# John Chen

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## Summary

As a human-computer interaction and learning researcher, I study how to leverage advanced technologies, such as Generative AI (GAI) or Augmented Reality, for playful informal learning at scale. I have led the research, design, and development of Physics Lab AR and Turtle Universe, App Store-featured playful learning software, reaching 7 million+ online, out-of-school learners worldwide. To understand the resulting large-scale human datasets, I have developed computational approaches with GAI to generate, measure, and evaluate inductive qualitative coding results. Over the past decade, I have learned from and worked with hundreds of learners across ages and backgrounds. I participated in seven and co-led five U.S. grant proposals to fund my research agenda.

## Professional Experience

**Assistant Professor (Incoming), University of Arizona** Aug 2025 (expected)

– Game Design and Development, College of Information Science

**Founder and CEO, CIVITAS LLC** Aug 2014 - Aug 2019

– Founded CIVITAS LLC, an award-winning solution provider in educational technology, Augmented Reality (AR), and Virtual Reality (VR). Designed and implemented Dental Medicine, Criminology, and Physics projects for several Asian universities.

## Education

2025(expected) **Northwestern University** Evanston, IL
PhD in Computer Science and Learning Sciences
Dissertation title: Designing Constructionist Systems for Scaling, Supporting, and Analyzing Open-Ended Human Learning
Dissertation Advisor: Uri J. Wilensky
Expected Graduation: July 2025

2024 **Northwestern University**
Master of Science in Computer Science Evanston, IL

2016 **Beijing Normal University**
Bachelor of Arts in Chinese Language and Literature Beijing, CN

## Peer-Reviewed Publications

**Chen**, **J.**, Lotsos, A., Wang, G., Zhao, L., Sherin, B., Wilensky, U. J., & Horn, M. S. (2025). Processes Matter: How ML/GAI Approaches Could Support Open Qualitative Coding of Online Social Datasets. *Proceedings of ISLS Annual Meeting 2025.*

**Chen**, **J.**, Zhao, L., Horn, M. S., & Wilensky, U. J. (2025). Engaging Millions of Worldwide Youth in Informal STEM Learning: Uncovering Open-Ended Design Principles that Drive Physics Lab's Success. *Proceedings of the ACM Interaction Design and Children (IDC) 2025.*

**Chen**, **J.**, Lu, X., Du, Y., Rejtig, M., Bagley, R., Horn, M. S., & Wilensky, U. J. (2024). Learning Programming of Agent-based Modeling with LLM Companions: Experiences of Novices and Experts Using ChatGPT & NetLogo Chat. *Proceedings of the 2024 CHI Conference on Human Factors in Computing Systems.*

**Chen**, **J.**, Zhao, L., Li, Y., Xie, Z., Wilensky, U. J., & Horn, M. S. (2024). "Oh My God! It's Recreating Our Room!" Understanding Children's Experiences with A Room-Scale Augmented Reality Authoring Toolkit. *Proceedings of the 2024 CHI Conference on Human Factors in Computing Systems*.

**Chen**, **J.**, Horn, M. S., & Wilensky, U. J. (2023a). Interactive Constructionist Scaffolds for Agent-Based Modeling and Programming in NetLogo. *FabLearn / Constructionism 2023: Full and Short Research Papers*.

**Chen**, **J.**, Horn, M. S., & Wilensky, U. J. (2023b). Tortuga: Building Interactive Scaffolds for Agent-based Modeling and Programming in NetLogo. *Proceedings of ISLS Annual Meeting 2023*.

**Chen**, **J.**, Zhao, L., Horn, M. S., & Wilensky, U. J. (2023). The Pocketworld Playground: Engaging online, out-of-school learners with Agent-based Programming. *Proceedings of the ACM Interaction Design and Children (IDC) 2023*.

**Chen**, **J.**, Zhao, L., Xiao, F., Horn, M. S., & Wilensky, U. J. (2022). Self-Governed Collaborative Inquiry in Action: A Case Study of a Large-Scale Online Youth Community. *Proceedings of ISLS Annual Meeting 2022*.

## Manuscripts in Process

Cao, L., Scardamalia, M., **Chen**, **J.**, & Chan, C. (In Preparation). Advancing Community Knowledge towards the Cutting-edge: Interactive Idea Map for Knowledge Building. *Proceedings of ISLS Annual Meeting 2026*.

**Chen**, **J.**, Lotsos, A., Wang, G., Zhao, L., Hullman, J., Sherin, B., Wilensky, U. J., & Horn, M. S. (In Preparation). A Computational Method for Measuring "Open Codes" in Qualitative Analysis. *ACL Rolling Review*.

Zhao, L., **Chen**, **J.**, Li, Y., Xie, Z., & Horn, M. S. (In Preparation). "Can we just sit and relax?" Coshaping the Process of Participatory Design with Children. *Proceedings of the ACM Interaction Design and Children (IDC) 2025*.

Wilkinson, J. T., Kelter, J., **Chen**, **J.**, & Wilensky, U. (2024). A Network Simulation of OTC Markets with Multiple Agents. *arXiv preprint arXiv:2405.02480*.

## Papers and Posters Presented

**Chen**, **J.**, Lotsos, A., Zhao, L., Wang, G., Wilensky, U. J., Sherin, B., & Horn, M. S. (2025). Prompts Matter: Comparing ML/GAI Approaches for Generating Inductive Qualitative Coding Results. *AERA Annual Meeting 2025*.

Thinking Like a Computer Without Writing Code: What's Next for Agent-based Modeling? (2025). *ISLS Annual Meeting 2025*.

Zhao, L., Li, Y., **Chen**, **J.**, & Horn, M. S. (2025). Balancing Facilitation and Exploration: Analyzing Visitor Interactions with a Medical Patient Simulator in a Science Museum. *AERA Annual Meeting 2025*.

**Chen**, **J.**, Horn, M. S., & Wilensky, U. J. (2023). NetLogo AR: Bringing Room-Scale Real-World Environments Into Computational Modeling for Children. *Proceedings of the ACM Interaction Design and Children (IDC) 2023*.

**Chen**, **J.**, & Wilensky, U. J. (2023a). ChatLogo: A Large Language Model-Driven Hybrid Natural-Programming Language Interface for Agent-Based Modeling and Programming. *Proceedings of FabLearn/Constructionism 2023*.

**Chen**, **J.**, & Wilensky, U. J. (2023b). Measuring Young Learners' Open-ended Agent-based Programming Practices with Learning Analytics. *AERA Annual Meeting 2023*.

Li, Y., & **Chen**, **J.** (2023). Creative Expression through Color and Sound: A NetLogo Model for the Sonification of Color and the Visualization of Sound. *Proceedings of FabLearn/Constructionism 2023*.

Mongkhonvanit, K., Hummer, T. M., & **Chen**, **J.** (2023). Velo: Exploring Animal Behavior Modeling through Hybrid Robotics-Simulation Learning Experience. *Proceedings of the ACM Interaction Design and Children (IDC) 2023*.

**Chen**, **J.**, & Wilensky, U. J. (2021). NetLogo Mobile: Introduction to A New Incarnation of NetLogo with embedded tools for Designing Interactive Scaffolds. *Presented at ISLS Annual Meeting 2021*.

**Chen**, **J.**, & Wilensky, U. (2020). NetLogo Mobile: An Agent-Based Modeling Platform and Community for Learners, Teachers, and Researchers. *Proceedings of International Conference of the Learning Sciences 2020*.

## Major Projects

**Human-AI Collaboration in Inductive Qualitative Analysis (2024-)**

*Project Lead, Proposal Co-writer*

- Led the project's technical and research team with 4 undergraduate and graduate students.
- Proposed and developed novel computational approaches to generate and evaluate inductive coding results (accepted by AERA 2025, in review for CSCL 2025, in preparation for ACL 2025).
- Co-wrote an NSF CISE:Core (IIS HCC) grant proposal ($600,000) to co-design interfaces for human-AI collaborative qualitative analysis with Prof. Uri Wilensky & Michael Horn.

**Cultivating Modeling Literacy and Practice through a NetLogo OSE (2023-)** NSF

*Core Team Member, Proposal Co-writer*

- Co-wrote the successful grant proposal (NSF's Pathways to Enable Open-Source Ecosystems, $1,449,990) with Prof. Uri Wilensky and Michael Horn.
- Participated in a 4-week NSF training and interviewed global stakeholders in academia and industry.
- Designed and cultivated NetLogo's official online forum to encourage open-source contributions.

**Enhancing Infrastructure for Model-Based Inquiry in Learning (2022-2024)** NU-SESP

*Project Lead, Proposal Co-writer*

- Co-wrote the successful grant proposal (Northwestern University School of Education and Social Policy (SESP)'s Venture Research Fund, $49,600) with Prof. Uri Wilensky.
- Recruited and supervised the project's team with 6 undergraduate and graduate students to design and develop authoring features for NetLogo Web.

**NetLogo Chat (ChatLogo, 2023-)**

*Project Lead, Proposal Co-writer*

- Led the project's technical and research team with 5 undergraduate and graduate students to design the first Generative AI-based interface for (learning of) scientific modeling.
- Conducted a global interview study with 30 academics, professionals, and graduate students to understand their perceptions, behaviors, and needs (CHI 2024).
- Co-wrote an NSF RITEL grant proposal ($900,000) to co-design a new iteration of NetLogo Chat for a high-school learning audience with Prof. Uri Wilensky.

**NetLogo AR (2023-)** Link to Project

*Project Lead*

- Led a technical and research team with 4 undergraduate and graduate students to design the first room-scale AR authoring system integrated with computational thinking ideas.
- Facilitated an 8-week after-school co-design activity with a diverse cohort of elementary school students.
- Conducted video analysis to reveal children's spatial thinking engagement and provided design suggestions (CHI 2024).

**Turtle Universe (NetLogo Mobile, 2019-)** Link to Product

*Founder, Project Lead*

- The mobile-first incarnation of NetLogo to promote complex systems and computational thinking.
- At Northwestern, led a technical and research team with 16 undergraduate and graduate students for its design, development, and research.
- Engaged 104,539 worldwide users (mostly online, informal learners, as of Aug 2024) in constructing and sharing playful programming projects and scientific modeling projects.
- Conducted design-based mixed methods research to understand the design of interactive scaffolds for informal, online learners (AERA 2022, IDC 2023, Constructionism 2023, ISLS 2023).

**Physics Lab AR (2017-)** Link to Product

*Founder, Project Lead*

- A playful mobile learning app for creating and sharing physics simulations.
- Repeatedly featured by Apple's App Store in Canada, Cambodia, China Mainland, Indonesia, Macao, Malaysia, Philippines, Singapore, Thailand, and Vietnam.
- Engaged 6,995,217 worldwide users (mostly online, informal learners, as of Aug 2024) with constructing or sharing physics simulations.
- At Northwestern, led a technical and research team for its design, development, and research.
- Conducted mixed methods research to understand its success and large-scale online community, examining millions of log data, shared artifacts, and conversations (ISLS 2022; IDC 2025, in preparation).

**CIVITAS (2013-2017)**

*Founder, Project Lead*

- Led the massive online social simulation's game design and development.
- Engaged around 60,000 youth and young adults in China.

## Professional Services

**Grant Proposal Panelist**
National Science Foundation (2023, 2024, 2025)

**Conference Organizer**

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| ACM Interaction Design and Children (2023) | Virtual Conference Co-chair |

**Reviewer / Program Committee Member**

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| ACM Interaction Design and Children (2022-2024) | Reviewer |
| ISLS Annual Meeting (2021-2025) | Program Committee Member |
| ACM Computer-Supported Collaborative Work (2022-2025) | Reviewer (Special Recognition) |
| ACM Conference on Human Factor in Computing Systems (2022-2025) | Reviewer (Special Recognition) |
| AERA Annual Meeting (2021-2025) | Reviewer, Session Chair |
| Constructionism Conference (2023) | Program Committee Member |
| IEEE Transactions on Learning Technologies (2024) | Reviewer |

## Awards and Activities

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| University Fellowship, Northwestern University | 2019-2020 |
| Dissertation Fellowship, Northwestern University | 2024-2025 |
| Participant, NSF CAMEL - Shaping the Future of Mathematics Learning and Education: A Scoping Workshop | 2024 |

## Invited Talks and Presentations

**Chen**, **J.** (February, 2025). Designing Open-Ended Human-AI Systems For Open-Ended Human Learning. *Invited Talk at the Department of Computer Science at the University of Texas, Arlington.*

**Chen**, **J.** (March, 2025-a). Designing Open-Ended Human-AI Systems For Open-Ended Human Learning. *Invited Talk at the Department of Informatics at Indiana University, Bloomington.*

**Chen**, **J.** (March, 2025-b). Designing Open-Ended Human-AI Systems For Open-Ended Human Learning. *Invited Talk at the Department of Human-Centered Computing at Indiana University, Indianapolis.*

**Chen**, **J.** (March, 2025-c). Designing Open-Ended Playful Environments For Open-Ended Human Learning. *Invited Talk at the College of Information Science at the University of Arizona.*

**Chen**, **J.** (November, 2024). Making Agent-based Computational Models with Generative AI: Opportunities and Challenges. *Invited Talk at Making Sense of Models: Decoding and Beyond, Santa Fe, New Mexico.*

**Chen**, **J.**, Zhao, L., & Lostos, A. (June, 2024). When LLMs Meet the Grounded Theory: Generate and Evaluate Open-Ended Qualitative Codes through Human-AI Collaboration. *Presented at Human-Computer Interaction Consortium 2024.*

## Teaching Experience

**Teaching Assistant @ Northwestern University** Spring 2022

**Teaching Assistant @ Northwestern University** Spring 2024

CS372/472/LS451: Designing & Constructing Models With Multi-Agent Languages

– Co-developed syllabus, curriculum, assignments, and course sequences with Prof. Uri Wilensky.
– Taught dozens of technical, feedback, and QA sections throughout the class.
– Served as a substitute instructor, holding lectures and project workshops with students.
– Graded and supervised students' weekly and final projects.
– Co-authored a paper with an undergraduate student.

**Teaching Assistant @ Northwestern University** Winter 2023

LS426/CS496: The Design of Technological Tools for Thinking and Learning

– Co-developed syllabus, curriculum, assignments, and course sequences with Prof. Uri Wilensky.
– Taught technical, feedback, and QA sections throughout the class.
– Graded and supervised students' weekly and final projects
– Co-authored two presentations (IDC 2023) with three graduate students.

**Guest Lecturer @ Northwestern University** Winter 2025

Segal Design Institute, DSGN 395: Designing with AI

– Designed learning activities with Prof. Elizabeth Gerber (Northwestern University).
– Facilitated the learning-by-doing experience around human-AI collaboration in qualitative analysis.

**Guest Lecturer @ Art of Inquiry** Winter 2023

Introduction to Agent-based Modeling for Ukrainian Children

– Worked with organizers and young volunteers to co-design the online sessions.
– Designed and adapted the learning experience for children in the war zone or as refugees.

## Supervised Students and Interns

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| Charles Cheng | Undergrad @ Northwestern University - Curricular Designer (2020-2021) |
| Siqi Chen | Master Student @ Northwestern University - Designer (2020) |
| Sixuan Li | Master Student @ University of Washington - Designer (2020) |
| Shimei Qiu | Master Student @ Northwestern University - Designer (2020-2021) |
| Zixuan Gu | Master Student @ Northwestern University - Designer (2020) |
| Xuan Zhang | Master Student @ Northwestern University - Developer (2020) |
| Chelsea Guzman | Undergrad @ Northwestern University - Translator (2021-2022) |
| Cassandra Lagunas | Undergrad @ Northwestern University - Translator (2021) |
| Feiwen Xiao | Master Student @ University of Pennsylvania - Research Assistant (2021-2022) |
| Hanwen Zhang | Undergrad @ Middlebury College - Research Assistant (2021-2022) |
| David Du | Master Student @ Northwestern University - Designer (2023-2024) |
| Sherry Xu | Master Student @ Northwestern University - Designer (2024) |
| Seungyeon Kim | Master Student @ Northwestern University - Designer (2024) |
| Ruth Bagley | Master Student @ Northwestern University - Developer & RA (2023-2024) |
| Haylie Wu | Undergrad @ Northwestern University - Developer (2023) |
| Acero Liang Li | Undergrad @ SUNY Buffalo - Developer (2023-2024) |
| Ethan Ji | Undergrad @ University of Wisconsin Madison - Developer (2023-2024) |
| Eugenia Cao | Undergrad @ Northwestern University - Research Assistant (2023) |
| Andre Chen | Undergrad @ Northwestern University - Developer (2023-2024) |
| Gerardo Perez | Undergrad @ Northwestern University - Developer (2024-) |

## Software and Models

**Chen**, **J.**, & Wilensky, U. (2023a). *NetLogo AR: Combining NetLogo with Room-scale Augmented Reality*. https://github.com/NetLogo-Mobile/NetLogo-AR/

**Chen**, **J.**, & Wilensky, U. (2023b). *NetLogo Chat: An LLM-based Modeling Assistant of NetLogo*. https://github.com/NetLogo-Mobile/TU-Editor/

**Chen**, **J.**, & Wilensky, U. (2021a). *NetLogo Model: Limited Order Book*. https://ccl.northwestern.edu/netlogo/models/LimitedOrderBook

**Chen**, **J.**, & Wilensky, U. (2021b). *NetLogo Model: The Pocketworld Playground*. https://www.turtlesim.com/products/turtle-universe/

**Chen**, **J.**, & Wilensky, U. (2021c). *NetLogo Model: Virus in a Community*. https://www.turtlesim.com/products/turtle-universe/

**Chen**, **J.**, & Wilensky, U. (2021d). *Tortuga: Building Interactive Scaffolds for NetLogo*. https://github.com/NetLogo-Mobile/Tutorial-Editor/

**Chen**, **J.**, & Wilensky, U. (2021e). *Turtle Universe*. https://www.turtlesim.com/products/turtle-universe/

**Chen**, **J.**, & Zhao, L. (2017). *Physics Lab*. https://www.turtlesim.com/products/physics-lab/

## Skills

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| Programming Languages | C++, C#, Coffeescript, CSS, HTML, Kotlin, Java, Javascript, NetLogo, Objective-C, Python, Ruby, Typescript, Shellscript, VB.net, Swift, SQL |
| Other Technical Skills | Full-Stack Development, Product Management, Online Community Design, Data Visualization, UI/UX, AR/VR (Headsets/Handhelds), Prompt Engineering, LLM-driven Systems |
| Quantitative Toolkits | STATA, R, Tableau, & many Python and Javascript packages |
| Quantitative Methodologies | Cluster Analysis, Regression Analysis, Network Analysis, Survival Analysis, Time Series Analysis, Agent-based Modeling |
| Qualitative Methodologies | Clinical Interview, (Quantitative/Online) Ethnography, Grounded Theory Analysis, Thematic Analysis, Video Analysis |

## Professional Affiliations

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| Association for Computing Machinery (2023-) | Membership |
| ACM SIGCHI (2024-) | Membership |
| American Educational Research Association (2021-) | Membership |
| International Society of Learning Sciences (2021-) | Membership |

## References

*Prof. Uri J. Wilensky*, Northwestern University
Lorraine H. Morton Professor of Learning Sciences, Computer Science and Complex Systems
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*Prof. Michael S. Horn*, Northwestern University
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*Prof. Bruce L. Sherin*, Northwestern University
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