, X., and LC, R. (2024). "From Design Inspiration to Co-curation: The Changing Role of Curatorial Practice in a Digital Generative AI Landscape for the Arts.", In *2024 CHI Conference on Human Factors in Computing Systems* (Submitted, *Co-first authors).

Comput Educ **Xiang, Y.**, Zhang, Z., Chang, D., Tu, L. (2023). "The Impact of Gamified Auditory-Verbal Training for Hearing-Challenged Children at Intermediate and Advanced Rehabilitation Stages." *Computers & Education.* (SCI, IF=12, SJR Q1, Submitted).

AAAAAA Chang, D.*, **Xiang, Y.***, Zhu, X. (2023). "A Style Matching Approach for the Generative Design of Animated Posters." *AAAAAA.* (Under review, *Co-first authors and corresponding author).

HRI '24 **Xiang, Y.** "A System Design for Multi-Modal Emotion Regulation and Management in Human-Robot and Human-Computer Interactions." In *2024 19th ACM/IEEE International Conference on Human-Robot Interaction (HRI).* (Submitted).

Research Experience

Data-Driven Innovation Lab @ SUTD
Visiting Student, Advisor: Prof. Jianxi Luo　　　　　　　　　　　Sept. 2023 - Dec. 2023 (Expected)

Conceptual Design Generation through Chatbot using LLMs　[More Details]
- Constructed a system and proposed a framework through prompt-based learning using the GPT API.
- Designed and developed an empathetic chatbot for engaging user interactions and visualize user status.
- Utilized language inference to generate and enhance users' knowledge systems within the design.

MIT Media Lab-City Science Lab @ Shanghai
Research Assistant, Advisor: Dr. Yan Zhang (Ryan), Prof. Kent Larson　　　Sept. 2021 - Aug. 2023

Human-AI Co-creation System Design for Decentralized Virtual Community　[More Details]
- Proposed decentralized governance for virtual community and designed optimal symbiosis policy.
- Developed a co-creation DAO and evaluated co-design impact through AI agent-based simulation.
- Co-organized the MIT City Science Submit & SocityDAO workshop as one of the main mentors(1/10).
- Accepted by *the DIS'23 WiP* Conference as the first author.

NUS-HCI Lab, Department of Computer Science @ National University of Singapore
Research Assistant, Advisor: Prof. Shengdong (Shen) Zhao　　　　　　　　May 2023 - Present

Empathetic Messaging- Enhancing Emotional Interaction through Co-Creation　[More Details]
- Investigated how multimodal modes of emotional messages impact users' perception by experiments.
- Proposed effective co-creation methods and tool for empathic communication through AIGC.
- Validated that the proposed system facilitates deeper emotional communication experiences.

Cultural Innovation Lab @ University of Southern California(USC) - SJTU (collaborated)
Research Assistant, Advisor: Prof. Jian Xu　　　　　　　　　　　　　　Apr. 2023 - Aug. 2023

Optimizing User Experience in VR for Multi-Modal Game Interactions　[More Details]
- Studied the way of better user experience by qualitative and quantitative user research.
- Designed 4 playful VR/AR interaction modes: touch, joystick, gesture, EEG signals.
- Validated the usability and experience of 54 users with 4 modes in game through experiment.

Brain Computer Interface Lab @ Rui Jin Hospital Clinical Neuroscience Center & miHoYo
Research Assistant, Advisor: Dr. Odin van der Stelt, Prof. Baoliang LU　　Oct. 2022 - May 2023

Investigating Digital Therapeutics and Designing PD-CAT for Parkinson's Disease　[More Details]
- Conducted research on digital health products for elderly and designed experimental paradigms.

- Developed PD-CAT, a Parkinson's disease cognitive assessment and training tool on mobile.
- Validated significant improvement of the cognitive behaviors through experiment (p<0.05).

HCI·X Summer Research Program @ CityU & DKU & HKUST(GZ)
Summer Research, Advisor: Prof. Ray LC, Prof. Xin Tong, Prof. Mingming Fan June 2023 - Sep. 2023

Exploring Human-AI Co-creation Approach in Digital Space and VR Exhibitions [More Details]
- Encoded curator interviews' insights on AI Tool usage in digital curation experiences.
- Created an experimental toolkit enabling curators to employ AI tools in co-curation processes.
- Verified the proposed toolkit by experiments and conducted open virtual exhibition online.
- Submitted to *CHI '24* Conference as the co-first author.

Pervasive Human Computer Interaction Lab @ Tsinghua University(THU)
Summer Research, Advisor: Prof. Xin Yi, Prof. Yuntao Wang, Prof. Yuanchun Shi May 2023- Sep. 2023

Facilitating Interaction with AIGC Using Proactive Feedback [More Details]
- Investigated how users perceive and respond to unconventional expressions from AI agents.
- Developed proactive feedback mechanism through 4 personality utilizing ChatGPT technology.
- Designed experiments to contrast various regulation strategies grounded in arousal and valence dimensions, which showed the enhancement of user trust and emotional engagement.

Information and Interaction Lab @ School of Design, SJTU
Advisor: Prof. Danni Chang, Prof. Zhenyu Gu   Sept. 2021 - Present

Project(Lead): A Style Matching Approach for the Generative Design of Animated Posters
- Combined Kansei Engineering and Machine Learning methods to explore the relationship between animation properties and style perception, proposed a parameterized design model.
- Conducted comparative experiments, validated the generation tool's usability and efficiency.

Project(Lead): Enhancing Usability: Evaluation and Strategy for Elder-Friendly APP Design
- Applied the elder-friendly mode to tackle the problem and the usability through experiment.
- Analyzed eye movement data, derived design strategies through information architecture.
- Accepted by *the ISTE '23* Conference, orally presented in MIT, Cambridge, USA.

Project(Lead): Exploration of Brain-Computer Interaction in Children's Attention Training
- Developed a multimodal BCI gamification attention training system through real-time EEG command.
- Independently completed the design and development of training game with Unity based on C#.
- Verified by the experiment (p0.05), the system significantly improves the users' attention behaviors.
- Accepted by *the IJERPH* as the first student author.

Project(Co-Lead): User Influence Networks through Web Mining and Social Network Analysis
- Explored the diffusion patterns of user needs at different levels in the UGC model.
- Utilized Python for data scraping, tokenization and clustering to analyze demand diffusion.
- Established user behavior patterns and content preferences of key opinion leaders (KOLs).

Master Thesis Project: Multi-Modal Emotion Regulation via Brain-Computer Interaction
- Developed a multimodal emotion recognition and regulation service system for service robot.
- Designed a real-time adjustment model based on brain-computer interaction through EEG signal.
- Verified the effectiveness by conducting experiment in Shanghai Mental Health Center (p<0.05).

TEACHING ASSISTANTSHIP

User Study international course (taught in English), *SJTU, Shanghai, China*   Sep. 2022 - Jan.2023
- Conducted instruction classes on data analysis using SPSS and MATLAB to graduate students.
- Assessed and advised weekly assignments for 38 domestic and international graduate students.

LEADERSHIP & INNOVATION

- **Speaker**, Shape Machine Symposium @Georgia Tech & SNU, Seoul, South Korea, July 2019
- **Delegate**, ICDF Conference, China-Italy Design Innovation Hub,Tsinghua University, Nov. 2021
- **Exhibitor**, "Posthumanist", exhibite in Seoul Biennale of Architecture and Urbanism, Nov. 2021
- **Student Representative**, Roundtable Talk, WDO World Industrial Design Day, June 2022
- **Oral speaker**, ISTE Conference, MIT Wong Auditorium, Cambridge, MA, USA, July 2022
- **Independent Exhibitor**, "Twisting", exhibited in World Expo Museum, Shanghai, Nov. 2022

Exhibitions and Design Works

- **Independent work:** "Third Space - Posthumanist Heterotopia", exhibited in the 2019 Seoul Biennale of Architecture and Urbanism, Dongdaemun Design Plaza, Seoul, published in "SPACE", November, 2019.
- **Independent work:** "Twisting Space", exhibited in World Expo Museum, Shanghai, November, 2022.
- **Independent work:** "Utopia Village", published in: Xiang, Y., Utopia Village, Chinese Creative Design Annual, 2020-2021, pp. 336, https://doi.org/10.41686/y.cnki.ysjsz.2022.001555.

SKILLS

- **Language**: English (proficient), Cantonese (proficient), Mandarin Chinese (native)
- **Experimental skills**: Eye-tracking, and EEG-based brain-computer interface in data processing
- **Professional skills**: Python, React, JavaScript, MATLAB, SPSS, R, C, LaTeX, Unity3D, Rhino, PS, AI
- **Interests**: Tennis (Singles Final Four at NEU), Meditating, Writing, Hiking