

# Xiaofei Zhou

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## Research Interest

Human-Computer Interaction, Educational Technology, Artificial Intelligence Education for K-12, Machine Learning Empowered Scientific Discovery Learning, Educational Game Design, Lifelong Learning

## Education

### University of Rochester (UR)

Ph.D. student, Computer Science

Advisors: Dr. Zhen Bai

2019-2024 (Expected)

### Carnegie Mellon University (CMU)

Human-Computer Interaction Institute, School of Computer Science

MS in Educational Technology and Applied Learning Sciences

Advisors: Dr. Geoff Kaufman, Dr. Ken Keodinger

2018-2019

### Tsinghua University (THU)

B.Eng., Industrial Engineering with Specialization in Human Factors

2014-2018

## Publication

### Peer-Reviewed Conference and Journal Papers

- P2 Xingchen Zhou, Pei-Luen Patrick Rau, Chi-Lan Yang, and **Xiaofei Zhou**. "Cognitive Behavioral Therapy-Based Short-Term Abstinence Intervention for Problematic Social Media Use: Improved Well-Being and Underlying Mechanisms." *Psychiatric Quarterly* (2020): 1-19.
- P1 Xiaoyu Wan, **Xiaofei Zhou**, Zaiqiao Ye, Chase K. Mortensen, and Zhen Bai. "SmileyCluster: supporting accessible machine learning in K-12 scientific discovery." In *Proceedings of the Interaction Design and Children Conference*, pp. 23-35. 2020. (**IDC 2020**)

### Workshop, Symposia, Poster, and Extended Abstracts

- A2 Xiaoyu Wan, **Xiaofei Zhou**, Zhen Bai. Demystifying SmileyCluster: Accessible Machine Learning for K-12 Students (**GHC'2020** Poster Session)
- A1 **Xiaofei Zhou**, Jingwan Tang, Sufian Mushtaq, Xiaoyu Wan, Zhen Bai. Empowering Teachers to Integrate Machine Learning into K-12 Scientific Discovery. *International Workshop on Education In Artificial Intelligence K-12 (EduAI'2020 Workshop Paper)*

### Work in Progress or in Submission

- W4 **Xiaofei Zhou**, Jingwan Tang, Saad Ahmad, Michael Daley, Zhen Bai. "Now, I Want to Teach it for Real!": Introducing Machine Learning as a Scientific Discovery Tool for K-12 Teachers.

- W3     **Xiaofei Zhou**, Jessica Van Brummelen, Phoebe Lin. Designing AI Learning Experiences for K-12: Emerging Works, Future Opportunities and a Design Framework.
- W2     Jingwan Tang, **Xiaofei Zhou**, Xiaoyu Wan, Zhen Bai. ML4STEM Professional Development Program: Bridging the Gap between Machine Learning and K-12 STEM Teaching (Submitted to **iJAIED** International Journal of Artificial Intelligence in Education)
- W1     Kexin Yang, **Xiaofei Zhou**, Lulian Radu. XR-Ed Framework: Designing Instruction-driven and Learner-centered Extended Reality Systems for Education.

## Talks and Presentations

- T2     **Empowering Teachers to Integrate Machine Learning into K-12 Scientific Discovery**, International Workshop on Education in Artificial Intelligence K-12 (EDUAI-20), held in conjunction with the International Conference on Artificial Intelligence in Education (AIED-20) 07/2020
- T1     **SmileyCluster: supporting accessible machine learning in K-12 scientific discovery**, Interaction Design and Children Conference (IDC-20) 06/2020

## Honors and Awards

- NSF I-Corps**, GoTracker for Project-Based Learning@CMU 2019
- Merit Scholarship**, CMU (\$9000) 2018
- Special Award of 36th Challenge Cup**, THU 2018
- Science and Technology Innovation Award**, Department of Industrial Engineering, THU 2018
- Outstanding Volunteer for IxDC**, International Conference of User Experience Design 2016
- Tsinghua University Social Practice Gold Award**, THU 2015

## Professional Experiences

- ASSETS 2019 Graphic Design Chair** Oct 2018-2019
- Designed ASSETS 2019 conference logo, website, and social media logo.
- OWLII Product & UX Designer** Mar-July 2018
- Conducted user research, designed interaction, and prototyped with Sketch and Photoshop for Xiatiao Camera.
  - Designed and conducted user testing.
  - Iterated design for the 2nd version.

## Learning Design Projects

- Go-Tracker: Facilitate More Effective Project-Based Learning** Sept-Dec 2018
- Advisor: Marti Louw, Human-Computer Interaction Institute, CMU*
- Interviewed 8 experts and stakeholders.
  - Collaborated with a local high school in Pittsburgh and observed classrooms in context.
  - Created storyboards and conducted speed dating with stakeholders.
  - Designed wireframes, visual interfaces and interaction.

- Tested system with 5 high school stakeholders, analyzed data and iterated design.

### **Intelligent Tutoring System for Information Visualization**

Sept 2018-Sept 2019

*Advisor: Dr. Ken Keodinger, Human-Computer Interaction Institute, CMU*

- Conducted cognitive task analysis (CTA) with 11 experts and novices.
- Designed a new instructional model for information visualization based on data from CTA.
- Conducted learner testing with 30 participants and verified the effectiveness of the instructional model.

### **Academic Writing Assistance for Non-Native English Speaker**

Oct 2017-Sept 2018

*Advisor: Dr. Chun Yu, Department of Computer Science and Technology, THU*

Special Award of 36th Challenge Cup, Tsinghua University.

- Improved user experience by designing and developing [esoda.org](http://esoda.org), an online platform for academic English writing assistance with 3000+ average daily visits.
- Redesigned with learning principles for its further development and better learning outcome

### **Experiential Game for Children's Security Education**

Feb 2017

- Interviewed target users and created personas, user scenarios and storyboards.
- Tested prototype and interviewed 12 children and their parents.
- Designed and iterated the game mechanism and UI prototype.

## **Research Experiences**

### **AI4K12: Accessible Machine Learning for K-12 Scientific Discovery**

Sept 2019-Present

*Advisor: Dr. Zhen Bai, Computer Science, University of Rochester*

- Designed and created the online technology-enhanced learning environment SmileyDiscovery to support ML-empowered scientific discovery learning for K-12 students.
- Designed and conducted a 2-week co-design research with 18 K-12 teachers.
- Analyzed the data collected from the co-design workshop and submitted a research paper to CHI'2021.

### **Character Creation Assistance Tool**

Sept 2018-Present

*Advisor: Dr. Geoff Kaufman, Human-Computer Interaction Institute, Carnegie Mellon University*

- Created storyboards and conducted speed dating for interactive systems and experiment design.
- Analyzed interaction between 10 creators and 3 readers for prior research.
- Recruited participants for the formal experiment and data collection.

### **A Machine Learning-Based KES for Interaction Design**

Sept 2017-June 2018

*Advisor: Dr. Patrick Rau, Department of Industrial Engineering, THU*

- Trained neural net models for Kansei classification by transfer learning from BVLC with Matlab, accuracy=84.7%.
- Conducted neuron analysis to analyze the rules of kawaii perception for Japanese females and found that Chinese females and Japanese females perceived kawaii differently.
- Built an auxiliary system for cross-cultural product design then designed and conducted validation experiments.

### **Sensing Curiosity in Play and Responding**

Jun-Oct 2017

*Advisor: Dr. Justine Cassell, Human-Computer Interaction Institute, CMU*

- Created a 17-iteration UI in Java for the Wizard-of-Oz study then conducted the heuristic evaluation and summative usability testing.

- Compiled more than 7000 logs of data from previous gameplay and extracted the typical features of children's game behaviors and strategies in order to build the children's curiosity behavior model.

### **Exploratory Research: Overuse and Abstinence of Social Media**

Apr-Sept 2017

*Advisor: Dr. Patrick Rau, Department of Industrial Engineering, THU*

- Conducted literature research on social media overuse, abstinence, and impact.
- Designed and conducted a 3-week social media abstinence experiment with 33 participants.
- Analyzed qualitative and quantitative data from 490 logs of diary study, interviews, and subjective scales, then demonstrated the effectiveness of short-term abstinence to improve productivity, life satisfaction and autonomy, especially for social media addicts.

## **Academic Service**

### **Conference Reviewer**

2020-Present

*AIED'20, IDC'21*

## **Teaching and Volunteer**

### **University of Rochester**

2019-Present

*Teaching Assistant*

- CSC161 Introduction to Programming Spring 2020
- CSC211 Introduction to HCI Fall 2020

### **Tsinghua University and Local K-12 Schools in Beijing**

May 2016-Jul 2018

*Teaching Volunteer*

- Recorded 4 audiobooks for blind children in a special education school.
- Taught Creative Writing for the First Grade students in the Haidian District School of Migrant Laborers' Children.
- Participated in a pen pal program for children in isolated areas.

### **Department of Industrial Engineering, Tsinghua University**

Sept 2015-Dec 2016

*Chief editor*

## **Research Mentoring**

### **Daniel Munoz**

Feb 2021-Present

*Undergraduate student at the Department of Computer Science, University of Rochester*

### **Fiona Au**

Feb 2021-Present

*Undergraduate student at Digital Media Studies, Computer Science, University of Rochester*

### **Kaixin Li**

Aug 2020-Present

*Undergraduate student at Digital Media Studies, Brain & Cognitive Sciences, University of Rochester*

### **Abdul Moid Munawar**

Mar 2020-Present

*Undergraduate student at the Department of Computer Science, University of Rochester*

### **Saad Ahmad**

Jan 2020-Present

*Undergraduate student at the Department of Computer Science, University of Rochester*

### **Sufian Mushtaq**

Jan 2020-Sept 2020

*Undergraduate student at the Department of Computer Science, University of Rochester*