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)** and **Interactive Visualization Systems**, and their application to design and development of innovative and interactive health technologies, visual analytics, AR & VR, human-space interaction, and cognitive and social science.

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 - Jan. 2024
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

ISTE '22 — **Xiang, Y.**, Chang, D., Yao, Y., Wang, L., et al. (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.

DIS '23 WiP — **Xiang, Y.**, Fan, Q., Qian, K., Li. J., et al. (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.

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, 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). http://arxiv.org/abs/2310.09778.

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). http://arxiv.org/abs/2310.09779.

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, Under Review). http://arxiv.org/abs/2310.11047.

CHI '24 Zhang, J.*, **Xiang, Y.***, Zhao, Y.*, Jin, X., ... & 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*. (Under Review, *Co-first Authors).

HRI '24 **Xiang, Y.** (2024). "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*. (Under Review).

IMWUT '24 Zhou, C., Ram, A., Gu, Y., ... & **Xiang, Y**. (2024). "GlassMail: Towards Personalised Wearable Assistant for On-the-go Email Creation on Smart Glasses." *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies*. (Submitted).

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

Research Experience

Information and Interaction Lab @ School of Design, SJTU

Research Assistant, Advisor: Prof. Danni Chang, Prof. Zhenyu Gu Sept. 2021 - Present

Gamified Brain-Computer Interaction in Children's Attention Training **[More Details]**
- 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 ($p<0.05$), the system significantly improves the users' attention behaviors.

Usability Evaluation and Strategy for Elder-Friendly Design **[More Details]**
- Applied the elder-friendly mode to tackle the accessibility and the usability problem through experiment.
- Analyzed eye movement data, derived design strategies through information architecture, task flow and UI.
- Accepted by *the ISTE '23* Conference, orally presented in MIT, Cambridge, USA.

Gamefied Auditory-verbal Training System Design for Children **[More Details]**
- Designed gamefied training system for children in intermediate and advanced hearing rehabilitation stage.
- Utilized voice and facial mouth shape recognition technology in developing the training system.
- Enhanced the auditory speech rehabilitation training in improving language abilities ($n=31$, $p<0.05$).

Style Matching Approach for Generative Design of Animated Posters **[More Details]**
- Applied Kansei Engineering to create a dynamic style labeling dataset by generating and labeling samples.
- Trained a BP neural network and combined genetic algorithm for animated style-matching model.
- Conducted comparative experiments, validated the parametric generation model's validity and usability ($p<0.05$).

Master's Thesis: Multimodal Emotion System via Brain-Computer Interaction **[More Details]**
- Developed a multimodal emotion recognition and regulation service system for space through AIGC.
- Designed a real-time adjustment model based on brain-computer interaction through EEG signal.
- Verified the effectiveness by conducting experiment with participants in Shanghai Mental Health Center.

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 VR Community **[More Details]**
- Proposed a decentralized governance model for a virtual community and designed an 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* Conference as work in progress paper as the first author.

NUS-HCI Lab, Department of Computer Science @ National University of Singapore

Research Assistant, Advisor: Prof. Shengdong (Shen) Zhao May 2023 - Oct. 2023

Enhancing Empathetic Interaction through Heads-up Computing by AR Glasses
- Investigated how multimodal modes of emotional messages impact users' perception through AR glasses.

- Proposed effective co-creation methods and tool for empathic communication through AIGC technique.
- Validated that the proposed system facilitates deeper emotional interaction experiences.
- Submitted to *IMWUT '24* Conference.

Data-Driven Innovation Lab @ Singapore University of Technology and Design

Visiting Student, Advisor: Prof. Jianxi Luo Sept. 2023 - Jan. 2024 (Expected)

Chatbot as an Advisor for Designer via Using Large Language Models (LLMs)

- Developed a system and framework through prompt-based learning using the GPT-4 and DALL·E API
- Designed and developed an empathetic chatbot for engaging user interactions and visualize user status.
- Utilized language inference techniques to generate and enhance users' knowledge systems within the design.

Brain Computer Interface Lab @ Rui Jin Hospital Clinical Neuroscience Center & miHoYo

Research Assistant, Advisor: Dr. Odin van der Stelt, Prof. Baoliang LU Oct. 2022 - Present

Investigating Digital Therapeutics and Designing PD-CAT for Parkinson's Disease

- Conducted research on digital health products for elderly and designed experimental paradigms.
- Developed a Parkinson's disease cognitive assessment and training tool on mobile and wearable devices.
- Experimentally verified significant improvement in cognitive clinical patient behavior ($p<0.05$).

Pervasive Human Computer Interaction Lab @ Tsinghua University

*Summer Research, Advisor: Prof. Xin Yi, Prof. Yuntao Wang, Prof. Yuanchun Shi*May 2023- Sep. 2023

Facilitating Interaction with AIGC Using Proactive Feedback

- Investigated how users perceive and respond to empathetic and unconventional expressions from AI agents.
- Developed proactive feedback mechanism through 8 personality utilizing prompt engineering technology.
- Contrasted experiments on arousal and valence dimensions, revealing improved user emotional engagement.

HCI·X Summer Research @ 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]

- Interviewed and encoded curators' insights into how the AIGC tool affects the digital curation experience.
- Created a toolkit enabling curators to employ AI tools in different Human-AI co-curation processes.
- Validated the proposed toolkit through experiments and hosted an open virtual exhibition online.
- Submitted to *CHI '24* Conference as the co-first author.

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 quantitative research in user study.
- Evaluated weekly assignments and provided guidance for 38 domestic and international graduate students.

Leadership & Innovation

- **Delegate**, Shape Machine Symposium @Georgia Tech & SNU, Seoul, South Korea July 2019
- **Exhibitor**, "Third Space", exhibited in the Seoul Biennale of Architecture and Urbanism Nov. 2019
- **Delegate**, ICDF Conference, China-Italy Design Innovation Hub, Tsinghua University Nov. 2021
- **Representative**, Roundtable Talk, WDO World Industrial Design Day June 2022
- **Oral speaker**, ISTE Conference, MIT Wong Auditorium, Cambridge, MA, USA July 2022
- **Delegate**, Brain-Computer Interface & Neurotechnology Spring School, IEEE Brain Apr. 2023
- **Independent Exhibitor**, "Twisting", exhibited in World Expo Museum, Shanghai Nov. 2022
- **Founder**, "Neuro-Emotive", Invested by Prof. Zexiang LI (Former Chair of DJI) May 2023 - Present

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, Unity, Unreal Engine, C#, React, JavaScript, HTML, CSS, MATLAB, SPSS, R