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

09/2021- Present **University of Michigan, Ann Arbor, MI, USA**
Ph.D. - Information, School of Information (expected)
Advisor: Barbara J Ericson

09/2019 - 12/2020 **Carnegie Mellon University, PA, USA**
MS - Human-Computer Interaction Institute, School of Computer Science
Advisor: Kenneth R Koedinger; Bruce M McLaren

09/2015 - 07/2019 **Nanjing University, Nanjing, China**
BA - Sociology, School of Social and Behavioral Sciences
Advisor: Yuxiao Wu
Outstanding Graduate, Outstanding Undergraduate Thesis

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 @ 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 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 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 Conference Proceedings (L)

Poster / Late-Breaking Work / Workshop / Special Track

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 2024: ACM Technical Symposium on Computer Science Education V. 2

L.04 **Parsons Problems to Scaffold Code Writing: Impact on Performance and Problem-Solving Efficiency**
Xinying Hou, Barbara J Ericson, Xu Wang
ITiCSE 2023: Conference on Innovation and Technology in Computer Science Education V. 2

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: International Conference on Learning Analytics & Knowledge

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 **Doctoral 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
Nanjing University Outstanding Graduate
Nanjing University Outstanding Undergraduate Thesis Award

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