Xingjian (Lance) Gu

xjgu@umich.edu · scholar · xingjian-gu

Research interests

AI Literacy, Computer Science Education, Education Equity and Justice

Education

2022 – Present	**University of Michigan School of Information** – Ann Arbor, MI PhD in Information Science
2020 – 2021	**Harvard Graduate School of Education** – Cambridge, MA Ed. M. in Technology, Innovation, and Education
2016 – 2020	**Brown University** – Providence, RI B. A. in Computer Science, B. A. in Education Studies *Magna Cum Laude.*

Honors and scholarships

2024, 2023	School of Information Doctoral Travel Award (University of Michigan)
2020	Phi Beta Kappa (Brown University)

Publications

2025	**The Intersectional Experience of Black Girl High School Students in Advanced Placement Computer Science** **Gu, X.**, Ericson, B. *Proceedings of the 56th ACM Technical Symposium on Computer Science Education V. 1 (pp. 304-310).*

2025   **Can a Free Tool in an Ebook Platform, Searchable Question Bank, and Summer Workshop Help Instructors Adopt Peer Instruction?**
Ericson, B., **Gu, X.**, Wu, Z., Patel, S., Padiyath, A.
Proceedings of the 56th ACM Technical Symposium on Computer Science Education V. 1 (pp. 304-310).

2024   **Insights from Social Shaping Theory: The Appropriation of Large Language Models in an Undergraduate Programming Course.**
Padiyath, A., Hou, X., Pang, A., Viramontes Vargas, D., **Gu, X.**, Nelson-Fromm, T., Wu, Z., Guzdial, M., Ericson, B.
Proceedings of the 2024 ACM Conference on International Computing Education Research-Volume 1 (pp. 114-130).

2023   **Peer+: A Tool to Support Peer Instruction in Interactive Ebooks**
Ericson, B. J., **Gu, X.**, Patel, S., Padiyath, A.
In Proceedings of the 2023 ACM Conference on International Computing Education Research-Volume 2 (pp. 48-49).

2023   **Exploring Physicality in Out-of-School Time Learning.**
Lee, L., Jones, D., Cederquist, S., **Gu, X.**, Fishman, B., Herrenkohl, L.
In Proceedings of the 17th International Conference of the Learning Sciences-ICLS 2023 (pp. 1839-1840).

2023   **Documenting Out-of-School Time Learning: Opportunities, Tensions, and a Prototype.**
Fishman, B., Rupert Herrenkohl, L., Pinkard, N., Headrick Taylor, K., Cardella, L., Cederquist, S., **Gu, X.**, Jones, D., Lee, J., Lee, L., Majors, Y., Samuelson, A.
In Proceedings of the 17th International Conference of the Learning Sciences-ICLS 2023 (pp. 1793-1794).

2023   **Out-of-School Time: Divergent Learning, Divergent Opportunities.**
Fishman, B., Rupert Herrenkohl, L., Pinkard, N., Headrick Taylor, K., Cederquist, S., **Gu, X.**, Jones, D., Lee, J., Lee, L., Reid, C., Penuel, W., Peppler, K.
In Proceedings of the 17th International Conference of the Learning Sciences-ICLS 2023 (pp. 1585-1592)).

2023   **Supporting Instructors Adoption of Peer Instruction**
Gu, X., Ericson, B. J., Wu, Z.
In Proceedings of the 55th ACM Technical Symposium on Computer Science Education V. 2 (pp. 1662-1663).

2020	**Using Design Alternatives to Learn About Data Organizations.** **Gu, X.**, Heller, M. A., Li, S., Ren, Y., Fisler, K., Krishnamurthi, S. *In Proceedings of the 2020 ACM Conference on International Computing Education Research (pp. 248-258).*

Talks

March 2025	The Intersectional Experience of Black Girl High School Students in Advanced Placement Computer Science *2025 ACM Technical Symposium on Computer Science Education '25*
March 2025	Can a Free Tool in an Ebook Platform, Searchable Question Bank, and Summer Workshop Help Instructors Adopt Peer Instruction? *2025 ACM Technical Symposium on Computer Science Education '25*
March 2024	Supporting Instructors Adoption of Peer Instruction *2024 ACM Technical Symposium on Computer Science Education '24*
August 2023	Peer+: A Tool to Support Peer Instruction in Interactive Ebooks *2023 ACM Conference on International Computing Education Research '23*

Research experience

2023 – Present	**Learning Media Lab, University of Michigan** Advisor: Dr. Ying Xu (PI) *Teacher-AI Collaboration:* Investigated how to best support STEM teachers to prepare lessons with LLM-based tools. Interviewed teachers about lesson planning process and user tested tool prototypes.

2022 – Present	**University of Michigan School of Information**
	Advisors: Dr. Barbara Ericson, Dr. Barry Fishman
	Tool-Supported Peer Instruction: Evaluated the learning outcomes of tool-supported Peer Instruction compared to traditional approaches. Researched whether providing open-source free tool can help instructors adopt Peer Instruction.
	Computer Science Education Equity: Researched Advanced Placement Computer Science learning experiences of high school students who are traditionally underrepresented in Computer Science.
	Out-of-School-Time STEAM Learning Records: Researched the needs of different stakeholders, including students, parents, educators, and college admissions officers, in recording high school students' out-of-school STEAM learning.
2021	**Teaching and Learning Lab Practicum, Harvard University**
	Advisor: Dr. Karen Brennan (PI)
	Designed workflow that facilitates the integration of learning tools in HGSE courses. Designed decision matrices to weigh between different factors when choosing learning tools. Both are now adopted by the lab for use.
	Using the designed decision matrices, tested and evaluated learning tools based on their accessibility, security, and impact on teaching and learning. Negotiated with vendors about review copies.
2019 – 2020	**Programming Languages Team, Brown University**
	Advisor: Dr. Shriram Krishnamurthi (PI)
	Studied how programming language design can facilitate students' understanding of data organizations.
	Collected and cleaned lab activity data from 57 students using Pandas. Designed and applied coding schemes to quantify students' textual responses and reflections.
	Analyzed the responses to assess students' learning and evaluate the learning design. Revised manuscripts and provided feedback on potential improvements to the course. Work published in SIGCSE International Computing Education Research Conference.
2018	**Brown University**
	Advisors: Dr. Jin Li (PI), Dr. Yoko Yamamoto
	Studied early childhood learning beliefs of immigrant families and their long-term effects on developmental outcomes.
	Cleaned, digitized and validated physical copies of interview surveys and audio recordings using EpiData. Qualitatively analyzed interviews of parents and kindergarten children.

2018	**East China Normal University**
	Advisor: Dr. Jing Zhou (PI)
	Studied how early childhood language acquisition, measured by the fluency and complexity of self-expression, is influenced by their families' socioeconomic status.
	Transcribed and processed linguistic corpus data from 11 kindergarten children to analyze their rate of language acquisition.

Industry experience

2021 – 2022	**Thinktown America Inc.**
	Educational Consultant: Building and teaching IB computer science courses. Tutoring 8th grade to 12th grade students with computer science theories and programming basics in Java, Python, etc.
	Advising and guiding high school students through college application. Facilitating students to reflect upon their life experiences and passions in preparation for presenting personal statements.
	Evaluating and integrating digital tools to the branch office. Collecting user experience feedback on in-house learning management systems and communicate them to the technology development team.
2021	**WeLight Education**
	Teacher: Designing math courses by synthesizing multiple elementary school curricula. Teaching math to students ranging from 1st grade to 7th grade.
	Adapting the Creative Computing Curriculum developed by Dr. Karen Brennan, teaching Scratch programming to elementary school learners with a constructionist approach.

Community services

2024 – Present	**Peer review**
	SIGCSE TS, CHI
2023 – Present	**Volunteer**
	SIGCSE TS, LAK, ISLS

Technical skills

Research

Quantitative analysis, coding scheme design, study design, data collection, cleaning, and processing, qualitative methods, scientific writing, strong communication skills

Learning design

Backward design, SAMR model, TPACK model, ADDIE model, logic model, principled negotiation, human-centered design, prototyping, learning analytics, multimodal data collection, teaching s

Programming

Python (NumPy, Scikit-Learn, Pandas), C, C++, Java, HTML, JavaScript, CSS, Racket, SQLite

Tools

Unity, Canvas, LTI, Tableau, RapidMiner, xAPI, Figma, Stata, LaTeX, Adobe XD, Scratch, Microsoft Office

Language Proficiency

English (Bilingual), Mandarin Chinese (Bilingual), German (B1)

Other interests

Board Game, Saxophone, Scuba Diving