

Chao Zhang

HCI Researcher | UX Designer | System Builder

Zhejiang University
Hangzhou, Zhejiang 310058, China

zhangchaohci@gmail.com
<https://zhangchaodesign.com/>

RESEARCH INTERESTS

Human-Computer Interaction (HCI), Human-AI Collaboration, Co-Creative AI, Digital Youth, Child-AI Interaction, AI Literacy, Storytelling, Learning Technologies, Learning at Scale, Ethics in User Experience, Dark Patterns, Usable Privacy & Security

EDUCATION

Zhejiang University, Hangzhou, China 09/2020 - 03/2023 (*expc.*)
M.E. in Design Engineering, GPA 3.93/4.00 (Top 1%), advised by Prof. Cheng Yao

Jiangnan University, Wuxi, China 09/2016 - 06/2020
B.E. in Electrical Engineering, minor in Digital Media Technology, GPA 3.83/4.00 (Top 3%)

PUBLICATIONS

Conference Papers and Posters

- c.6. **Chao Zhang**, Cheng Yao, Jiayi Wu, Weijia Lin, Lijuan Liu, Ge Yan, and Fangtian Ying. 2022. StoryDrawer: A Child-AI Collaborative Drawing System to Support Children's Creative Visual Storytelling. In *Proceedings of the 2022 CHI Conference on Human Factors in Computing Systems (CHI '22)*. [pdf]
- c.5. Ge Yan, **Chao Zhang**, Jiadi Wang, Zheng Xu, Jianhui Liu, Jintao Nie, Fangtian Ying, and Cheng Yao. 2022. CamFi: An AI-driven and Camera-based System for Assisting Users in Finding Lost Objects in Multi-Person Scenarios. In *Extended Abstracts of the 2021 CHI Conference on Human Factors in Computing Systems (CHI EA' 22)*. [pdf]
- c.4. Ge Yan, Cheng Yao, **Chao Zhang**, Jiadi Wang, Yuqi Hu, and Fangtian Ying. 2022. MusicCollage: A Music Composition Tool for Children Based on Synesthesia and a Genetic Algorithm. In *Proceedings of the 2022 International Conference on Human-Computer Interaction (HCI' 22)*. [pdf]
- c.3. **Chao Zhang**, Zili Zhou, Jiayi Wu, Yajing Hu, Yaping Shao, Jianhui Liu, Yuqi Hu, Fangtian Ying, and Cheng Yao. 2021. Bio Sketchbook: An AI-assisted Sketching Partner for Children's Biodiversity Observational Learning. In *Interaction Design and Children (IDC '21)*. [pdf]
- c.2. **Chao Zhang**, Cheng Yao, Jianhui Liu, Zili Zhou, Weilin Zhang, Lijuan Liu, Fangtian Ying, Yijun Zhao, and Guanyun Wang. 2021. StoryDrawer: A Co-Creative Agent Supporting Children's Storytelling through Collaborative Drawing. In *Extended Abstracts of the 2021 CHI Conference on Human Factors in Computing Systems (CHI EA' 21)*. [pdf]
- c.1. Muling Huang, Lingyan Zhang, Lijuan Liu, Pinqi Zhu, **Chao Zhang**, Pitchayapat Sonchaeng, Weiqiang Ying, Pinhao Wang, Yuqi Hu, Fangtian Ying, and Cheng Yao. 2021. ColorGuardian: Customize Skin Tattoos for Children with Vitiligo. In *Extended Abstracts of the 2021 CHI Conference on Human Factors in Computing Systems (CHI EA' 21)*. [pdf]

Journal Articles

- j.2. Yang Chen, Katherine Fennedy, Anna Fogel, Shengdong Zhao, **Chao Zhang**, Lijuan Liu, and Chingchiuan Yen. 2022. SSpoon: A Shape-changing Spoon That Optimizes Bite Size for Eating Rate Regulation. *ACM Journal on Interactive, Mobile, Wearable and Ubiquitous Technologies*. 6, 3, 105:1-105:32. [[pdf](#)]
- j.1. Lijuan Liu, Jiahao Guo, **Chao Zhang**, Zhangzhi Wang, Pinqi Zhu, Tuo Fang, Junwu Wang, Cheng Yao, and Fangtian Ying. 2021. ElectroPaper: Design and Fabrication of Paper-Based Electronic Interfaces for the Water Environment. *Electronics*. 10, 5, 604. [[pdf](#)]

Under Review Manuscripts

- m.5. Anonymous Authors (**as the First Author**). 2023. Designing an AI-Driven Observational Drawing Tool that Connects Children with Nature [Title modified to ensure blind review]. In *CHI '23*. *Under Review*.
- m.4. Anonymous Authors (**as the Co-First Author**). 2023. Exploring an End-User-Empowerment Intervention Approach for Dark Patterns in UX [Title modified to ensure blind review]. In *CHI '23*. *Under Review*.
- m.3. Anonymous Authors (**as the Second Author**). 2023. Understanding Creators' Engagement with Received Critiques in Online Communities [Title modified to ensure blind review]. In *CHI '23*. *Under Review*.
- m.2. Anonymous Authors (**as the Co-Author**). 2023. Teaching Children Mathematical Language using a Voice-Guided Embodied Game [Title modified to ensure blind review]. In *CHI '23*. *Under Review*.
- m.1. Anonymous Authors (**as the Co-Author**). 2023. Integrating Electronics, Mechanical Structures, and Magnets to Augment Laser-Cut Objects [Title modified to ensure blind review]. In *CHI '23*. *Under Review*.

PATENTS & SOFTWARE COPYRIGHTS

Patents

- p.3. A Drawing System to Support Children's Observation of Plants and Learning about Biodiversity. 2021. *China National Invention Patent*. Application No. 202110645869.1
- p.2. A Sketch Recognition and Generation Method based on Raspberry Pi and Recurrent Neural Network. 2020. *China National Invention Patent*. Application No. 202011322789.4
- p.1. A Sentiment Analysis and Visualization Method Combining Video and Pop-Ups. 2019. *China National Invention Patent*. Application No. 201910287517.6

Software Copyrights

- sc.1. Enterprise Network Opinion Analysis and Visualization Software. 2019. *China Software Copyright*. Registration No. 2019SR0428088

SELECTED DESIGN AWARDS & EXHIBITIONS

Design Awards

- a.7. **Iron Award**, A' Design Award, Italy. [[Link](#)] 2022
- a.6. **iF Talent Award**, iF Design Award, Germany. [[Link](#)] 2021
- a.5. **Honorable Mention**, Design Intelligence Award (DIA), China. [[Link](#)] 2021
- a.4. **Outstanding Winner** (Top 1), C4-AI Innovation Contest, China. 2021

- a.3. **Outstanding Winner** (Top 10), China Graduate AI Innovation Competition, China. 2021
- a.2. **Finalist** (Top 20) x 4, User Experience Design Award (UXDA), China. 2021
- a.1. **Nominations Award**, International Designer Club Award, Malaysia. 2021

Design Exhibitions

- e.3. **China Design Exhibition**, China. 2022
- e.2. **Global Grad Show** x 2, Dubai Design Week, The United Arab Emirates. [\[Link.1\]](#) [\[Link.2\]](#) 2021
- e.1. **“Ecological Bridge” Innovative Design Exhibition** x 3, China. 2021

SELECTED HONORS & SCHOLARSHIPS

Honors

- h.2. **Valedictorian**, School of IOT, Jiangnan University, China. 2020
- h.1. **Jiangnan Talent** (Only 10 awardees in Jiangnan University), Jiangnan University, China. 2019

Scholarships

- s.3. **National Scholarship** (Top 1% in Zhejiang University), Ministry of Education, China. 2022
- s.2. **National Scholarship** (Top 1% in Zhejiang University), Ministry of Education, China. 2021
- s.1. **National Scholarship** (Top 1% in Jiangnan University), Ministry of Education, China. 2018

RESEARCH EXPERIENCE

Explore End-User-Empowerment Approach against Dark Patterns in User Experience

SaNDwich Lab, University of Notre Dame (ND), USA

06/2022 - Present

Lead Researcher, team of 5, advised by Prof. Toby Jia-jun Li and Prof. Yaxing Yao

- Materialized an end-user empowerment intervention approach as a technology probe that supports users in changing dark patterns on website interfaces and designed the UIs of the probe with Figma;
- Implemented the probe in the form of a browser extension using Vue.js, Tailwind CSS, and Google Firebase;
- Conducted a 2-week probe deployment study with 15 participants to understand end users' real-life, in-situ reactions to our approach and their underlying needs and preferences;
- Analyzed the collected interview transcripts using thematic analysis and affinity diagramming;
- Submitted a co-first paper to CHI 2023 [\[m.4.\]](#).

Investigate Feedback Seekers' Engagement with Received Comments in Online Communities

HCI Lab, Hong Kong University of Science and Technology (HKUST), China

06/2022 - 09/2022

Research Intern, team of 4, advised by Prof. Xiaojuan Ma

- Used pattern.en and NLTK to characterize 287k discussion messages collected from Reddit with content-based features (i.e., actionability, justification, specificity, and valence);
- Developed a coding scheme through thematic analysis to categorize seekers' cognitive engagement;
- Implemented machine learning models (e.g., SVC, MLP, RF, etc.) to classify seekers' cognitive engagement and the creation stages of their artifacts (work-in-progress or complete);

- Submitted a second author paper to CHI 2023 [m.3].

Design an AI Drawing Partner to Support Children's Creativity in Visual Storytelling

INNO Lab, Zhejiang University (ZJU), China

10/2020 - 09/2021

Lead Researcher, team of 5, advised by Prof. Cheng Yao and Prof. Fangtian Ying

- Conducted a formative investigation with 12 pairs of parents and children to identify the challenges children face in visual storytelling through observations and semi-structured interviews;
- Designed and developed a child-AI collaborative drawing system that supports children's creativity in visual storytelling using Figma, Vue.js, Paper.js, and Tailwind CSS;
- Implemented a voice agent and a voice-driven sketching algorithm using Baidu Text-to-Speech API, Google Speech-to-Text API, Google Translation API, NLTK, and Sketch-RNN;
- Conducted a between-subject user study with 64 children to evaluate the system using mixed methods;
- Published and presented a Late-Breaking Work at CHI 2021 and a first author paper at CHI 2022 [c.2.] [c.6.].

WORK EXPERIENCE

Research Intern, HCI Lab, OPPO Research Institute, China

01/2022 - 04/2022

Mentored by Dr. Yilei Shi and Dr. Haimo Zhang

TEACHING EXPERIENCE

CST 5141081 Interaction Technology and Design Practice, Teaching Assistant, ZJU

Spring 2021

CST 5143104 Design Engineering, Teaching Assistant, ZJU

Autumn 2020

CST 2521018 Frontier of Engineering Technology, Teaching Assistant, ZJU

Autumn 2020

ORAL PRESENTATIONS

Invited Talk, Design Innovation Center, China Academy of Art

04/2022

Topic: Entanglement of Design and Technology

Invited Talk, Industrial Design Institution, Chinese Mechanical Engineering Society

04/2022

Topic: Entanglement of Design and Technology

Presenting Author, CHI 2022, Virtual Event

03/2022

Presenting Author, IDC 2021, Virtual Event

06/2021

Presenting Author, CHI 2021, Virtual Event

03/2021

ACADEMIC SERVICES

Paper Reviewing: Chinese CHI 2021, IDC 2022, CHI 2022, ChinaVis 2022, Chinese CHI 2022

SKILLS

Research: Interview, Survey, Participatory Design, Experimental Design, Thematic Analysis, LaTeX

Design: User Experience Design (Figma, Sketch), 3D Modelling and Rendering (Cinema 4D, Corona Render, Rhino 3D), Generative Design (P5, Processing, Grasshopper), Graphic Design (Adobe Products)

Computing: Front-End Development (Javascript, HTML, CSS, Vue.js), Statistics Analysis (Matplotlib, Numpy, Pandas, SPSS, JASP), and Machine Learning (Sklearn, PyTorch, Tensorflow)

Prototyping: 3D Printing, Laser Cutting, Fabrication and Hardware Assembly, Basic Circuit Design