

# Shiyan Jiang

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## CURRENT EMPLOYMENT

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**Assistant Professor: Learning Design and Technology**, College of Education, North Carolina State University, July 2019 – present. (Coordinator of Graduate Certificate in Learning Analytics; Future Interdisciplinary Fellow)

**Graduate Faculty: Department of Computer Science**, College of Engineering, North Carolina State University, May 2023 – present.

## EDUCATION

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**Ph.D. in Teaching and Learning (Specialization in Technology-enhanced STEM Education)**, University of Miami (UM). 2018. Advisor: **Dr. Ji Shen**

**M.S. in Computer Science (OMSCS)**, Georgia Institute of Technology.

**B.S. in Educational Technology**, East China Normal University.

## PRIOR EMPLOYMENT

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**Post-doctoral Associate: Language Technologies Institute**, School of Computer Science, Carnegie Mellon University, 2018-2019. Advisor: **Dr. Carolyn P. Rosé**

**Graduate Researcher: Teaching and Learning**, School of Education and Human Development, University of Miami, 2013- 2018. Advisor: **Dr. Ji Shen**

**Research Internship: Information Sciences and Technology**, Pennsylvania State University, Summer 2017. Advisor: **Dr. Mary Beth Rosson**

**Data Visualization Developer Internship: Sun Sentinel**, FL, Summer 2016.

**Research Internship: University of California, Berkeley**, Summer 2015. Advisor: **Dr. Marcia Linn**

**Research Internship: Concord Consortium**, MA, Summer 2014. Advisor: **Dr. Charles Xie**

## RESEARCH

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### *Interest*

- Interdisciplinary computing education
- AI (Artificial Intelligence) education
- Data science education
- Computer science education
- Identity development
- Technology-mediated learning
- Learning analytics
- Data visualization

### ***Funded project (selected)***

Project Collaborative Research: DTI: Integrating Language-Based AI Across the Curriculum to Create Diverse Pathways to AI-Rich Careers (**NSF ITEST # 2241671**; \$ 385,921; PI); June 2023 – May 2026

- Develop and test a set of AI curriculum modules for math (5 hours), ELA (5 hours), history (5 hours), and CS (10-15 hours), and an introductory module (2 hours);
- Investigate a set of research questions to advance our knowledge in student learning of AI across curriculum as well as teacher community formation in the AI domain.

Project Institutional Opportunities to Belong: A Playbook for Putting Middle Schoolers' Policy Insights into Motion (**New Venture Fund**; \$ 199,841; Co-PI); September 2023 – August 2024

- Support students in designing developmentally appropriate and culturally affirming learning spaces that address the belonging vulnerability of students at their school;
- Reposition youth as subject matter experts and intellectual authorities on the topic of student belonging.

Project Collaborative Research: BCSER: Broadening the Use of Learning Analytics in STEM Education Research (**NSF ECR # 2321128**; \$ 497,970; Co-PI); October 2023 – September 2026

- Create a modular curriculum that can be assembled into multiple distinct semester-long courses, incorporated into existing courses, or used individually for workshops;
- Support instructors to tailor their instruction for faculty and graduate students with different disciplinary backgrounds and incorporate the curriculum into their institutions.

Project Creating Diverse Data Science Learning Pathways (**NSF IUSE # 2313644**; \$ 399,968; Co-PI); August 2023 – July 2025

- Implement the ADAPT (All-campus Data science through Accessible, Project-based Teaching and learning) model and develop resources for implementing the model;
- Research the development of robust data science identity through an intersectional lens.

Project Narrative Modeling with StoryQ: Integrating Mathematics, Language Arts, and Computing to Create Pathways to Artificial Intelligence Careers (**NSF ITEST # 1949110**; \$1.5 M; Co-PI); June 2020 – May 2024

- Create and test StoryQ, a web-based text mining and narrative modeling platform;
- Develop, implement, and test a Narrative Modeling with StoryQ curriculum;
- Investigate research questions related to student learning of AI and AI career interests.

Project Learning Analytics in STEM Education Research Institute (LASER) (**NSF ECR # 2025090**; \$ 1 M; Co-PI); September 2020 – May 2024

- Provide professional development for 150 early and mid-career STEM education researchers in Learning Analytics (LA);
- Investigate research questions related to developing inclusive LA communities and creating diverse pathways for LA.

Project Enhancing Undergraduate Learning About Biomechanics and Data Science Through Augmented Reality and Self-motion Data (**NSF IUSE # 2013451**; \$600 K; Co-PI); September 2020 – May 2024

- Build an augmented learning platform to capture human motion data;
- Develop curriculum modules for undergraduate biomechanics and data science courses;
- Investigate student learning in integrated biomechanics and data science learning.

Project Building an Interdisciplinary Community of Entrepreneurial Graduate Students (**NC State Foundation Grant**; \$ 25 K; PI); September 2023 – May 2024

- Create a community of graduate students from COE, COM, and CEI that promotes interdisciplinary learning and collaboration.
- Foster innovation, creativity, and problem-solving skills among graduate students by positioning students as creators of technology-driven solutions and providing them with the resources and support needed to turn their ideas into reality.

(Finished) Project Promoting Youth Critical Data Literacy Through Computing and Community Storytelling with Data (**NC State Data Science Workshop Award**; \$ 56 K; PI); August 2021 – May 2022

- Develop technology prototypes for supporting youth in reasoning about data from socioscientific perspectives.
- Investigate research questions related to broadening participation in data science and data visualization and exploring designs for promoting critical data and media literacies.

(Finished) Project Multimodal AI literacy: Supporting K-12 AI Education through Composing with Multiple Modes (**NC State Catalyst Grant**; \$ 10 K; PI); January 2020 – June 2020

- Develop a free summer camp that engages youth in learning AI concepts through creating artifacts with multiple modes;
- Investigate research questions related to supporting K-12 AI education with multimodal composition.

(Finished) Project Learning COVID-19 with Data Visualizations (**NC State Faculty Research and Professional Development**; \$ 5 K; PI); July 2020 – July 2021

- Provide opportunities for middle and high school youth to engage in understanding, exploring, and evaluating data visualizations about COVID-19.
- Investigate research questions related to supporting data science education in remote learning.

### ***Proposals under review***

**Jiang, S.**, Barnes, T., & Xu, D. (PI). *Collaborative Research: CHALLENGE: Empowering Students in Critical and Human-centered AI Literacy to Learn Ethics through Narratives and Generative AI*, NSF, \$ 2,168,773.

**Jiang, S.** (PI). *Collaborative Research: Neural Net Maker: Making Sense of Distributed Representations and Expressing Cultures through Algorithms in the Age of AI*, NSF, \$ 406,710.

*Peer - reviewed journal article* (\*denotes student co-author; #denotes equal contribution)

**Jiang, S.**, McClure, J. \*, Tatar, C. \*, Bickel, F. \*, Rosé, C., & Chao, J. (in press). Toward inclusivity in Artificial Intelligence: A comparative study of cognitive engagement between marginalized female students and peers. *British Journal of Educational Technology*.

Tatar, C. \*, **Jiang, S.**, Rosé, C., & Chao, J. (in press). Exploring teachers' views and confidence in the integration of an Artificial Intelligence curriculum into their classrooms: A case study of curricular co-design program *International Journal of Artificial Intelligence in Education*.

Nocera, A., Newton, V. \*, & **Jiang, S.** (in press) "They created segregation with the economy": Using AI for a student-driven inquiry into redlining in the social studies classroom. *Theory & Research in Social Education*.

Li, X. \*, **Jiang, S.**, Hu, Y., Feng, X., Chen, W., & Ouyang, F. (2024). Investigating the impact of structured knowledge feedback on collaborative academic writing. *Education and Information Technologies*, 1-29.

**Jiang, S.**, McClure, J. \*, Mao, H. \*, Chen, J. \*, Liu, Y. \*, & Zhang, Y. (2023). Integrating machine learning and color chemistry: Developing a high-school curriculum towards real-world problem-solving. *Journal of Chemical Education*.

Ding, L., Li, T., **Jiang, S.**, & Gapud, A. (2023). Students' perceptions of using GenAI in a physics classroom as a virtual tutor: a ChatGPT case. *International Journal of Educational Technology in Higher Education*, 20(1), 63.

**Jiang, S.** & Wang, C. \* (2023). Blurring the boundaries of current and future selves: Students' STEM identity development in a multimodal composing learning environment. *Learning, Media and Technology*, 48(4), 596-611.

**Jiang, S.**, Huang, J., & Lee, H. (2023). Unpacking the complexities and nuances of technology-supported learning processes: Visualizing qualitative data. *Educational Technology Research and Development*, 1-19.

**Jiang, S.**, Tang, H., Tatar, C. \*, Rosé, C., & Chao, J. (2023). High school students' data modelling practices: From modeling unstructured data to evaluating automated decisions. *Learning, Media and Technology*, 48(2), 350-368.

**Jiang, S.** (2023). Towards broadening participation: Investigating adolescents' participation trajectories in a collaborative multimodal composing learning environment. *Educational Technology & Society*, 26(3), 21-36.

Sanei, H. \*, Kahn, J., Yalcinkaya, R. \*, **Jiang, S.**, & Wang, C. \* (2023). Examining how students use interactive coding and socioscientific data to tell stories about climate change. *Journal of Science Education and Technology*, 1-17.

**Jiang, S.**, Qian, Y., Tang, H., Yalcinkaya, R. \*, Rosé, C., Chao, J., & Finzer, W. (2022). Examining computational thinking processes in modeling unstructured data. *Education and Information Technologies*, 1-25.

#**Jiang, S.**, Lee, V. R., & Rosenberg, J. M. (2022). Data science education across the disciplines: Underexamined opportunities for K-12 innovation. *British Journal of Educational Technology*, 53(5), 1073-1079.

**Jiang, S.**, Huang, X., Sung, S. H., & Xie, C. (2022). Learning analytics for assessing hands-on laboratory skills in science classrooms using Bayesian network analysis. *Research in Science Education*, 1-20.

**Jiang, S.**, Nocera, A., Tatar, C. \*, Yoder, M. M. \*, Chao, J., Wiedemann, K., ... & Rosé, C. P. (2022). An empirical analysis of high school students' practices of modelling with unstructured data. *British Journal of Educational Technology*, 53(5), 1114-1133.

Moore, R. L., **Jiang, S.**, & Abramowitz, B. \* (2022). What would the matrix do?: a systematic review of K-12 AI learning contexts and learner-interface interactions. *Journal of Research on Technology in Education*, 1-14.

Kahn, J., Peralta, M. \*, Rubel, L., Lim, V., **Jiang, S.**, & Herbel-Eisenmann, B. (2022). Notice, Wonder, Feel, Act, and Reimagine: A framework for social justice and equity in data science education. *Educational Technology & Society*, 25(4), 80-92.

Lim, V., Peralta, M. \*, Rubel, L., **Jiang, S.**, Kahn, J., & Herbel-Eisenmann, B. (2022) Keeping pace with innovations in data visualizations: A commentary for mathematics education in times of crisis. *ZDM—Mathematics Education*, 1-10.

Rubel, L, Herbel-Eisenmann, B., Peralta, M. \*, Lim, V., **Jiang, S.**, & Kahn, J. (2022). Intersectional feminism to reenvision mathematical literacies & precarity. *Research in Mathematics Education*, 24(2), 224-248.

Wang, Q., Rosé, C. P., Ma, N., **Jiang, S.**, Bao, H., & Li, Y. (2022). Design and application of automatic feedback scaffolding in forums to promote learning. *IEEE Transactions on Learning Technologies*, 15(2), 150-166.

Peng, Y., Li, Y., Su, Y., Chen, K., & **Jiang, S.** (2022). Effects of group awareness tools on students' engagement, performance, and perceptions in online collaborative writing: Intergroup information matters. *The Internet and Higher Education*, 53, 100845.

**Jiang, S.**, Tatar, C. \*, Huang, X., Sung, S. H., & Xie, C. (2021). Augmented reality in science laboratories: Investigating high school students' navigation patterns and their effects on learning performance. *Journal of Educational Computing Research*, 07356331211038764.

**Jiang, S.**, Shen, J., Smith, B. E., & Kibler, K. (2020). Science identity development: How multimodal composition mediates role-taking as scientist in a media-rich learning environment. *Educational Technology Research and Development*. 1-26.

**Jiang, S.** & Kahn, J. (2020). Data wrangling practices and collaborative interactions with aggregated data. *International Journal of Computer-Supported Collaborative Learning*. 1-25.

Kahn, J., & **Jiang, S.** (2020). Learning with large, complex data and visualizations: youth data wrangling in modeling family migration. *Learning, Media and Technology*, 1-16.

Shen, J., Chen, G., Barth-Cohen, L., **Jiang, S.**, & Eltoukhy, M. (2020). Connecting computational thinking in everyday reasoning and programming for elementary school students. *Journal of Research on Technology in Education*, 1-21.

**Jiang, S.**, Shen, J., & Smith, B. E. (2019). Designing discipline-specific roles for interdisciplinary learning: two comparative cases in an afterschool STEM+ L programme. *International Journal of Science Education*, 1-24.

**Jiang, S.**, Smith, B. E., & Shen, J. (2019). Examining how different modes mediate adolescents' interactions during their collaborative multimodal composing processes. *Interactive Learning Environments*, 1-14.

Smith, B. E., Shen, J., & **Jiang, S.** (2019; invited article). The science of storytelling: Middle schoolers engaging with socioscientific issues through multimodal science fictions. *Voices from the middle*, 26(4).

Barth-Cohen, L., **Jiang, S.**, Shen, J., Chen, G., & Eltoukhy M. (2018). Interpreting and navigating multiple representations as central to computational thinking in a robotics programming environment. *Journal for STEM Education Research*, 1, 119-147.

Sung, S., Shen, J., **Jiang, S.**, & Chen, G. (2017). Comparing the effects of dynamic computer visualization on undergraduate students' understanding of osmosis with randomized posttest-only control group design. *Research and Practice in Technology Enhanced Learning*, 12, 1-21.

Chen, G., Shen, J., Barth-Cohen, L., **Jiang, S.**, Huang, X., Eltoukhy, M. (2017). Assessing elementary students' computational thinking in everyday reasoning and robotics programming. *Computers & Education*, 109, 162-175.

#### **Peer - reviewed conference proceeding (Selected)**

McClure, J. \*, **Jiang, S.**, Chao, J., Rosé, C., & Bickel, F. \* (2024). Navigating cognitive engagement in AI-enhanced education: Lexical diversity and open-ended inquiry in journalism learning. *Proceedings of the Annual Meeting of international Society of the Learning Sciences (ISLS)*.

McClure, J. \*, Zheng, J., Bickel, F. \*, **Jiang, S.**, Rosé, C. P., Chao, J., & Winling, L. (2024). Modeling with primary sources: An approach to teach data bias for artificial intelligence and machine learning education. *Proceedings of the Annual Meeting of international Society of the Learning Sciences (ISLS)*.

Mushi, D. \*, Chao, J., **Jiang, S.**, Ellis, R., Rosé, C., & Wiedemann, K. (2024). Using biterm topic modeling to explore gender differences in secondary students' wonderings about AI concepts. *Proceedings of the Annual Meeting of international Society of the Learning Sciences (ISLS)*.

Ellis, R., Chao, J., **Jiang, S.**, Rosé, C., & Wiedemann, K. (2024). Leveraging student choice and interest to design an engaging lesson about artificial intelligence. *Proceedings of the Annual Meeting of international Society of the Learning Sciences (ISLS)*.

Chao, J. & **Jiang, S.** (2024). Decoupling words and meanings: Secondary students' sense-making of text classification models. *Proceedings of the Annual Meeting of international Society of the Learning Sciences (ISLS)*.

Tatar, C. \*, **Jiang, S.**, Chao, J., & Rosé, C. (2023). The impact of a technology-enhanced unit on high school students' understanding of Artificial Intelligence & machine learning. *Proceedings of the Annual Meeting of international Society of the Learning Sciences (ISLS)*.

Tatar, C. \*, McClure, J., Bickel, F., Ellis, R., Wiedemann, K., Chao, J., **Jiang, S.**, & Rosé, C. (2023). Examining high school students' self-efficacy in machine learning practices. *Proceedings of the Annual Meeting of international Society of the Learning Sciences (ISLS)*.

Chao, J., Finzer, W., Rosé, C., **Jiang, S.**, Ellis, R., Wiedemann, K., Tatar, C. \*, & Fiocco, J. (2023). Teach Artificial Intelligence with StoryQ: a web-based machine learning and text mining

tool for k-12 students. *Proceedings of the 54<sup>th</sup> ACM Technical Symposium on Computer Science Education (SIGCSE)*.

McClure, J. \*, Mushi, D. \*, **Jiang, S.**, & Kellogg, S. (2023). The state of teaching about algorithmic bias and fairness in Learning Analytics programs. *Proceedings of the 13th International Conference on Learning Analytics and Knowledge (LAK)*.

Chao, J., Ellis, R., **Jiang, S.**, Rosé, C., Finzer, W., Tatar, C. \*, Fiacco, J., & Wiedemann, K., (2023). Exploring Artificial Intelligence in English Language Arts with StoryQ. *Proceedings of the 13th AAI Symposium on Educational Advances in Artificial Intelligence (EAAI-23)*.

Olsen, J. & **Jiang, S.** (2022) Integrating student identity support in orchestration systems. *Proceedings of the Annual Meeting of international Society of the Learning Sciences (ISLS)*.

**Jiang, S.**, Desportes, K., & Bergner, Y. (2022). Agents, models, and ethics: Importance of interdisciplinary explorations in AI education. *Proceedings of the Annual Meeting of international Society of the Learning Sciences (ISLS)*.

Yalcinkaya, R. \*, Sanei, H. \*, Wang, C. \*, Zhu, L. \*, Kahn, J. & **Jiang, S.** (2022). Remixing as a Key Practice for Coding and Data Storytelling. *Proceedings of the Annual Meeting of international Society of the Learning Sciences (ISLS)*.

Tatar, C. \*, **Jiang, S.**, Chao, J., Wiedemann, K., Fiacco, J. \*, Finzer, W., & Rosé, C. (2022). Examining learning opportunities for integrating AI education in English Language Art classrooms. *Proceedings of the Annual Meeting of international Society of the Learning Sciences (ISLS)*.

Rahimi, S., Fulwider, C. \*, **Jiang, S.**, & Shute, V. (2022). Predicting learning gains in an educational game using feature engineering and Machine Learning. *Proceedings of the Annual Meeting of international Society of the Learning Sciences (ISLS)*.

#Rubel, L, Herbel-Eisenmann, B., **Jiang, S.**, Kahn, J., Lim, V., & Peralta, M. \*(2022). Storytelling with data in response to crisis: Shifting away from ‘Maths of the Morgue’. *Proceedings of the Annual Meeting of international Society of the Learning Sciences (ISLS)*.

Finzer, W., Chao, J., Rosé, C., & **Jiang, S.** (2022). StoryQ—An online environment for Machine Learning of text classification. *Proceedings of the 12th AAI Symposium on Educational Advances in Artificial Intelligence (EAAI-22)*.

Akram, B., Yoder, S. \*, Tatar, C. \*, & **Jiang, S.** (2022). Towards an AI-infused interdisciplinary curriculum for middle-grade classrooms. *Proceedings of the 12th AAI Symposium on Educational Advances in Artificial Intelligence (EAAI-22)*.

Chao, J., Finzer, W., Rosé, C., **Jiang, S.**, Yoder, M. \*, ... Tatar, C. \*, & Wiedemann, K. (2022). StoryQ: A web-based Machine Learning and text mining Tool for K-12 Students. *Proceedings of the 53<sup>rd</sup> ACM Technical Symposium on Computer Science Education (SIGCSE)*.

Yoder, S. \*, Tatar, C. \*, Aderemi, I. \*, Boorugu, S. \*, **Jiang, S.**, & Akram, B. (2021). Gaining insight into effective teaching of AI problem-solving through CSEDM: A case study. *Proceedings of the 5th Educational Data Mining in Computer Science Education (CSEDM) Workshop*.

Tatar, C. \*, Yoder, M. \*, Coven, M. \*, Wiedemann, K., Chao, J., Finzer, W., **Jiang, S.**, & Rosé, C. (2021). Modeling unstructured data: Teachers as learners and designers of technology-enhanced Artificial Intelligence curriculum. *Proceedings of the Annual Meeting of international Society of the Learning Sciences (ISLS)*.

**Jiang, S.**, Huang, X., Xie, C., Sung, S., & Yalcinkaya, R. \* (2020). Augmented scientific investigation: Support the exploration of invisible “fine details” in science via Augmented Reality. *Proceedings of the 19th ACM International Conference on Interaction Design and Children (IDC)*, London, UK.

**Jiang, S.** & Kahn, J. (2020). Data patterns and missing data: Complex issues in designs for learning with aggregated data in family migration context. *Proceedings of the 14<sup>th</sup> International Conference of the Learning Sciences (ICLS)*, Nashville, USA.

**Jiang, S.**, Yang, K., Suvarna, C., Casula, P., Zhang, M., & Rosé, C. (2019). Applying rhetorical structure theory to student essays for providing automated writing feedback. *Proceedings of the Workshop on Discourse Relation Parsing and Treebanking 2019* (pp. 163-168).

**Jiang, S.** & Kahn, J. (2019; nominee of best paper). Data wrangling practices and processes in modeling family migration narratives with big data visualization technologies. *Proceedings of the 13<sup>th</sup> International Conference of the Computer Supported Collaborative Learning (CSCL)*, Lyon, France.

**Jiang, S.**, Shen, J., Smith, B., & Kibler, K. (2018). Examining science identity development in disciplinary role-taking multimodal composing environment. *Proceedings of the 13<sup>th</sup> International Conference of the Learning Sciences (ICLS)*, London, UK.

Smith, B., Shen, J., **Jiang, S.**, Chen, G., Hamaoui, M., & Torralba, J. (2018). Multimodal reflection: Adolescents remixing and sharing their experiences in an informal STEM+L academy. *Proceedings of the 13th International Conference of the Learning Sciences (ICLS)*, London, UK.

**Jiang, S.**, Shen, J., & Smith, B. (2016). Integrating science and writing in multimedia science fictions: Investigating student interactions in role-taking. *Proceedings of the 12<sup>th</sup> International Conference of the Learning Sciences (ICLS)*, Singapore.

Shen, J., Chen, G., Barth-Cohen, L., **Jiang, S.**, & Eltoukhy, M. (2016). Developing a language-neutral instrument to assess fifth graders’ computational thinking. *Proceedings of the 12<sup>th</sup> International Conference of the Learning Sciences (ICLS)*, Singapore.

**Jiang, S.**, Shen, J., Sun, Y. (2015). Conceptualizing, analyzing, and visualizing massive data on student engagement in MOOCs: A literature review. *Proceedings of the 11<sup>th</sup> International Conference of the Computer Supported Collaborative Learning (CSCL)*, Gothenburg, Sweden.

### **Book chapter**

**Jiang, S.**, Smith, B. E., & Shen, J. (2024). Our Story will be the Future: A Learner-centered Approach to Support Digital Multimodal Composing about the Climate Crisis. In *Youth Created Media on the Climate Crisis* (pp. 107-123). Routledge.

Fiacco, J \* , **Jiang, S.**, Adamson, D., & Rosé, C. (2023). Learning Analytics. In International encyclopedia of education (4rd ed.).

Shen, J., Smith, B. E., & **Jiang, S.** (2020). Integrating multimodal composing technology (MCT) in interdisciplinary learning. In L. C. de Oliveira & A. M. Menda (Eds.), *English language teaching methods, approaches, and lessons*. Charlotte, NC: Information Age Publishing.



Shen, J., **Jiang, S.**, & Liu, O. L. (2015). Reconceptualizing a college science learning experience in the new digital era: A review of literature. In X. Ge, D. Ifenthaler, J.M. Spector (Eds.) *Full steam ahead: Emerging technologies for STEAM* (pp. 61-79). New York: Springer.

### ***Manuscripts under review***

**Jiang, S.**, Tatar, C. \*, McClure, J. \*, Bickel, F. \*, Rosé, C, Chao, J., & Nocera, A. (under review). Integrating Artificial Intelligence into history classrooms: Exploring student inquiry processes and implications for interdisciplinary learning. *Educational Technology Research and Development*.

**Jiang, S.**, Yeter, Y., Jiang, R., Ding, X., Sung, H. S., & Xie, C. (under review). An empirical study on how science motivation drives learning space navigation and performance in remote labs. *Journal of Contemporary Educational Psychology*.

Smith, B. E., **Jiang, S.**, & Shen, J. (under review). Examining disciplinary role-taking in a Collaborative, Multimodal Learning (CML) environment. *Cognition and Instruction*.

Mushi, D. \*, **Jiang, S.**, & Kellogg, S. (under review). Toward the design of data science open educational resources: Text mining of data science learners' YouTube comments. *Journal of Distance Education*.

Tang, H., **Jiang, S.**, & Xie, C. (major revision). Solarizing Your School: Engineering design in students' authentic epistemic practices of adopting renewable energy. *Journal of Science Education and Technology*.

Kahn, J., & **Jiang, S.** (major revision). Leveraging epistemic data agency with data visualizations to bridge the gap between data trends and personal experiences. *Information and Learning Sciences*.

### ***Manuscripts in preparation***

**Jiang, S.** (in preparation). Investigating the impact of authentic AI research on preparing teachers to implement AI curriculum. *Journal of Learning Sciences*.

**Jiang, S.** & Kahn, J. (in preparation). Comparative data modeling across storytelling contexts. *Cognition and Instruction*.

### ***Presentation (Selected)***

**Jiang, S.**, & Long, D. (2024, April). Integrating AI education in K–12 humanities curricula: Opportunities, challenges, design considerations, and promising solutions. To be presented at the annual conference of American Educational Research Association (AERA), Chicago.

**Jiang, S.** (2024 & 2023 & 2022, March). Data Visualization in Education. **Invited** virtual lecture, Research Methods course, Nanyang Technological University.

Wang, C. \*, Sanei, H. \*, Yalcinkaya, R. \*, Kahn, J., **Jiang, S.**, & Cairo, A. (2023, April). Examining how students code with socioscientific data to tell stories about climate change. Presented at the annual conference of American Educational Research Association (AERA), Chicago.

Nocera, A., Newton, V. \*, & **Jiang, S.** (2023, April). Bringing systemic racism into view: Using AI modeling for a student-driven inquiry into redlining in the social studies classroom. Presented at the annual conference of American Educational Research Association (AERA), Chicago.

- Tatar, C. \* & **Jiang, S.** (2022, April). An empirical analysis of high school students' understanding of AI through modeling texts. Presented at the annual conference of American Educational Research Association (AERA), Hybrid.
- Tatar, C. \* & **Jiang, S.** (2021, November). Designing an Artificial Intelligence curriculum with high school teachers and students. Presented at the Annual International Convention of the Association for Educational Communications and Technology (AECT), Online
- Tang, H. & **Jiang, S.** (2021, November). Agency in engineering design: Understanding how students balance the tradeoff between criteria and constraints in authentic epistemic practices. Presented at the Annual International Convention of the Association for Educational Communications and Technology (AECT). (**Selected as a Featured Research in RTD**)
- #Rubel, L. H., Peralta, L. M. \*, Herbel-Eisenmann, **Jiang, S.**, B., Kahn, J., & Lim, V. Y. (2021, October). Theorizing Data Science Education: An Intersectional Feminist Perspective on Data, Power, and "Playing the Game". Presented at the 43rd Annual Conference of the North American Chapter of the International Group for the Psychology of Mathematics Education (PME-NA 2021).
- Tatar, C. \* & **Jiang, S.** (2021, April). Effects of Augmented Infrared Reality Technology on Learning Achievement: Case of High School Students. Presented at the annual conference of American Educational Research Association (AERA), Online.
- #Peralta, L. M. \*, Rubel, L. H., Herbel-Eisenmann, B., Kahn, J., Lim, V. Y., & **Jiang, S.** (2021, April). What's Going on in "What's Going on in This Graph?" Presented at the Annual Meeting of the American Education Research Association (AERA), Online.
- Yalcinkaya, A. \* & **Jiang, S.** (2020, November). Augmented Scientific Investigation: Making Invisible Visible to the Unaided Eye via Augmented Reality. Presented at the Annual International Convention of the Association for Educational Communications and Technology (AECT), Online
- Jiang, S.**, & Kahn, J. (2020, April). Storytelling with data visualizations: Narrative patterns in modeling family migration narratives. Presented at the annual conference of American Educational Research Association (AERA), San Francisco, CA. (Cancelled)
- Jiang, S.** (2020, January). Data wrangling practices and learning with aggregated data in talk-in-interaction. **Invited** virtual seminar, Concord Consortium.
- Jiang, S.** (2020 & 2019, October). Visual analytics of learning data. **Invited** virtual lecture, Research Methods & Technologies course, University of Arizona.
- Jiang, S.**, Shen, J., & Smith, B.E. (2019, April). Patterns and trajectories of an adolescent's participation during an integrated STEM and Digital Literacies program. Presented at the annual conference of American Educational Research Association (AERA), Toronto, Canada.
- Kahn, J. & **Jiang, S.** (2019, April). Youth data wrangling and modeling family migration. Presented at the annual conference of American Educational Research Association (AERA), Toronto, Canada.
- Smith, B. E., Kolovou, M., **Jiang, S.**, Ran, H., Torralba, J., & Shen, J. (2019, April). Multidimensional meaning-making: Adolescents leveraging visuals and sounds in their

multimodal science fictions. Presented at the annual conference of American Educational Research Association (AERA), Toronto, Canada.

Chen, G., Shen, J., **Jiang, S.**, Barth-Cohen, L., & Eltoukhy, M. (2018, April). Linking elementary students' problem-solving process to computational thinking. Presented at the 2018 annual conference of American Educational Research Association (AERA), New York City, NY.

**Jiang, S.** & Cong, Q. (2017, September). Exploring the impact of students' academic usage of mobile devices on technostress and academic performance: A double-edged sword. Presented at the annual conference of Association for Learning Technology (ALT), Liverpool, UK.

**Jiang, S.**, Smith, B.E., & Shen, J. (2017, April). Peer Interaction in multimodal composition: The story behind the scenes. Presented at the annual conference of American Educational Research Association (AERA), San Antonio, TX.

Barth-Cohen, L., **Jiang, S.**, Shen, J., Chen, G., & Eltoukhy, M., (2017, April). Elementary school students' computational thinking practices in a robotics-programming environment. Presented at the annual conference of American Educational Research Association (AERA), San Antonio, TX.

Shen, J., Smith, B., **Jiang, S.**, Kibler, K., Chen, G., & Irina, M. (2017, October). Examining middle school students' collaborative multimodal composing through disciplinary identity development. Presented at the Annual International Convention of the Association for Educational Communications and Technology (AECT), Jacksonville, FL.

**Jiang, S.**, Smith, B.E., & Shen, J. (2016, October). Exploring multimodal composition in collaborative digital learning environments. Presented at the Annual International Convention of the Association for Educational Communications and Technology (AECT), Las Vegas, NV.

**Jiang, S.**, Shen, J., & Smith, B. (2016, April). Assessing students' scientific literacy in collaborative science fiction writing. Presented at the 2016 Annual Meeting of the American Educational Research Association (AERA), Washington, D.C.

Sung, S., Shen, J., **Jiang, S.**, & Chen, G. (2016, April). The effect of including dynamic computer visualizations on assessing college students' interdisciplinary understanding of osmosis. Presented at the 2016 Annual Meeting of the American Educational Research Association (AERA), Washington, D.C.

Xie, C., Nourian, S., **Jiang, S.** (2015, April). Performance assessment of engineering design using process analytics based on CAD software. Presented at the National Association for Research in Science Teaching (NARST) Conference 2015, Chicago, IL.

Avalos, M. A., Bengochea, A., Malova, I., **Jiang, S.**, Carlo, M., & Augustin, J. (2014, December). Vocabulary instruction for English learners then and now: Do we have it right for the future? Presented at the 64<sup>th</sup> Annual Conference of the Literacy Research Association (LRA), Marco Island, FL.

Shen, J., **Jiang, S.**, Cheng, G., & Namdar, B. (2014, October). Designing the innovative Knowledge Organization System (iKOS) for science learning. Presented at the Annual

International Convention of the Association for Educational Communications and Technology (AECT), Jacksonville, FL.

### *Invited Talk*

**Jiang, S.** (2022). From Educational Technology to Learning Analytics: Broadening Access to Data Science. Vanderbilt University.

**Jiang, S.** (2022). From Educational Technology to Learning Analytics: Broadening Access to Data Science. University of Virginia.

### *Other*

Tatar, C. \*, Chao, J., & **Jiang, S.** (2021). A technology-enhanced high school AI curriculum, published online.

**Jiang, S.** (2016). A technology-enhanced curriculum: Integrating STEM learning with data visualization, published online (www.wise.berkeley.edu; projectID = 18753).

## TEACHING

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### *Graduate Level*

**Instructor of ECI 587: Machine Learning in Education**, North Carolina State University. Every Fall semester. Taught graduate student courses about the application of Machine Learning in educational contexts; **R & Python programming**. (core course in NC State Learning Analytics graduate certificate program)

**Instructor of ECI 588: Text Mining in Education**, North Carolina State University. Every Spring semester. Taught graduate student courses about the application of text mining in educational contexts; **R & Python programming**. (core course in NC State Learning Analytics graduate certificate program)

**Instructor of ECI 519: Data Visualization in Education**, North Carolina State University, Fall 2019 and Spring 2020. Taught courses about the application of data visualization in educational contexts; **D3.js programming**. (core course in NC State Learning Analytics graduate certificate program, Changed to **ECI 586 Introduction to Learning Analytics**)

**Instructor of ECI 709: Learning Sciences Seminar**, North Carolina State University, Spring 2021. Taught courses in Learning sciences for doctoral students.

**Instructor of ECI 510: Research Applications in Curriculum and Instruction**, North Carolina State University, Fall 2020. Taught courses about introductions to educational research.

**Invited speaker of SCS 11344: Machine Learning in Practice**, Carnegie Mellon University, Fall 2018. Taught courses in Machine Learning for graduate students.

### *Undergraduate level*

**Invited speaker of TAL 543: Science Instruction in the Secondary School**, UM, Spring 2016. Taught courses about STEM-related classroom technologies for pre-service teachers.

**Teaching assistant of TAL 323: Science Instruction in the Elementary School**, UM, Fall 2013/Fall 2014. Led class discussions and graded student assignments.

### ***Teacher professional development***

**Instructor** of educational technology workshops for in-service teachers, Summer 2018 (n = 12); Fall 2017 (n = 73); Spring 2016 (n = 30); Fall 2014 (n = 25). Trained and supervised in-service teachers to implement technology-enhanced STEM projects.

### ***K-12 teaching***

**Instructor** of multiple formal and informal programs associated with Project STEM+L, including

- Afterschool program for 5<sup>th</sup>-8<sup>th</sup> graders from Miami-Dade public schools (Summer 2018; Spring 2018; Fall 2017; Summer 2017; Fall 2015).
- Elective STEAM course for Henry S. West Laboratory School (Fall 2017; Fall 2016)
- Afterschool program for Ponce de Leon Middle School (Spring 2015)

**Instructor** of project First Star UM Academy, UM, Summer 2017. Taught digital composing to guide under-represented high schoolers to envision future professions.

## **DOCTORAL STUDENTS SUPERVISED**

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### ***Doctoral dissertation (co-)chair***

Franziska Bickel (expected 2026)

Yudi Prasetyo (expected 2026)

Yuru Zhang (co-chair with Dr. Kevin Oliver, expected 2025)

Doreen Mushi (co-chair with Dr. Kevin Oliver, expected 2025)

Jeanne McClure (expected 2024)

Rabia Yalcinkaya (graduated 2023)

Cansu Tatar (co-chair with Dr. Kevin Oliver, graduated 2023)

Cigdem Meral (co-chair with Dr. Meghan Manfra, graduated 2023)

### ***Doctoral dissertation committees***

Samim Mirhosseini (Department of Computer Science, in progress)

Dan Carpenter (Department of Computer Science, in progress)

Mustafa Ozcicek (College of Design, in progress)

Grace Wonaphotimuke (College of Design, in progress)

Hanwen Wang (Department of Industrial and Systems Engineering, in progress)

Hamid Sanei (Department of STEM Education, in progress)

Fahmid Morshed Fahid (Department of Computer Science, graduated 2024)

Lili Wang (Department of Teacher Education and Learning Sciences, graduated 2023)

Nischal Shrestha (Department of Computer Science, graduated 2022)

Gina Bai (Department of Computer Science, graduated 2022)

Andrew Emerson (Department of Computer Science, graduated 2022)

Ruth Akintunde (Department of Computer Science, graduated 2021)

Zhen Guo (Department of Computer Science, graduated 2021)

Li Li (Department of Industrial and Systems Engineering, graduated 2021)

## SERVICE

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**Editorial Board (2023-2026):** *Journal of Science Education and Technology*

**Editorial Board (2024-2026):** *Educational Technology Research & Development*

**Technology Committee Co-chair (2023-present):** *International Society of the Learning Sciences (ISLS)*

**Special issue guest editor:** British Journal of Educational Technology, Data science education across the disciplines, 2021 (co-edit with Drs. Victor Lee and Josh Rosenberg)

**Journal review:** International Journal of Computer-Supported Collaborative Learning; Science Education; Computers & Education; Educational Technology Research & Development; Journal of Science Education and Technology; Journal of Educational Computing Research; Studies in Educational Evaluation; IEEE Internet of Things; Education and Information Technologies

**NSF panel review:** ITEST; DRK-12; AISL; IUSE

**Conference review:** ISLS; AERA; AECT

**Workshop for AERA-ICPSR PEERS Data Hub, A LASER Focus on Understanding and Improving STEM Education, 2021** (co-present with LASER team)

**Search committee member:** Cluster Hires in Digital Transformation of Education at NC State, 2022; Executive Director of Data Science Academy at NC State, 2021

## GLOBAL ENGAGEMENT

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AI in Education. **Invited** talk by U.S. Embassy in Colombia, Educational Leaderships Summit, Bogota, Colombia, 2023

Looking beyond the hype: Interdisciplinary perspectives on AI Education for a sustainable future. **Invited** keynote speaker, Turkey, 2023

Data Visualization in Education. **Invited** virtual lecture, Research Methods course, Nanyang Technological University, Singapore, 2022; 2023; 2024

## HONORS AND AWARDS

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Interdisciplinary Future Fellow, North Carolina State University, 2023

Goodnight Early Career STEM Innovator, North Carolina State University, 2022

FI Scholar, Friday Institute for Educational Innovation, North Carolina State University, 2020

Catalyst Grant Award, North Carolina State University, 2020

Early Career Workshop Award, Association for Educational Communications and Technology, 2020

Early Career Workshop Award, International Society of the Learning Sciences, 2019

Bronze Award, International Serious Play, Treasure Key, 2017

Innovation Award in Learning Technology Design and Development, the 2nd e-ICON World Contest, South Korea, 2012

## **PROFESSIONAL MEMBERSHIP**

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International Society of the Learning Sciences (ISLS)

Association of Educational Communication and Technology (AECT)

American Educational Research Association (AERA)

Interaction Design and Children (IDC)