Xiaoran **Wu**

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Research Interests

I want to design interpretable, interactive, visualizable, or language-intelligent human-AI systems. I want to break down black-box AI systems into flexible, interpretable, and controllable user interfaces and provide linguistic or visual human-AI communication channels for better human-AI synergy. By lowering the barriers to communicating and collaborating with AI, I aim to map the landscape of future work with the hope of making AI be like air – ubiquitous, critical, but not perceptible to humans.

Education

Tsinghua University

Beijing, China

M.S. in Computer Science

2017 - 2021

- Supervised by Prof. Jia Jia at the Department of Computer Science and Technology
- Topic: Human-computer interaction and machine learning
- Thesis: An Interactive Photography Guidance System via Deep Computational Aesthetics

Tianjin Foreign Studies University

Tianjin, China

B.S. in Advertisement

2012 - 2016

- Focus on interaction design and advertisement design
- Thesis: Five Interactive Design Elements for Enhanced User Experience of Mobile Apps

Research Publications

Under Review	Xiaoran Wu, Zihan Yan, Xiang 'Anthony' Chen. **DeclutterCam: A Photographic Assistant System with Clutter Detection and Removal.** *CHI 2023 Under Review*	2023
Under Review	Xiaoran Wu, Zihan Yan, Chongjie Zhang, Tongshuang Wu. **Decisions that Explain Themselves: A User-Centric Deep Reinforcement Learning Explanation System.** *IUI 2023 Under Review*	2023
Under Review	Chenghao Li, Tonghan Wang, Xiaoran Wu,Jun Yang, Qianchuan Zhao, Chongjie Zhang. **Never Revisit: Continuous Exploration in Multi-Agent Reinforcement Learning.** *ICLR 2023 Under Review*	2023
NeurIPS [Spotlight]	🏆 [Alphabetical order] Yipeng Kang, Tonghan Wang, Xiaoran Wu, Qianlan Yang, Chongjie Zhang. **Non-Linear Coordination Graphs.** *36th Conference on Neural Information Processing Systems [Spotlight Paper]*	2022
NeurIPS	Siyang Wu, Tonghan Wang, Xiaoran Wu, Jingfeng Zhang, Yujing Hu, Changjie Fan, Chongjie Zhang. **Model and Method: Training-Time Attack for Cooperative Multi-Agent Reinforcement Learning.** *Workshop on Deep Reinforcement Learning @NeurIPS 2022*	2022
NeurIPS	Rong-Jun Qin, Feng Chen, Tonghan Wang, Lei Yuan, Xiaoran Wu, Zongzhang Zhang, Chongjie Zhang, Yang Yu. **Multi-Agent Policy Transfer via Task Relationship Modeling.** *Workshop on Deep Reinforcement Learning @NeurIPS 2022*	2022
IUI	Xiaoran Wu. **Interpretable Aesthetic Analysis Model for Intelligent Photography Guidance Systems.** *27th Annual Conference on Intelligent User Interfaces*	2022
HCI International	Xiaoran Wu, Jia Jia. **Tumera: Tutor of Photography Beginners.** *22nd International Conference on Human-Computer Interaction*	2019

Research Experience

Collaborative Research — *University of California, LA*

Interactive Human-AI Tool for Photographic Guidance — *2022*

- Worked with Prof. Xiang 'Anthony' Chen. Developed an AI-powered interactive user interface where users can see and alter AI-detected cluttered objects highlighted in their viewfinder. Users can remove cluttered objects with a novel image inpainting tool based on GANs.
- Designed and conducted a user study demonstrating that the system significantly improved photo quality and enabled users to explore more photographic ideas compared to a generic baseline.

Collaborative Research — *Carnegie Mellon University*

Explainable AI with Natural Language Explanations — *2022*

- Worked with Prof. Tongshuang Wu. Conducted a user-centric study that identifies the goals of RL developers for using XRL and four techno-centric pitfalls that prevent previous XRL methods from achieving these goals.
- Developed an XRL algorithm based on the counterfactual inference that detects causes and results of decisions, builds influence graphs reflecting the reasoning process of RL agents, and hereby generates explanations in natural language.
- Built an interactive XRL system where users can actively explore the information of interests and the reasoning behind RL decisions.

Research Assistant — *Tsinghua University*

Human-computer interaction and interaction design — *2017 - 2021*

- Aimed to improve user experience with AI for more engaging human-computer interaction.
- Developed an intelligent photography assistant system, Tumera+. Tumera+ provides users with interpretable feedback during shooting reminding them of the most significant shortcomings of current photos.
- Developed interactive AI tools. In one of the projects, I interactively visualized the dynamics of deep reinforcement learning. Users can adjust the network architecture and learning hyper-parameters to see the influence on policy learning.

Entrepreneurship Experience

Yishi Tech

Co-Founder, CTO — *2020-2021*

- Develop interaction tools for video translation.
- Responsible for (1) developing deep learning models for image inpainting, speech recognition, and translation; (2) designing user interactions.
- Obtained an investment of 9M RMB.

Work Experience

UX Research Intern — *Microsoft Research Asia*

User Experience Design — *July 2020 - Oct. 2020*

- Worked on an AI audio processing platform. Designed interaction flow according to new requirements of emotional prediction from tones.
- Worked remotely with US Microsoft teams to design the new version of the Fabric UI system.

Research Intern — *Alibaba DAMO Academy*

Human-Computer Interaction and Visual Computation — *Aug. 2018 - May 2019*

- Did research on computational aesthetics, aiming at improving image visual quality by combining aesthetic rules and deep learning techniques.
- Applied the method to assist the poster design for e-commercial websites. Helped small and medium businesses to make appealing posters.
- Developed an App for intelligent design. Finished the interactive design of the product and improved it based on user feedback.

Awards

12nd Challenge Cup, **Gold medal** of Chinese University Students' business competition 2020
President's Innovation Challenge at Tsinghua University, Challenge Award 2020
National AIDS Prevention Advertising Contest, Third Prize 2015
Second Class Scholarship , at Tianjin Foreign Studies University 2014
Tianjin Challenge Cup, Bronze Award 2014
Baidu Logo Design Competition, Second Prize 2014

Teaching Experience

Teaching Assistant — *Tsinghua University*

Undergraduate Research Assistant — *2018 & 2019*

- Provided guidance and assistance on summer research projects, including literature review, research idea development, algorithm implementation, and report/paper writing.
- Supervised a project on generating stick figures in different styles based on deep contour detection and denoise.
- Supervised a project on image aesthetics scoring and suggesting.