

Jinnie Shin

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Education

University of Alberta

Department of Educational Psychology

Ph.D. in Measurement, Evaluation and Data Science

Dissertation: Automated Item Generation by Combining the Non-template and Template-based Approaches to Generate Reading Inference Test Items

Edmonton, AB, Canada
2018-2021

University of Alberta

Department of Educational Psychology

Ph.D. in Measurement, Evaluation and Cognition

Dissertation: A Neural Network Approach to Automated Essay Scoring: A Comparison with the Method of Integrating Deep Language Features using Coh-Metrix (Published in Language Testing, 2020)

Edmonton, AB, Canada
2016-2018

Gyeongin National University of Education

Department of Elementary Education

B.Ed. in English Education

South Korea
2012-2016

Current Appointment

University of Florida / Assistant Professor

2021 - PRESENT, Gainesville, FL

Research and Evaluation Methodology, H-DOSE, College of Education

Previous Appointments

Altus Assessments / Senior Research Scientist

2021, Toronto, ON, Canada

External Research Department

Virtual Learning Lab, University of Florida / External NLP Intern

2020-2021, Gainesville, FL

External Research Intern under the supervision of Dr. Danielle S. McNamara at the Arizona State University to conduct NLP research

Medical Council of Canada / ML and NLP research Intern

2020, Ottawa, ON, Canada

Research Intern to conduct analysis on log analysis with remote proctoring exams

National Certificate of Educational Assessment / NLP Research Consultant

2020, Wellington, New Zealand

Automated Essay Scoring consultant

American College Testing (ACT inc.) / Visiting Scholar

2019, Iowa city, IA

ELA Automated Item Generation research consultant

Centre for Research in Applied Measurement and Evaluation / Statistical Consultant

2017-2021, University of Alberta, Edmonton, AB, Canada

Alberta Education / Research Intern

2017-2020, Edmonton, AB, Canada

Research Intern at the provincial achievement sector and the research branch

Affiliate Positions & Programs	Institute for Advanced Learning Technologies (IALT) <i>Member, College of Education, University of Florida</i>		Gainesville, FL 2021 - Present
	Virtual Learning Lab (VLL) <i>Member, College of Education, University of Florida</i>		Gainesville, FL 2020 - Present
	Centre for Research in Applied Measurement and Evaluation <i>Research Assistant, Dept of Educational Psychology, University of Alberta</i>		Edmonton, AB, Canada 2016-2021
Awards	Doctor of Recruitment Scholarship <i>Awarded to superior doctoral level students who have the potential to contribute to the University's research significantly.</i>	\$5,000	Edmonton, AB, Canada 2018
	Myer Horowitz Travel Award <i>Faculty of Education, University of Alberta</i>	\$1,500	Edmonton, AB, Canada 2018
	GSA Academic Travel Award <i>Graduate Student Association, University of Alberta</i>	\$1,000	Edmonton, AB, Canada 2018, 2019
	Mary Louise Imrie Graduate Student Award <i>Faculty of Education, University of Alberta</i>	\$1,000	Edmonton, AB, Canada 2018, 2019
	Educational Psychology Travel Award <i>Faculty of Education, University of Alberta</i>	\$500	Edmonton, AB, Canada 2019
Grant	Profiling Effective Self-regulation Test-taking Strategies of High school Students in a Large-scale Mathematics Assessment AERA-NSF Research Grant Role: Principal Investigator (PI)		\$34,307 2022-2024 (Pending)
	Democratizing Digital Learning: An Intelligent Learning and Assessment Environment for Supporting Early Literacy Spencer Foundation Role: Co-Principal Investigator (CO-PI)		\$419,836 2022-2025 (Pending)
	Early Literacy for All Children: An Intelligent Learning and Assessment System for Addressing Disproportionate Learning Losses in Reading TD Ready Challenge Role: Co-Principal Investigator (CO-PI)		\$373,509 2021-2024 (Pending)
	MaT-Coach: A Personalized Communication Coach for Math Educators Institute of Education Sciences Role: Co-Principal Investigator (CO-PI)		\$895,349 2022-2026 (Pending)

**Peer-reviewed
Book Chapters**

1. **Shin, J.** & Gierl, M. J. (in press). A Technology-Enhanced Approach for Locating Timely and Relevant News Articles for Context-based Science Education. In A. Alavi (Ed.), *Artificial Intelligence in STEM Education: The Paradigmatic Shifts in Research, Education, and Technology*. Taylor & Francis
2. Gierl, M. J., **Shin, J.**, & Firoozi, T. (in press). Automatic Item Generation. In R. Tierney, F. Rizvi, K. Erickson, & G. Smith (Eds.), *International Encyclopedia of Education* (4th Ed.). New York: Elsevier.
3. **Shin, J.**, Guo, Q. & Gierl, M. J. (2020). Automated essay scoring using deep learning. In M. Khosrow-Pour (Editor), *Handbook of Research on Modern Educational Technologies, Applications, and Management* (Vol. 2) IGI-Global. DOI: 10.4018/978-1-7998-3476-2

**Peer-reviewed
Journal
Articles**

1. **Shin, J.**, Chen, F., Lu, C. & Bulut, O. (2021). Using time-series prediction to inform test administration decisions in computerized formative assessment. *Journal of Computers in Education*. DOI: 10.1007/s40692-021-00196-7
2. **Shin, J.**, & Bulut, O. (2021). Building an intelligent recommendation system for personalized test scheduling: A reinforcement learning approach. *Behavior Research Methods*. DOI: 10.3758/s13428-021-01602-9
3. Bulut, O., Cormier, D. C. & **Shin, J.** (2020). An Intelligent recommender system for personalized test administration scheduling with computerized formative assessments. *Frontiers in Education*, 5, 1-11. DOI: 10.3389/feduc.2020.572612
4. **Shin, J.** & Gierl, M. J. (2020). More Efficient Processes for Creating Automated Essay Scoring Frameworks: A Demonstration of Two Algorithms. *Language Testing*. DOI:10.1177/0265532220937830
5. **Shin, J.**, Bulut, O. & Gierl, M. J. (2020). Development practices of trusted AI systems among Canadian data scientists. *International Review of Information Ethics*. DOI: 10.29173/irie377
6. **Shin, J.**, Bulut, O. & Gierl, M. J. (2019). The Effect of Best distractor location on the difficulty of multiple-choice items. *Journal of Experimental Education*. DOI: 10.1080/00220973.2019.1629577
7. **Shin, J.**, Guo, Q. & Gierl, M. J. (2019). Multiple-Choice Item Distractor Development using Topic Modelling Approaches. *Frontiers in Psychology*, 10:825. DOI: 10.3389/fpsyg.2019.00825

**Peer-reviewed
Proceedings**

1. **Shin, J.**, Balyan, R., Banawan, M., Leite, W. L., & McNamara, D. S (2021). Pedagogical Communication Language in Video Lectures: Empirical Findings from Algebra Nation. In *Proceedings of International Conference of the Learning Sciences 2021* (p.323-329).
2. Banawan, M., Balyan, R., **Shin, J.**, Leite, W. L., & McNamara, D. S (2021). Linguistic Features of Discourse within an Algebra Online Discussion Board Authors. In *Proceedings of Educational Data Mining Conference 2021*. https://educationaldatamining.org/EDM2021/virtual/static/pdf/EDM21_paper_89.pdf

**Technical
Reports**

1. Gierl, M. J. & **Shin, J.** (2020). Using Automated Procedures to Machine Score Essays. Written in the New Zealand NCEA Examination Content Areas of English and History. Wellington, NZ: New Zealand Qualification Authority

**Manuscripts &
Proceedings
Under Review**

1. **Shin, J.** & Gierl, M. J. (under review). Automated Generation of Fill-in-the-blank Questions for Reading Comprehension Examinations [Invited Paper]
2. **Shin, J.**, Gierl, M. J., & Lai, H. (under review). The Importance of Content Coding in Automatic Item Generation. [Invited Paper]
3. Gierl, M. J., Lai, H., & **Shin, J.** (under review). Implications of Metadata for Medical Licensure Testing [Expanding Pathways to Licensure]
4. **Shin, J.**, Banawan, M., Balyan, R., Leite, W. L., & McNamara, D. S. (under review). Understanding and Evaluating the Purposeful Interpersonal Interaction within an Online Mathematics Discussion Board
5. Banawan, M., **Shin, J.**, Balyan, R. Leite, W. L., & McNamara, D. S. (under review). Math Discourse Linguistic Components: Cohesive Cues within a Math Discussion Board Discourse

**Manuscripts
In Preparation**

1. **Shin, J.**, Moore, R. L., & *Aguinalde, A. P., (in preparation). Understanding the Student Engagement and the Use of Learning Technologies: The impact of COVID-19
2. **Shin, J.** & Gierl, M. J., (in preparation). Automated Reading Item Generation.
3. **Shin, J.**, Balyan, R., Banawan, M., Leite, W. L., & McNamara, D. S (in preparation). Tutoring discourse and student learning in Online Mathematics Learning Environments: A Theory-based Natural Language Processing Approach
4. **Shin, J.**, Guo, Q., Alves, C., & Morin, M. (in preparation). Interaction Log Analysis of Proctoring Modalities in High-Stakes Medical Licensing exams.
5. **Shin, J.** & Gierl, M. J., (in preparation). Attribute-specific Automated Essay Scoring.
6. Firoozi, T., **Shin, J.**, Gierl, M. J., & Bulut, O. (in preparation). The Effect of Option Similarity on The Item Difficulty of A Reading Comprehension Test: An Application of Word Embedding Techniques.
7. Bulut, O., **Shin, J.**, & Cormier, D. C., (in preparation) Personalized Test Scheduling for Computerized Reading Assessments: A recommender system approach.

**Conference
Presentations**

1. **Shin, J.**, Banawan, M., Balyan, R., Leite, W. L., & McNamara, D. S. (submitted). Understanding and Evaluating the Purposeful Interpersonal Interaction within an Online Mathematics Discussion Board. 2022 Learning Analytics and Knowledge Conference [Full paper]
2. Banawan, M., **Shin, J.**, Balyan, R., Leite, W. L., & McNamara, D. S. (submitted). Math

¹ * Student Co-author

Discourse Linguistic Components: Cohesive Cues within a Math Discussion Board Discourse. 2022 Learning Analytics and Knowledge Conference [Full paper]

3. **Shin, J.** & Gierl, M. J. (accepted). Automated Item Generation of Reading Inference Test Items: A Natural Language Processing Approach. Paper accepted at Division C-3b: Technology-Based Environments at the 2022 Annual Meeting of American Education Research Association (AERA)
4. Banawan, M., Balyan, R., **Shin, J.**, Leite, W. L., & McNamara, D. S (2021, July). Linguistic Features of Discourse within an Algebra Online Discussion Board. Paper presented at the 2021 Annual Conference of Educational Data Mining (EDM)
5. **Shin, J.**, Firoozi, T., & Gierl, M. J. (2021, June). ICT Use and Teachers' self-efficacy in Canadian Classrooms: The Mediating Roles of Purposeful Instructional Practices Using the Teaching and Learning International Survey (TALIS) 2018 Results. Paper presented at the 2021 Annual Conference of the Canadian Society for the Study of Education (CSSE)
6. **Shin, J.**, Balyan, R., Banawan, M., Leite, W. L., & McNamara, D. S (2021, April). Discovering Pedagogical Communication Strategies with Algebra Tutoring videos with a Theory-based NLP Approach. 2021 Annual Meeting of American Education Research Association (AERA) (Online)
7. Bulut, O., Cormier, D. C., & **Shin, J.** (2021, June). The end of one-size-fits-all testing: Personalizing test schedules with recommender systems. Paper presented at the annual meeting of the National Council on Measurement in Education, Baltimore, MD
8. **Shin, J.**, Guo, Q., Alves, C., & Morin, M. (2021, June). Interaction log Analysis of Proctoring Modalities in high-stakes Medical Licensing Exams. Paper presented at the annual meeting of the National Council on Measurement in Education, Baltimore, MD
9. Firoozi, T., **Shin, J.**, Bulut, O., & Gierl, M. J. (2021, June). The effect of option similarity on the item difficulty of a reading comprehension test: An application of word embedding techniques. Paper presented at the annual meeting of the National Council of Measurement in Education, Baltimore, MD
10. **Shin, J.**, Balyan, R., Banawan, M., Leite, W. L., & McNamara, D. S (Nov, 2020). Combining Discourse Analysis and Natural Language Processing: Revealing Patterns of Pedagogical Communication in Algebra Tutoring. 2021 Annual Meeting of the Society for Computation in Psychology (SCIP) (Online)
11. **Shin, J.**, Gierl, M. J., Lai, H. & Matovinovic (2020). Automated Reading item Generation Using Topic Modelling Approach. Paper to be presented at the National Council on Measurement in Education, San Francisco, CA, USA (Conference cancelled due to COVID-19)
12. **Shin, J.**, Chen, F., Lu, C. & Bulut, O. (2020). Automating Test Administration Decisions in Computerized Formative Assessment. Paper to be presented at the National Council on Measurement in Education, San Francisco, CA, USA (Conference cancelled due to COVID-19)
13. **Shin, J.**, Bulut, O. & Gierl, M. J. (2019, May). Development Practices of Trusted AI Systems among Canadian Data Scientists. Paper presented at the AI, Ethics and Society Conference, Edmonton, AB, CA

14. **Shin, J.**, Guo, Q. & Gierl, M. J. (2019, April). Using Students' Written Responses to Inform Content Specialists about Students' Common Misconceptions. Paper presented at the National Council on Measurement in Education, Toronto, ON, CA
15. **Shin, J.** & Gierl, M. J. (2019, April). A Comparison of Machine and Deep Learning Approaches in Automated Essay Scoring. Paper presented at the National Council on Measurement in Education, Toronto, ON, CA
16. **Shin, J.** (2019, March). Using Automated Question Answering System for Math Word Problems. Poster session presented at the 12th Annual G.M Dunlop Conference, Edmonton, AB, CA
17. **Shin, J.**, Bulut, O. & Gierl, J. M. (2018, April). Does the position of response options matter? Poster session presented at the National Council on Measurement in Education (NCME) 2018, New York City, NY, USA

Symposium & Invited Presentations

1. **Shin, J.** (2021, June). Identifying Pedagogical Conversational Patterns in Online Algebra Learning. Ed Games EXPO 2021, Gainesville, FL, USA (Online)
2. **Shin, J.** (2021, April). Advances in Assessment in Online Learning Environments. Webinar at the Florida Distance Learning Research Consortium, Gainesville, FL, USA (Online)
3. **Shin, J.** (2020, Feb). Automated Item Generation in Reading Assessment. Presentation in the CanAm online Symposium 2020, Edmonton, AB, CA
4. **Shin, J.** (2019, Oct). PIRLS 2019 Alberta Student's Achievement Results and Contextual Questionnaire Analysis Results. Poster presented at the 2019 Alberta Research Network Meeting, Edmonton, AB, CA
5. **Shin, J.** (2019, Oct). The Effect of Content Coverage on Student Achievement in Mathematics: Preliminary Analysis of TIMSS 2015. Poster presented at the 2019 Alberta Research Network Meeting, Edmonton, AB, CA
6. Bulut, O. & **Shin, J.** (2017, September). Examining Item and Response Option Position Effects. Presentation in the CanAm online Symposium 2017, Edmonton, AB, Canada
7. **Shin, J.**, Bulut, O. & Gierl J. M., (2017, March). Does the position of response option matter? Poster session presented at the Engage Conference 2017, Edmonton, AB, Canada

Teaching

EDF 6436: Theory of Measurement <i>Instructor, College of Education, University of Florida</i>	Spring 2022
EDF 6938: Computational Psychometrics <i>Instructor, College of Education, University of Florida</i>	Summer 2022
EDF 6938: Introduction to NLP in Education Research <i>Instructor, College of Education, University of Florida</i>	Fall 2022
CMPUT 497/501: Introduction to Natural Language Processing <i>Graduate Teaching Assistant, Dept. of Computing Science, University of Alberta</i>	Winter 2021
EDU 210: Introduction to Educational Technology <i>Graduate Teaching Assistant, Faculty of Education, University of Alberta</i>	Winter 2021

Workshop: Introduction to Machine Learning with Python
Instructor, University of Alberta

Fall 2020

EDPY500: Introduction to Data Analysis in Education Research
Graduate Teaching Assistant, Dept. of Educational Psychology, University of Alberta

Fall 2017/
 Winter
 2018

EDPY303: Educational Assessment
Graduate Teaching Assistant, Dept. of Educational Psychology, University of Alberta

Fall 2017

Academic Service

Conference Volunteer

National Council on Measurement in Education, 2019 Annual Meeting, Toronto, ON
 International Conference on Language and Social Psychology (16th), Edmonton, AB
 The G.M. Dunlop Conference Annual Meeting, Edmonton, AB

Professional Membership

American Education Research Association <i>Member</i>	2021 - Present
National Council on Measurement in Education <i>Member</i>	2021 - Present
Canadian Educational Researchers' Association <i>Member</i>	2021 - Present

Editorial Services

Scientific Report, Nature | *Reviewer*
 Language Testing | *Reviewer*
 Assessing Writing | *Reviewer*
 Journal of Science Education and Technology | *Reviewer*
 Journal of Research on Technology in Education | *Reviewer*
 Frontiers in Education / Frontiers in Educational Psychology |
Reviewer