

Yang Jiang

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[Google Scholar](#)

Research Interests

Big Data in Education; Artificial Intelligence; Learning Analytics; Educational Data Mining; Learner Modeling; Educational Technology; Cognitive Psychology; Educational Assessments; Complex Skills; Large Language Models

Education

Columbia University, Teachers College, New York, NY 2013-2018

Ph.D. in Cognitive Science in Education. **Overall GPA: 4.00/4.00.**

Concentration: Intelligent Technologies and Learning Analytics.

Advisor: Ryan Baker, John Black.

Qualification Exam Score: 99/100 (2nd highest in University History)

Dissertation: Jiang, Y. (2018). *Development of Self-Regulated Learning Skills Within Open-Ended Computer-Based Learning Environments for Science*. (Doctoral dissertation, Columbia University).

Dissertation Committee: Ryan Baker, John Black, Jody Clarke-Midura, Stephen Peverly, Bryan Keller.

Columbia University, Teachers College, New York, NY 2015-2017

M.S. in Applied Statistics. **Overall GPA: 4.00/4.00.**

Harvard University, Graduate School of Education, Cambridge, MA 2010-2011

Ed.M. (Master's) in Technology, Innovation, and Education. **Overall GPA: 4.00/4.00.**

Shanghai International Studies University, Shanghai, China 2006-2010

B.A. in Journalism and Communication. **Overall GPA: 3.88/4.00 (Ranking: Top 1)**

Employment / Positions

Educational Testing Service, Princeton, NJ

Research Scientist, Data Science, ETS Research Institute 2021-present

Associate Research Scientist, Data Science 2018-2021

Consultant, Research & Development 2017-2018

Teachers College Columbia University, New York, NY 2013-2018

Graduate Researcher

Cheng & Tsui , Boston, MA Digital Products Analyst	2012-2013
Pioneer Valley Chinese Immersion Charter School , Hadley, MA Mathematics and Chinese Immersion Teacher	2011-2012
Harvard University , Cambridge, MA Graduate Research Assistant, Graduate School of Education	2010-2011
Xinhua News Agency Shanghai Branch , Shanghai, China Intern, Audio and Video Bureau	2009

Awards and Honors

- Harvard Graduate School of Education Alumni Council Award for Impact in Education. 2025.
- Best Poster Presentation Award. The 10th Annual Research and Scholarship Showcase. 2022.
- Presidential Award. Educational Testing Service. 2021.
- Top Cited Article 2020-2021. Wiley. 2021.
- SPOT Award. Educational Testing Service. 2019.
- Best Student Paper Award. Best Paper Award Nomination. Artificial Intelligence in Education (AIED). 2018.
- Teachers College Doctoral Fellowship. 2014-2018.
- Student Scholarship. The National Science Foundation (NSF) Big Data PI Meeting. Washington, DC. 2017.
- Kuo Ping Wen Scholarship. 2014-2016.
- Susan A. and Robert S. Diamond Scholarship. 2014-2015.
- Ben Woods Fellowship. 2013-2014.
- SISU Academic Excellence Scholarship. 2006-2010.

Publications

Journal Articles

- Jiang, Y.**, Beigman Klebanov, B., Hao, J., Deane, P., & Livne, O. E. (2025). Unveiling patterns of interaction with automated feedback in Writing Mentor and their relationships with use goals and writing outcomes. *Journal of Computer Assisted Learning*, 41(2). e70014. <https://doi.org/10.1111/jcal.70014>
- Jiang, Y.**, Zhang, M., Hao, J., Deane, P., & Li, C. (2024). Using keystroke behavior patterns to detect nonauthentic texts in writing assessments: Evaluating the fairness of predictive models. *Journal of Educational Measurement*, 61(4), 571-594. <https://doi.org/10.1111/jedm.12416>

- Jiang, Y.**, Hao, J., Fauss, M., & Li, C. (2024). Detecting ChatGPT-generated essays in a large-scale writing assessment: Is there a bias against non-native English speakers? *Computers and Education*, 217, 105070. <https://doi.org/10.1016/j.compedu.2024.105070>
- Andrews-Todd, J., **Jiang, Y.**, Steinberg, J., Pugh, S., L., & D'Mello, S. K. (2023). Investigating collaborative problem solving skills and outcomes across computer-based tasks. *Computers and Education*, 207, 104928. <https://doi.org/10.1016/j.compedu.2023.104928>
- Jiang, Y.**, Cayton-Hodges, G. A., Nabors Oláh, L., & Minchuk, I. (2023). Using sequence mining to study students' calculator use, problem solving, and mathematics achievement in the National Assessment of Educational Progress (NAEP). *Computers and Education*, 193, 104680. <https://doi.org/10.1016/j.compedu.2022.104680>
- Jiang, Y.**, Martín-Raugh, M., Yang, Z., Hao, J., Liu, L., & Kyllonen, P. C. (2023). Do you know your partner's personality through virtual collaboration or negotiation? Investigating perceptions of personality and their impacts on performance. *Computers in Human Behavior*, 141, 107608. <https://doi.org/10.1016/j.chb.2022.107608>
- Jiang, Y.** & Cayton-Hodges, G. A. (2023). Investigating problem solving on calculator items in a large-scale digitally-based assessment: A data mining approach. *Journal for Research in Mathematics Education*, 54(2), 118-140. <https://doi.org/10.5951/jresmetheduc-2020-0290>
- Gong, T., Shuai, L., **Jiang, Y.**, & Arslan, B. (2023). Using process features to investigate scientific problem-solving in large-scale assessments. *Frontiers in Psychology*, 14, 1131019. <https://doi.org/10.3389/fpsyg.2023.1131019>
- Jiang, Y.**, Brockway, D. & Moon, J. A., (2023). Incorporating an engineering context into science learning: The effects of task context and response structuring on science understanding and investigation behaviors in a simulation. *Journal of Research in Science Teaching*, 60(6), 1292-1328. <https://doi.org/10.1002/tea.21832>
- Castellano, K., Mikeska, J., Moon, J., Holtzman, S., Gao, J., & **Jiang, Y.** (2022). Examining preservice elementary teachers' answer changing behavior on a content knowledge for teaching science assessment. *Journal of Science Education and Technology*, 31, 528-541. doi: [10.1007/s10956-022-09971-2](https://doi.org/10.1007/s10956-022-09971-2)
- Gong, T., **Jiang, Y.**, Saldivia, L. E., & Agard, C. (2022). Using Sankey diagrams to visualize drag and drop action sequences in technology-enhanced items. *Behavior Research Methods*, 54, 117-132. <https://doi.org/10.3758/s13428-021-01615-4>
- Jiang, Y.**, Gong, T., Saldivia, L.E., Cayton-Hodges, G., Agard, C. (2021). Using process data to understand problem-solving strategies and processes for drag-and-drop items in a large-scale mathematics assessment. *Large-Scale Assessments in Education*, 9(2), 1-31. <https://doi.org/10.1186/s40536-021-00095-4>
- Arslan, B., **Jiang, Y.**, Keehner, M., Gong, T., Katz, I. R., & Yan, F. (2020). The effect of drag-and-drop item features on test-taker performance and response strategies. *Educational Measurement: Issues and Practice*, 39(2), 96-106. **[Recognized as a top cited article in 2020-2021 by Wiley]**

Jiang, Y., Clarke-Midura, J., Keller, B., Baker, R. S., Paquette, L., & Ocumpaugh, J. (2018). Note-taking and science inquiry in an open-ended learning environment. *Contemporary Educational Psychology*, 55, 12–29.

Conference Papers in Stringently Refereed Proceedings

In computing and educational technology-related fields, conference proceedings are among the primary venues for publication and are rigorously peer-reviewed and highly competitive, with acceptance rates typically ranging from 15% to 30%.

Jiang, Y., Hao, J., Cui, W., Kerzabi, E., & Kyllonen, P. (2025). Uncovering transferable collaboration patterns across tasks using large language models. *Proceedings of the 26th International Conference on Artificial Intelligence in Education (AIED 2025)*.

Hou, X., Forsyth, C. M., Andrews-Todd, J., Rice, J., Cai, Z., **Jiang, Y.**, Zapata-Rivera, D., & Graesser, A. C. (2025). An LLM-enhanced multi-agent architecture for conversation-based assessment. *Proceedings of the 26th International Conference on Artificial Intelligence in Education (AIED 2025)*.

Jiang, Y., Graf, E. A., & Andrews-Todd, J. (2025). Using epistemic network analysis and sequential pattern mining to explore the impacts of human facilitation on collaborative mathematical problem solving. *Proceedings of the Annual Meeting of the International Society of the Learning Sciences (ISLS 2025)*.

Jiang, Y., Hao, J., Fauss, M., & Li, C. (2024). Towards fair detection of AI-generated essays in large-scale writing assessments. *Proceedings of the 25th International Conference on Artificial Intelligence in Education (AIED 2024)* (pp. 317-324). Springer. https://doi.org/10.1007/978-3-031-64312-5_38

Forsyth, C., Zapata-Rivera, D., Graf, E., & **Jiang, Y.** (2024). Complex conversations: LLMs vs. knowledge engineered conversation-based assessment. *Proceedings of the 17th International Conference on Educational Data Mining (EDM 2024)*, pp 868-871. DOI: 10.5281/zenodo.12729976.

Jiang, Y., Beigman Klebanov, B., Livne, O. E., & Hao, J. (2023). Analyzing users' interaction with writing feedback and their effects on writing performance. In N. Wang, G. Rebolledo-Mendez, V. Dimitrova, N. Matsuda, O. C. Santos (Eds.), *Proceedings of the 24th International Conference on Artificial Intelligence in Education (AIED 2023)* (pp. 466-471). Springer. https://doi.org/10.1007/978-3-031-36336-8_72

Zhang, J., Ober, T., **Jiang, Y.**, Plass, J., & Homer, B. (2021). Predicting executive functions in a learning game: Accuracy and reaction time. *Proceedings of the 14th International Conference on Educational Data Mining (EDM 2021)*, 688-693. **[Won Research and Scholarship Showcase Poster Presentation Award]**

Jiang, Y., Almeda, V., Kai, S., Baker, R.S., Ostrow, K., Inventado, P., & Scupelli, P. (2020). Single template vs. multiple templates: Examining the effects of problem structure on performance. *Proceedings of the 14th International Conference of the Learning Sciences (ICLS)*, 1015-1022.

- Gong, T., Shuai, L., Arslan, B., & **Jiang, Y.** (2020). Process based analysis on scientific inquiry tasks using large-scale national assessment dataset. *Proceedings of the 13th International Conference on Educational Data Mining (EDM 2020)*, pp. 417–423.
- Andres, A., Ocumpaugh, J., Baker, R.S., Slater, S., Paquette, L., **Jiang, Y.**, Bosch, N., Munshi, A., Moore, A. & Biswas, G. (2019). Affect sequences and learning in Betty's Brain. *Proceedings of the 9th International Learning Analytics and Knowledge (LAK) Conference*, 383-390.
- Jiang, Y.**, Bosch, N., Baker, R. S., Paquette, L., Ocumpaugh, J., Andres, J. M. A. L., Moore, A. L., Biswas, G. (2018). Expert feature-engineering vs. deep neural networks: Which is better for sensor-free affect detection? In *Proceedings of the 19th International Conference on Artificial Intelligence in Education (AIED 2018)* (pp. 198–211). Berlin, Heidelberg: Springer. **[Won Best Student Paper Award] [Nominated for Best Paper Award]**
- Jiang, Y.**, Paquette, L., Baker, R.S., Clarke-Midura, J. (2015). Comparing novice and experienced students in Virtual Performance Assessments. *Proceedings of the 8th International Conference on Educational Data Mining* (pp. 136–143).
- Jiang, Y.**, Baker, R.S., Paquette, L., San Pedro, M.O., Heffernan, N.T. (2015). Learning, moment-by-moment, and over the long term. *Proceedings of the 17th International Conference on Artificial Intelligence in Education* (pp. 654–657). Berlin, Heidelberg: Springer.
- Sao Pedro, M., **Jiang, Y.**, Paquette, L., Baker, R.S., Gobert, J. (2014). Identifying transfer of inquiry skills across physical science simulations using educational data mining. *Proceedings of the 11th International Conference of the Learning Sciences* (pp. 222–229).
- Jiang, Y.** (2014). Design of invention-based simulations as preparation for future learning. *Proceedings of Teachers College Educational Technology Conference (TCETC)*, New York, NY.

Book chapters

- Jiang, Y.**, Clarke-Midura, J., Baker, R. S., Paquette, L., & Keller, B. (2018). How immersive virtual environments foster self-regulated learning. In R. Zheng (Ed.), *Digital technologies and instructional design for personalized learning* (pp. 28–54). Hershey, PA: IGI Global.

Commissioned Papers and Special Reports

- Jiang, Y.**, Cayton-Hodges, G. A., Nabors Oláh, L., & Minchuk, I. (2022). *Using student calculator data to make inferences about student problem solving on the grade 8 NAEP 2019 mathematics assessment*. Report to U.S. Department of Education.
- NAEP Reporting Task Force White Paper. Submitted to U.S. Department of Education. (2020)
- NAEP Science ICT Process Data Analyses Report. Submitted to U.S. Department of Education. (2019)
- NAEP Special Study SBT-DI Task Report. Submitted to U.S. Department of Education. (2018)

Workshop Papers

Zapata-Rivera, D., Forsyth, C. M., Graf, A., & **Jiang, Y.** (2024). Designing and evaluating evidence-centered design based conversations for assessment with LLMs. *Proceedings of EDM 2024 Workshop: Leveraging Large Language Models for Next Generation Educational Technologies*.

Preprints

Zhang, L., Lin, J., Sabatini, J., Zapata-Rivera, D., Forsyth, C., **Jiang, Y.**, Hollander, J., Hu, X., & Graesser, A. C. (2025). Generative data imputation for sparse learner performance data using generative adversarial imputation networks. ArXiv. <https://doi.org/10.48550/arXiv.2503.18982>

Manuscripts Under Review and In Preparation

Zapata-Rivera, D., Forsyth, C. M., Graf, E. A., **Jiang, Y.**, Zhang, L., Rice, J., & Graesser, A. C. (under review). AI scoring of conversation-based assessments using Toulmin Diagrams.

Zhang, L., Zhai, X., Lin, J., Kleiman, J., Zapata-Rivera, D., Forsyth, C. M., **Jiang, Y.**, Hu, X., & Graesser, A. C. (under review). Exploring communicative strategies for collaborative LLM agents in mathematical problem solving.

Zhang, L., Lin, J., Sabatini, J., Zapata-Rivera, D., Forsyth, C., **Jiang, Y.**, Hollander, J., Hu, X., & Graesser, A. C. (under review). Generative data imputation for sparse learner performance data using generative adversarial imputation networks.

Fauss, M., Hao, J., **Jiang, Y.**, Zu, J., Li, C., & Wang, Y. (under review). Effects of sampling temperature on writing style and quality of AI-generated essays.

Jiang, Y., He, Q., & Soyoye, O. O. (in preparation). Exploring students' navigation behaviors in a large-scale reading assessment: A sequence clustering approach.

He, Q., Bei, N., **Jiang, Y.** (in preparation). Understanding adults' latent problem-solving strategies by different literacy competence levels with Hidden Markov Model.

He, Q., Bei, N., **Jiang, Y.** (in preparation). Identifying latent state transition with multigroup hidden Markov model on process data.

Zhang, L., Yeasin, M., Havugimana, F., Lin, Zapata-Rivera, D., Forsyth, C., **Jiang, Y.**, Hu, X., & Graesser, A. C. (in preparation). Bridging global pretraining and similarity-based local fine-tuning in GAIN for robust imputation of sparse learner performance data.

Forsyth, C. M., Zapata-Rivera, D., Graf, E. A., Zhang, L., Rice, J., Andrews-Todd, J., Hou, X., **Jiang, Y.**, & Graesser, A. C. (in preparation). Towards an integrated learner model in a multi-agent conversation-based assessment.

Invited Talks

Jiang, Y. (2025, January). *Educational policy and fairness in the era of generative AI*. China Institute for Educational Finance Research, Peking University. Beijing, China.

Jiang, Y. (2024, September). *Unlocking the "black box": Leveraging process data in large-scale assessments*. IAEA Workshop on innovations in methodologies. Philadelphia, PA.

- Jiang, Y.**, Cayton-Hodges, G. A., & Minchuk, I. (2024, August). *Using process data to explore Grade 4 student calculator use on the NAEP 2019 mathematics assessment*. Invited presentation at the SAIL Knowledge Sharing Session Series. National Center for Education Statistics, U.S. Department of Education, Washington, DC.
- Jiang, Y.** (2024, June). *Innovations in methodologies to understand and learn from learner behaviors*. ETS Research Institute. Princeton, NJ.
- Jiang, Y.** (2024, June). *Detecting AI-generated essays in a large-scale writing assessment: Is there a bias against non-native English speakers?* ETS Process Data SIG. Princeton, NJ.
- Jiang, Y.** (2024, May). *Educational data mining and learning analytics in digitally-based assessments*. University of Pennsylvania, Philadelphia, PA.
- Forsyth, C., Zapata-Rivera, D., Graf, A., & **Jiang, Y.** (2024, March). *Prompt engineering for conversations in assessment*. Educational Testing Service AI and Interactive Digital Assessments Talk Series. Princeton, NJ.
- Jiang, Y.** (2023, March). *Using process data to open the “black box” in large-scale assessments*. Invited Keynote for the 21st Annual EGSS Conference. Montreal, Canada.
- Jiang, Y.** & Cayton-Hodges, G. (2023, February). *Using big data to understand mathematical problem solving*. Invited talk for the Journal for Research in Mathematics Education (JRME) Talk Series. Virtual.
- Jiang, Y.** (2022, August). *Process data in large-scale educational assessments*. East China Normal University. Shanghai, China.
- Jiang, Y.**, Cayton-Hodges, G. A., Nabors Oláh, L., & Minchuk, I. (2022, March). *Using student calculator data to make inferences about student problem solving on the grade 8 NAEP 2019 mathematics assessment*. Invited presentation at the SAIL Knowledge Sharing Session Series. National Center for Education Statistics, U.S. Department of Education, Washington, DC.
- Jiang, Y.** (2021, October). *Using process data from the NAEP calculator to understand student mathematical problem solving strategies*. Educational Testing Service Process Data SIG. Princeton, NJ.
- Jiang, Y.** (2021, February). Data Science and Education Association, Teachers College Columbia University, New York, NY.
- Jiang, Y.**, Cayton-Hodges, G. A., Nabors Oláh, L., & Minchuk, I. (2020, November). *Patterns of calculator use on 2019 grade 8 NAEP and their relationship to performance*. Educational Testing Service. Princeton, NJ.
- Jiang, Y.** (2020, August). *Interactive tools in digitally-based assessments: Using process data to inform design*. Educational Testing Service CogSci for AD series. Princeton, NJ.
- Arslan, B., Gong, T., & **Jiang, Y.** (2019, March). *Going beyond scores: Understanding students’ scientific inquiry practices with process data*. Educational Testing Service Process Data SIG. Princeton, NJ.

- Jiang, Y.** (2018, November). *Applying EDM and LA methods to explore and analyze student knowledge, behaviors, and strategies as they use computer-based learning environments*. Penn Center for Learning Analytics, University of Pennsylvania, Philadelphia, PA.
- Jiang, Y.** (2018, January). *Development of self-regulatory skills in open-ended learning environments*. Carnegie Mellon University. Pittsburgh, PA.
- Jiang, Y.** (2017, December). *Combining educational data mining and multilevel modeling to trace development of self-regulatory skills in open-ended learning environments*. Educational Testing Service, Princeton, NJ.
- Jiang, Y.** (2017, June). *Learning, moment-by-moment and over the long term*. Penn Center for Learning Analytics, University of Pennsylvania, Philadelphia, PA.
- Jiang, Y.** (2016, May). *Educational technology research in the big data era*. Invited talk at Beijing Language and Culture University. Beijing, China.
- Jiang, Y.** (2014, December). *Analyzing educational technology using big data*. Wenzhou University, Wenzhou, China. December 2014.

Conference and Poster Presentations

- Jiang, Y.**, Hao, J., Cui, W., Kerzabi, E., & Kyllonen, P. (2025, July). *Uncovering transferable collaboration patterns across tasks using large language models*. Paper presented at the 26th International Conference on Artificial Intelligence in Education (AIED 2025). Palermo, Italy.
- Tighe, E., He, Q., Bei, N., **Jiang, Y.**, Kaldes, G., & Magliano, J. (2025, July). *Understanding digital problem-solving strategies by adults' literacy levels: Applying Hidden Markov Models to process data*. Paper presented at the 2025 Annual Meeting of the Society for Text and Discourse (ST&D), Padua, Italy.
- Jiang, Y.**, Graf, E. A., & Andrews-Todd, J. (2025, June). *Using epistemic network analysis and sequential pattern mining to explore the impacts of social facilitation on collaborative mathematical problem solving*. Paper presented at Annual Meeting of the International Society of the Learning Sciences (ISLS 2025), Helsinki, Finland.
- Graf, E. A., **Jiang, Y.**, Andrews-Todd, J., van Rijn, P. W., Lizano, C. L., Agyapong, F. (June, 2025). *Collaboration and facilitation in the development of mathematical understanding*. Submitted to the biannual DRK-12 PI Meeting, Arlington, VA.
- Hao, J., Cui, W., **Jiang, Y.**, Kyllonen, P., Kerzabi, E., & Andrews-Todd, J. (2025, April). *AI and analytics to support computer-supported SEL*. Paper presented at the 2025 American National Council on Measurement in Education (NCME) Annual Meeting, Denver, CO.
- Graf, E. A., Forsyth, C., Ruiz Diaz, S., Yan, D., & **Jiang, Y.** (2025, April). *Mathematical explorations in an LLM*. Paper presented at the 2025 American Educational Research Association (AERA) Annual Meeting, Denver, CO.
- Jiang, Y.**, Hao, J., Fauss, M., & Li, C. (2024, September). *Investigating the bias in detecting ChatGPT-generated essays in a writing assessment*. Paper presented at the 49th Annual International Association for Educational Assessment (IAEA) Conference, Philadelphia, PA.

- Guo, H., **Jiang, Y.**, Liu, X., & Saldivia, L. (2024, September). *Innovations in methodologies to understand and learn from learner and group behaviors on large-scale assessments*. Workshop presented at the 49th Annual International Association for Educational Assessment (IAEA) Conference, Philadelphia, PA.
- Jiang, Y.**, Hao, J., Fauss, M., & Li, C. (2024, July). *Towards fair detection of AI-generated essays in large-scale writing assessments*. Poster presented at the 25th International Conference on Artificial Intelligence in Education (AIED 2024), Recife, Brazil.
- Forsyth, C., Zapata-Rivera, D., Graf, E., & **Jiang, Y.** (2024, July). *Complex conversations: LLMs vs. knowledge engineered conversation-based assessment*. Poster presented at the 17th International Conference on Educational Data Mining (EDM 2024), Atlanta, GA.
- Zapata-Rivera, D., Forsyth, C. M., Graf, A., & **Jiang, Y.** (2024, July). *Designing and evaluating evidence-centered design based conversations for assessment with LLMs*. Poster presented at the 17th International Conference on Educational Data Mining (EDM 2024), Atlanta, GA.
- Jiang, Y.**, Hao, J., Fauss, M., & Li, C. (2024, April). *Detecting AI-generated essays in a large-scale educational assessment: Is there a bias against non-native English speakers?* Paper presented at the 2024 American Educational Research Association (AERA) Annual Meeting, Philadelphia, PA.
- Quirk, V., **Jiang, Y.**, He, Q. (2024, April). *Exploring sex differences in navigation behaviors in a large-scale reading assessment*. Paper presented at the 2024 American Educational Research Association (AERA) Annual Meeting, Philadelphia, PA.
- Jiang, Y.**, Hao, J., Fauss, M., & Li, C. (2024, April). *Towards investigating the fairness of detecting LLM-generated essays*. Paper presented at the 2024 American National Council on Measurement in Education (NCME) Annual Meeting, Philadelphia, PA.
- Jiang, Y.**, Hao, J., Fauss, M., & Li, C. (2023, September). *AI essay detectors: Bias against non-native speakers?*. Poster presented at the ETS AI Expo, Princeton, NJ.
- Jiang, Y.**, Beigman Klebanov, B, Livne, O. E., & Hao, J. (2023, July). *Analyzing users' interaction with writing feedback and their effects on writing performance*. Poster presented at the 24th International Conference on Artificial Intelligence in Education (AIED 2023), Tokyo, Japan.
- He., Q., Bei, N., **Jiang, Y.**, Kaldes, G., & Tighe, E. L. (2023, May). *Understanding adults' latent problem-solving strategies with sequential process data*. Presented at the 2023 IES Annual Principal Investigators Meeting, virtual.
- Soyoye, O. O., **Jiang, Y.**, He., Q. (2023, April). *Using sequence mining to explore students' behaviors in digital reading assessments*. Paper presented at the 2023 American Educational Research Association (AERA) Annual Meeting, Chicago, IL.
- Bei, N., He., Q., **Jiang, Y.** (2023, April). *Identifying latent state transitions with multigroup hidden Markov model on process data*. Paper presented at the 2023 American National Council on Measurement in Education (NCME) Annual Meeting, Chicago, IL.
- Jiang, Y.**, Cayton-Hodges, G., Nabors Oláh, L.K., & Minchuk, I. (2022, April). *Using sequence mining to explore mathematical tool usage in large-scale digitally-based assessments*. Paper presented

at the 2022 American National Council on Measurement in Education (NCME) Annual Meeting, San Diego, CA.

Nabors Oláh, L., Cayton-Hodges, G., **Jiang, Y.**, & Minchuck, I. (2022, June). *A framework for K12 classroom-based OTL in mathematics*. Paper presented at the CCSSO National Conference on Student Assessment, Atlanta, GA.

Cisterna, D., Liu, L., Cahill, A., Kinsley, D., Chen, S., Qi, Y., & **Jiang, Y.** (2022, March). *Exploring Student Reasoning Patterns in the Context of an NGSS-Aligned Assessment Task: The Ecosystem Item*. Paper presented at the Annual Meeting of the National Science Teaching Association, Vancouver, BC.

Moon, J., **Jiang, Y.**, & Brockway, D. (2021, July). *The role of task context and scaffolding in simulation-based assessments of science learning*. Paper presented at the 12th Conference of the International Test Commission, virtual.

Gong, T., Liu, B., Lemke, M. L., **Jiang, Y.**, & Xi, N. (2021, July). *Analysis of user retention in an online platform for English language learning and self-assessment*. Paper presented at the 12th Conference of the International Test Commission, virtual.

Zhang, J., Ober, T., **Jiang, Y.**, Plass, J., & Homer, B. (2021, June). *Predicting executive functions in a learning game: Accuracy and reaction time*. Paper presented at the 14th International Conference on Educational Data Mining (EDM 2021), virtual.

Jiang Y., Gong, T., & Arslan, B. (2021, April). *Gaps between knowing and doing in scientific inquiry practices within large-scale educational assessments*. Paper presented at the 2021 American National Council on Measurement in Education (NCME) Annual Meeting, virtual.

Jiang, Y. & Hao, J. (2021, April). *Exploring the progression of writing fluency in large-scale assessments using keystroke logs*. Paper presented at the 2021 National Council on Measurement in Education (NCME) Conference, virtual.

Gong, T., Zhang, M., **Jiang Y.**, Li, C., & Hao, J. (2021, April). *Investigating production rate of short essay writing using large-scale assessments*. Paper presented at the 2021 American National Council on Measurement in Education (NCME) Annual Meeting, virtual.

Castellano, K., Mikeska, J., Moon, J., Holtzman, S., Gao, J., & **Jiang, Y.** (2021, April). *Do the tenets of answer changing research hold for an innovative assessment?* Paper presented at the 2021 National Council on Measurement in Education (NCME) Conference, virtual.

Andrews-Todd, J., **Jiang, Y.**, Naylor, L., Wilson, S., Toscano, M., & Steinberg, J. (2021, April). *Exploring collaboration interaction patterns and gameplay processes in an educational game*. Paper presented at the 2021 American Educational Research Association (AERA) Annual Meeting, virtual.

Gong, T., Shuai, L., Arslan, B., & **Jiang, Y.** (2020). *Process based analysis on scientific inquiry tasks using large-scale national assessment dataset*. Paper presented at the 13th International Conference on Educational Data Mining (EDM 2020), virtual.

Jiang, Y., Almeda, V., Kai, S., Baker, R.S., Ostrow, K., Inventado, P., & Scupelli, P. (2020, June). *Single template vs. multiple templates: Examining the effects of problem structure on*

- performance. Paper presented at the 14th International Conference of the Learning Sciences (ICLS). Nashville, Tennessee.
- Jiang, Y.**, Almeda, V., Kai, S., Baker, R.S., Ostrow, K., Inventado, P., & Scupelli, P. (2019, July). *Single template vs. multiple templates: Examining the effects of problem structure on performance*. Paper presented at the 41st Annual Meeting of the Cognitive Science Society (CogSci), Montreal, Canada.
- Arslan, B., **Jiang, Y.**, Gong, T., Keehner, M., & Katz, I. (2019, July). *A computational cognitive modeling approach to understand test-takers' strategy use in drag-and-drop math questions*. Paper presented at the 41st Annual Meeting of the Cognitive Science Society (CogSci), Montreal, Canada.
- Arslan, B., **Jiang, Y.**, Gong, T., & Keehner, M. (2019, April). *The effects of drag-and-drop item type design on test-takers' performance and strategy use*. Paper presented at the 2019 American Educational Research Association (AERA) Annual Meeting, Toronto, Canada.
- Feng, G., Shuai, S., **Jiang, Y.**, Xie, J., & Agard, C. (2019, April). *Analyzing process data for the randomized control trial of NAEP reading scenario-based tasks*. Paper presented at the 2019 National Council on Measurement in Education (NCME) Conference, Toronto, Canada.
- Andres, A., Ocumpaugh, J., Baker, R.S., Slater, S., Paquette, L., **Jiang, Y.**, Bosch, N., Munshi, A., Moore, A. & Biswas, G. (2019, March). *Affect sequences and learning in Betty's Brain*. Paper presented at the 9th International Learning Analytics and Knowledge (LAK) Conference, Tempe, AZ.
- Jiang, Y.**, Bosch, N., Baker, R. S., Paquette, L., Ocumpaugh, J., Andres, J. M. A. L., Moore, Allison L., Biswas, G. (2018, June). *Expert feature-engineering vs. deep neural networks: Which is better for sensor-free affect detection?* Paper presented at the 19th International Conference on Artificial Intelligence in Education (AIED 2018), London, UK.
- Jiang, Y.** (2016, April). *Transfer of scientific inquiry skills in open-ended learning environments*. Paper presented at the Teachers College 2016 Psychology Conference, New York, NY.
- Jiang, Y.**, Paquette, L., Baker, R.S., Clarke-Midura, J. (2015, June). *Comparing novice and experienced students in Virtual Performance Assessments*. Paper presented at the 8th International Conference on Educational Data Mining (EDM 2015), Madrid, Spain.
- Jiang, Y.**, Baker, R.S., Paquette, L., San Pedro, M.O., Heffernan, N.T. (2015, June). *Learning, moment-by-moment, and over the long term*. Paper presented at the 17th International Conference on Artificial Intelligence in Education (AIED 2015), Madrid, Spain.
- Wang, T., Wang, Y., **Jiang, Y.**, Baker, R., Hu, X. (2015). *中国大陆教育数据挖掘进展综述*. The Third Meeting of Computational Behavioral Sciences -- Corpus Linguistics and Text Data Mining: Modeling and Applications. China.
- Sao Pedro, M., **Jiang, Y.**, Paquette, L., Baker, R.S., Gobert, J. (2014, June). *Identifying transfer of inquiry skills across physical science simulations using educational data mining*. Paper presented at the 11th International Conference of the Learning Sciences (ICLS), Boulder, CO.

Jiang, Y. (2014, May). *Design of invention-based simulations as preparation for future learning*. Paper presented at the 2014 *Teachers College Educational Technology Conference (TCETC)*, New York, NY.

Kamarainen, A.M., Metcalf, S., Jiang, Y., Grotzer, T. and Dede, C. (2011, August). *EcoMUVE: An immersive virtual environment that prepares students for inquiry learning in real world ecosystems*. Presented at the *Ecological Society of America Annual Meeting*, Austin, TX, USA.

Professional Service

ETS Services

- Coordinator and Organizer of ETS Process Data Special Interest Group. 2020-present.
- Board Member. ETS Summer Internship Review Committee. 2022–2025.
- Organization Committee Member for Team China. ETS Asian Event. 2019.

Professional Communities

- Chair. National Council on Measurement in Education (NCME) Annual Award Committee. 2026.
- Industry Track Chair and Organizing Committee Member. The 18th International Conference on Educational Data Mining (EDM). 2025.
- Award Committee Member. National Council on Measurement in Education (NCME) Annual Award for Exceptional Achievement in Educational Measurement. 2025.
- Workshop Co-Organizer on “Innovations in methodologies to understand and learn from learner and group behaviors on large-scale assessments”. The Annual International Association for Educational Assessment (IAEA) Conference. 2024.
- Program Committee Member. International Conference on Educational Data Mining (EDM). 2017, 2018, 2019, 2021, 2022, 2023, 2025.
- Program Committee Member. The International Conference on Computer Supported Education (CSEDU). 2025.
- Program Committee Member. The International Conference of the Learning Sciences (ICLS). 2025.
- Senior Program Committee Member. The International Conference on Artificial Intelligence in Education (AIED). 2022, 2025.
- Program Committee Member. The International Conference on Artificial Intelligence in Education (AIED). 2021, 2023, 2024.
- Program Committee Member. AIED Industry and Innovation Track. 2022.
- Program Committee Member. The International Learning Analytics and Knowledge Conference (LAK). 2019.

Ad-hoc Journal Reviewer

- Computers and Education
- Computers in Human Behavior
- Frontiers in Psychology
- International Journal of Educational Data Mining
- International Journal of Artificial Intelligence in Education
- Journal of Research in Science Teaching

- Frontiers in Artificial Intelligence
- Journal of Intelligence
- Computers and Education: Artificial Intelligence
- Journal of Learning Disabilities
- Large-Scale Assessments in Education
- Assessing Writing
- The Internet and Higher Education
- Journal of Data and Information Quality
- Computer-Based Learning in Context
- Acta Psychologica
- Computer Standards & Interfaces
- Quality Assurance in Education

Reviewer for International Conferences and Other Publications

- International Conference on Artificial Intelligence in Education (AIED, 2021-2025)
- International Conference on Educational Data Mining (EDM, 2017-2019, 2021-2023, 2025)
- International Learning Analytics and Knowledge Conference (LAK, 2019)
- International Conference of the Learning Sciences (ICLS, 2025)
- The 17th International Conference on Computer Supported Education (CSEDU, 2025)
- CHI (2021)
- EDMGAMES (2019)
- ETS Tech Review (2018-present)
- Digital Technologies and Instructional Design for Personalized Learning (2018)

Research Grants

Select Externally Funded Research Projects

- | | |
|-----------|--|
| 2024-2027 | <p>Funding Source: U.S. Department of Education, Education Innovation and Research (EIR) program</p> <p>Role: Co-Investigator</p> <p>Project: Developing Middle School Students' Social Emotional Learning Skill Applications through Technology Enhanced Collaborative Learning (S411C230179)</p> <p>Corresponding PI: Patrick Kyllonen (PI), Stephen N. Elliott (Co-PI), Jiangang Hao (Co-PI), Jessica Andrews Todd (Co-PI), Yang Jiang (Co-I), Michael Fauss (Co-I)</p> <p>Amount: \$3,999,997</p> |
| 2022-2024 | <p>Funding Source: U.S. Department of Education, National Center for Education Statistics (NCES)</p> <p>Role: Principal Investigator</p> <p>Project: National Assessment of Educational Progress (NAEP) Survey Assessment Innovation Lab: Advancing NAEP Math Digital Task Design (NAEP SAIL P198)</p> <p>Amount: \$143,000</p> |

- 2023-2024 **Funding Source:** U.S. Department of Education, National Center for Education Statistics (NCES)
Role: Principal Investigator
Project: Comparing Process Data from the 2019 and 2022 NAEP Math Assessments to Understand Score Drops and Contextualizing NAEP Results through Students' Test-Taking Processes (NAEP SAIL P846)
Amount: \$350,000
- 2023-2024 **Funding Source:** U.S. Department of Education, National Center for Education Statistics (NCES)
Role: Co-Principal Investigator
Project: Select-in-Passage Item Formats in NAEP Reading (NAEP SAIL P847)
Amount: \$112,500
- 2020-2024 **Funding Source:** U.S. Department of Education, National Center for Education Statistics (NCES)
Role: Co-Principal Investigator
Project: Exploring Mathematical Process Data from Large-Scale Digitally-Based Assessments (NAEP SAIL P173)
Amount: \$350,000
- 2020-2023 **Funding Source:** U.S. Department of Education, National Center for Education Statistics (NCES)
Role: Principal Investigator
Project: Using National Assessment Process Data to Understand Cognitive Processes (NAEP SAIL P170)
Amount: \$72,000
- 2021-2025 **Funding Source:** U.S. National Science Foundation
Role: Core Researcher
Project: Investigating the Role of Collaboration on the Development of Student Ideas using a Learning Progression for the Function Concept
Amount: \$3,063,630
- 2019-2022 **Funding Source:** U.S. Army Research Institute for the Behavioral and Social Sciences
Role: Core Researcher
Project: Collaborative Problem Solving (CPS) Skill: Estimating an Individual's Contribution to Small Group Performance (W911NF1910106)
Amount: \$993,345
- 2017-2022 **Funding Source:** U.S. Department of Education
Role: Core Researcher

Project: A Theory and Data Driven Approach for Identifying Evidence of Collaborative Problem Solving Skills (R305A170432)

Amount: \$1,399,250

2016-2021 **Funding Source:** U.S. National Science Foundation

Role: Participant

Project: Collaborative Research: Using Data Mining and Observation to derive an enhanced theory of SRL in Science learning environments (DRL-1561567)

Amount: \$1,492,122

2013-2017 **Funding Source:** U.S. National Science Foundation

Role: Participant

Project: Research on Education and Learning (REAL): Making Math Tutors More Engaging and Effective through Interaction Design Patterns and Educational Data Mining (DRL-1252297)

Amount: \$1,480,949

Currently Under Review

2025-2029 **Funding Source:** U.S. Department of Education, Institute of Education Sciences

Role: Principal Investigator

Project: Fair and Responsible Detection of AI-Generated Essays

Amount: \$1,699,975

2025-2029 **Funding Source:** U.S. Department of Education, Institute of Education Sciences

Role: Co-Investigator

Project: Assessing STEM Skills Through AI-Based Conversation Based Assessment

Amount: \$1,700,000

2025-2029 **Funding Source:** U.S. National Science Foundation

Role: Co-Investigator

Project: Exploring How Conversational Agent Personas Affect Students' Interactions and Learning in Science

Amount: \$3,000,000

2025-2029 **Funding Source:** U.S. Department of Education, Institute of Education Sciences

Role: Co-Investigator

Project: Collaborative Character Skills Development with Geographically Dispersed Student Teams

Amount: \$4,000,000

Select Internally Funded Research Projects

- 2025-2026 **Funding Source:** ETS Research Institute
Role: Principal Investigator
Project: AI-Enhanced Self-Regulated Learning and Socially Shared Regulation of Learning
- 2024-2025 **Funding Source:** ETS Research Institute
Role: Principal Investigator (in collaboration with Yizhou Fan (Peking University) and Yuan Shen (Zhejiang University))
Project: AI-Based Pedagogical Agents for Writing
- 2022-2024 **Funding Source:** ETS Research Allocation and ETS Enterprise Security Initiative
Role: Principal Investigator
Project: Responsible and Fair Use of AI: Developing Innovative Data Analytics and AI Methods to Support Test Security
- 2021-2023 **Funding Source:** ETS Research Allocation
Role: Principal Investigator
Project: Assessment of Complex 21st Century Skills in the Age of AI: Process Data Analytics and Psychometric Modeling of Interactive Data from Human-Human Interaction
- 2020-2022 **Funding Source:** ETS Research Allocation
Role: Principal Investigator
Project: Enhancing Process Data Capabilities: Process Data Analysis for Writing Mentor
- 2018-2020 **Funding Source:** ETS Research Allocation
Role: Principal Investigator
Project: Interactive Simulations to Enhance Assessment in STEAM Disciplines: Exploring EDM and Learning Analytics
- 2019-2020 **Funding Source:** ETS Research Allocation
Role: Principal Investigator
Project: Leveraging Response Process Data to Support Next Generation Assessments: Keystroke Analytics, Tool Usage Analytics, and Group Variations
- 2020 **Funding Source:** ETS Research Allocation
Role: Principal Investigator
Project: Adaptive Learning Systems: A Research Synthesis

Mentorship

Mentoring Activities through ETS Research Internship Program, NAEP Internship Program, ETS-UTSA Pathways Summer Internship Program, etc.

Ph.D.

- 2025 Siyang Liu (University of Michigan, co-advisor: Jessica Andrews Todd). *Exploring Features that Optimize the Use of AI to Support Assessment and Learning in STEM.*
- 2024 Xinying Hou (University of Michigan, co-advisors: Jessica Andrews Todd, Carol Forsyth). *An LLM Multi-Agent Architecture for Conversation-Based Assessment.*
- 2024 Yehong Yang (Beijing Normal University). *Using Social Network Analysis to Explore Interaction Patterns in Collaborative Decision Making Tasks.*
- 2023 Victoria Quirk (University of Illinois Urbana-Champaign, co-advisor: Qiwei He). *Exploring Subgroup Differences in Navigation Behaviors and Cognitive Processes in 2019 NAEP Reading Assessments.*
- 2022 Olushola Soyoye (University of Delaware, co-advisor: Qiwei He). *Using Sequence Mining to Explore Cognitive Processes and Strategies in Assessments.*
- 2022 Ni Bei (University of Washington, co-advisor: Qiwei He). *Identifying Latent State Transition in Problem-Solving.*
- 2021 Reginald Ziedzor (Southern Illinois University). *Investigating Engagement and Motivation in Digitally-Based Reading Assessments.*
- 2020 Blake Turner (University of Maryland, co-advisors: Gabrielle Cayton-Hodges, Leslie Nabors Olah, and Ilona Minchuk). *Understanding Impacts of Culture and Race on NAEP Math: Assessment and Interpretation.*
- 2020 Ropa Denga (Rensselaer Polytechnic Institute, co-advisor: Hilary Persky). *Effects of Formatting in Reading Blocks: Exploring Test-Takers' Response and Behavioral Patterns.*

Master's

- 2020 Sofia Santillan (University of Texas at San Antonio, co-advisors: Jessica Andrews and Jonathan Steinberg). *Perceptions of Self vs. Partner in Collaborative Problem-Solving Tasks.*

Undergraduate

- 2020 Grace Eke (Xavier University of Louisiana, co-advisors: Gabrielle Cayton-Hodges and Chris Agard). *Exploring Use of Virtual Tools for Mathematics Assessment.*
- 2020 Laila Naylor (University of Texas at San Antonio, co-advisors: Jessica Andrews and Jonathan Steinberg). *Comparing Gender Combination Pairs to Assess Interaction Patterns.*

Computer skills

Python; R; SPSS; Java; RapidMiner; MPlus; HLM; SQL; Adobe Creative Suites (Photoshop, Flash, InDesign, etc.); HTML; CSS; Javascript; XML; Video-editing; Microsoft Office Expert (Microsoft Authorized).

Affiliations

American Educational Research Association; National Council for Measurement in Education;
International Artificial Intelligence in Education Society; International Society of the Learning Sciences

Last updated on April 17, 2025