Xinying Hou

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Research Interests

Topics: AI in Education, Learning Technology, Computing Education, STEM Education, Human-Computer Interaction
Methodologies: Applied Machine Learning, Mixed Methods (qualitative + quantitative), Data Mining, Usability Testing

Education

2021 -Present **University of Michigan, Ann Arbor, MI, USA**
Ph.D. - Information, School of Information *(expected)*
Advisor: Barbara J Ericson

2019-2020 **Carnegie Mellon University, PA, USA**
MS - Human-Computer Interaction Institute, School of Computer Science
Advisor: Kenneth R Koedinger; Bruce M McLaren

2015-2019 **Nanjing University, Nanjing, China**
BA - Sociology, School of Social and Behavioral Sciences

Publications (🏆 Best Paper Award; 🥇 Best Paper Nomination)

Heavily-reviewed Journal Papers (J)

J03 **The Impact of Gender in Learning with Games: A Consistent Effect in a Math Learning Game**
Huy A. Nguyen, **Xinying Hou**, J Elizabeth Richey, Bruce M McLaren
IJGBL: International Journal of Game-Based Learning, 12(1), pp. 1–29.

J02 **How Instructional Context Can Impact Learning with Educational Technology: Lessons from a Study with a Digital Learning Game**
Bruce M McLaren, J Elizabeth Richey, Huy A Nguyen, and **Xinying Hou**
C&E: Computers & Education, 178, pp. 1–20.

J01 **Assessing the Effects of Open Models of Learning and Enjoyment in a Digital Learning Game**
Xinying Hou, Huy A Nguyen, J Elizabeth Richey, Erik Harpstead, Jessica Hammer, Bruce M McLaren
IJAIED: International Journal of Artificial Intelligence in Education, pp. 1–31.

Heavily-reviewed Conference Proceedings (C)

C.09  **CodeTailor: LLM-Powered Personalized Parsons Puzzles for Engaging Support While Learning Programming**
Xinying Hou, Zihan Wu, Xu Wang, Barbara J Ericson
L@S 2024: ACM Conference on Learning at Scale

C.08 **Insights from Social Shaping Theory: The Appropriation of Large Language Models in an Undergraduate Programming Course**
Aadarsh Padiyath, **Xinying Hou**, Amy Pang, Diego Viramontes Vargas, Xingjian Gu, Tamara Nelson-Fromm, Zihan Wu, Mark Guzdial, Barbara J Ericson
ICER 2024: ACM Conference on International Computing Education Research

C.07 **How Novices Use LLM-Based Code Generators to Solve CS1 Coding Tasks in a Self-Paced Learning Environment**
Majeed Kazemitabaar, **Xinying Hou**, Austin Henley, Barbara J Ericson, David Weintrop, Tovi Grossman
Koli Calling 2023: ACM Koli Calling International Conference on Computing Education Research

C.06 **Understanding the Effects of Using Parsons Problems to Scaffold Code Writing for Students with Varying CS Self-Efficacy Levels**
Xinying Hou, Barbara J Ericson, Xu Wang
Koli Calling 2023: ACM Koli Calling International Conference on Computing Education Research

C.05  **Evaluating ChatGPT's Decimal Skills and Feedback Generation in a Digital Learning Game**
Huy A Nguyen, Hayden Stec, **Xinying Hou**, Sarah Di, Bruce M McLaren
EC-TEL 2023: European Conference on Technology Enhanced Learning

C.04 **Examining the Benefits of Prompted Self-explanation for Problem-solving in a Decimal Learning Game**
Huy A. Nguyen, **Xinying Hou**, Hayden Stec, Sarah Di, John Stamper, Bruce M McLaren
AIED 2023: International Conference on Artificial Intelligence in Education

C.03 **Using Adaptive Parsons Problems to Scaffold Write-Code Problems**
Xinying Hou, Barbara J Ericson, Xu Wang
ICER 2022: ACM Conference on International Computing Education Research

C.02 **Moving beyond Test Scores: Analyzing the Effectiveness of a Digital Learning Game through Learning Analytics**
Huy A Nguyen, **Xinying Hou**, John Stamper, Bruce M McLaren
EDM 2020: International Conference on Educational Data Mining

C.01 **Exploring How Gender and Enjoyment Impact Learning in a Digital Learning Game**
Xinying Hou, Huy A Nguyen, J Elizabeth Richey, Bruce M McLaren
AIED 2020: International Conference on Artificial Intelligence in Education

Lightly-reviewed Poster / Late-Breaking Work / Workshop / Special Track (L)

L.08 **A Preliminary Analysis of Students' Help Requests with an LLM-powered Chatbot when Completing CS1 Assignments**
Ruiwei Xiao, **Xinying Hou**, Harsh Kumar, Steven Moore, John Stamper, Michael Liut
CSEDM 2024: Educational Data Mining in Computer Science Education Workshop

L.07 **Exploring How Multiple Levels of GPT-Generated Programming Hints Support or Disappoint Novices**
Ruiwei Xiao, **Xinying Hou**, John Stamper
CHI 2024: ACM Conference on Human Factors in Computing Systems

L.06 **Enhancing LLM-Based Feedback: Insights from Intelligent Tutoring Systems and the Learning Sciences**
John Stamper, Ruiwei Xiao, **Xinying Hou**
AIED 2024: International Conference on Artificial Intelligence in Education

L.05 **Integrating Personalized Parsons Problems with Multi-Level Textual Explanations to Scaffold Code Writing**
Xinying Hou, Barbara J Ericson, Xu Wang
SIGCSE TS 2024: ACM Technical Symposium on Computer Science Education

L.04 **Parsons Problems to Scaffold Code Writing: Impact on Performance and Problem-Solving Efficiency**
Xinying Hou, Barbara J Ericson, Xu Wang
ITiCSE 2023: ACM Conference on Innovation and Technology in Computer Science Education

L.03 **Design a Dashboard for Secondary School Learners to Support Mastery Learning in a Gamified Learning Environment**
Xinying Hou, Tomohiro Nagashima, Vincent Aleven
EC-TEL 2022: European Conference on Technology Enhanced Learning

L.02 **Drinking Our Own Champagne: Analyzing the Impact of Learning-by-doing Resources in an E-learning Course**
Xinying Hou, Paulo F Carvalho, Kenneth R Koedinger
LAK 2021: ACM International Learning Analytics and Knowledge Conference

L.01 **Increasing Children's Knowledge of Pattern Detection and Skip Counting Using a Tablet-based Math Activity**
Cheyeon Ha, **Xinying Hou**, Huy A Nguyen, Judith Odili Uchidiuno
ICLS 2020: International Conference of the Learning Sciences

Research Experiences

09/2021 - Present **Graduate Student Researcher**
University of Michigan - Ann Arbor

06/2024 - 07/2024 **PhD Researcher Intern**
Educational Testing Service (ETS) - ETS Research Institute
Mentors: Jessica Andrews Todd, Carolyn Forsyth, Yang Jiang

10/2019 - 7/2021 **Graduate Research Assistant**
Carnegie Mellon University

Invited Talks & Service

07/2024 **L@S 2024:** CodeTailor: LLM-Powered Personalized Parsons Puzzles for Engaging Support While Learning Programming

01/2024 **Raspberry Pi Foundation:** Using generative AI to create personalized Parsons Problems and explanations

11/2023 **Koli Calling 2023:** Understanding the Effects of Using Parsons Problems to Scaffold Code Writing for Students with Varying CS Self-Efficacy Levels

04/2023 **2023 CRA-WP Grad Cohort for Women:** Helping Novice Programmers to Write Code in an Introductory Programming Class: The Effects of Using Adaptive Parsons problems as Scaffolding

08/2022 **ICER 2022:** Using Adaptive Parsons Problems to Scaffold Write-Code Problems.

07/2020 **AIED 2020**: Exploring How Gender and Enjoyment Impact Learning in a Digital Learning Game.

07/2020 **EDM 2020**: Moving beyond Test Scores: Analyzing the Effectiveness of a Digital Learning Game through Learning Analytics.

07/2020 **Session Chair**
13th International Conference on Educational Data Mining

Teaching Experience

Winter 2024 **SI 206 - Data-Oriented Programming**
Graduate Student Instructor

Honors and Awards

2024 Rackham Conference Travel Grant
Best Paper Nomination L@S'24

2023 UMSI Conference Travel Grant
Best Paper Award ECTEL'23

2022 Rackham Conference Travel Grant

2019 Carnegie Mellon University Merit Scholarship Recipient

2017 National Scholarship Recipient (0.2%)

Skills and Tools

Data Science Python, R, STATA, SPSS, Data Mining, Applied Machine Learning

Development Python, HTML5/CSS3, JavaScript, Bootstrap, Vue.js, Django, AJAX, C#, Unity (3D)

Qualitative methods Cognitive Task Analysis, Backward Design, Contextual Inquiry,
Affinity Diagramming, Usability Testing, Survey Design, User Interview

Quantitative methods Statistics testing, A/B Testing, Experiment Design

Design Figma, Vioceflow
Sketching, Personas, Storyboarding, Prototyping