CHENGLU LI

Ph.D. Candidate (ABD) in Educational Technology

Google Scholar ◇ ResearchGate ◇ Personal Website

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EDUCATION

University of Florida — Sept. 2020 - May 2023 (expected)
Ph.D. candidate in Curriculum & Instruction — Gainesville, FL
Specialized in Educational Technology
Dissertation Title: ConCICE Support For Online Algebra I Learning: <u>Con</u>ceptual <u>C</u>hange Oriented Conversational Artificial Intelligence Using <u>I</u>nduction, <u>C</u>oncretization, and <u>E</u>xemplification (see the demo).
Committee: Wanli Xing, Walter Leite, Anthony Botelho, Kara Dawson
Minor in Research and Evaluation Methodology, Educational Psychology

The University of Texas at Austin — Sept. 2015 - Aug. 2017
M.A. in Curriculum & Instruction — Austin, TX
Specialized in Learning Technologies
Finished Coursework of M.S. in Data Science

The University of International Business and Economics — Sept. 2011 - June 2015
B.A. in Business Vietnamese — Beijing, China
Finance double major, thesis published in a peer-reviewed journal

RESEARCH INTERESTS & SKILLS

Research Areas: Fair, Accountable, and Transparent (FAccT) AI in Education, Learning Analytics, Educational Data Mining, Computer Supported Collaborative Learning, Game-based Learning, Online Learning

Language: Mandarin, Vietnamese, & English (TOEFL 110/120)

Programming: JavaScript, Typescript, Python, R, Swift, Objective-C, C#, C++, & C

Front-end: React, React Native, Vue, Svelte, Ant-Design, TailWindUI, CharkraUI

Server-side: Express, NestJS, FastAPI, Flask, Django, MySQL, PostgreSQL, & MongoDB

Data Analysis: PyTorch, Tensorflow, Stan, Scikit-Learn, Pandas, NumPy, D3, SPSS, & SAS

RESEARCH PROJECTS

Connecting STEM to Music and the Physics of Sound Waves — Feb. 2022 - Present
Researcher& Developer — *Gainesville, FL*
· Funded by *NSF, #1657366, $1,227,507*.
· Lead the design and development of a flow-based programming platform (M-Flow) aligned with standards to teach computing with music.
· Collaboratively conduct classroom studies to examine the effectiveness of M-Flow to teach computing.
· Participate in the development of curriculum and professional development sessions.

Precision Education: The Virtual Learning Lab

Researcher

Sept. 2020 - Present
Gainesville, FL

· Funded by *IES, #R305C160004, $8,908,288*.
· Lead studies on investigating and mitigating algorithmic bias for virtual learning environments (VLEs) in the context of Math Nation.
· Collaboratively conduct research to understand factors that influence teaching and learning in VLEs.

FAccT AI Cyberinfrastructure

Researcher & Developer

Sept. 2020 - Present
Gainesville, FL

· Funded by *Schmidt Family Foundation, University of Florida AI Catalyst Grant -P0195022, & the University of Florida Informatics Institute Seed Funding, $156,061.*
· Lead the investigation and development of fair, accountable, and transparent (FAccT) AI cyberinfrastructure (e.g., reusable models, algorithms, and platforms) for education.
· Coordinate to organize a Kaggle Data Science Competition with Schmidt Family Foundation to further understandings on Fair Predictions.

Helios Innovation Technologies in Early Learning

Researcher & Developer

July 2020 - July 2021
Gainesville, FL

· Funded by *Helios Education Foundation, $2,000,000*
· Developed a course-to-course and within-course-resource recommendation system for the Flamingo platform. See the report here
· The course-to-course recommender adopts a hybrid approach (expert, content, and collaboration filtering) using deep learning.
· The within-course-resource recommender utilizes state-of-the-art transformer architecture in natural language processing for semantic match and search.

SCI and ENGR Edu for Infrastructure Transformation

Researcher & Development Leader

June 2019 - Dec. 2021
Gainesville, FL

· Funded by *NSF, #2054079 & #2131097, $3,225,499*
· Collaborated with STEM researchers and educators to understand, identify, and address the needs for a remote lab in Physics and Chemistry education.
· Led the development team (3 members) to design and develop a cloud solution for the remote lab.
· Independently designed the software architecture adopting micro-service and ModelView-ViewModel (MVVM) paradigms.

Alien Rescue

Researcher & Development Leader

Sept. 2015 - Sept. 2020
Austin, TX

· Led the development team (6 members) for Alien Rescue version 6, 7, & 8, an online problem-based 3D immersive learning environment for sixth grade science.
· Collaborated on research projects to investigate the affordances of game-based learning and problem-based learning for middle school science education.
· Built teachers' dashboard independently, where teachers could access descriptive summaries, AI insights, and real-time interventions of students' learning activity.

GRANT ACTIVITY

My Role: Major contributor for proposal writing and project development.
Amount: More than $2,000,000 in the past three years.
Subawards are expected after I land in a research position. Feel free to reach out to my advisor (wanli.xing@coe.ufl.edu) to confirm the details.

Funded Grants

1. *Conversational AI for Online Math Learning*, Google Cloud for Education Research Credits, **Principal Investigator**, $1,000. May 2021 - May 2022.

2. *Project SPAC3: A Culturally Relevant Approach to Spatial Computational Thinking Skills and Career Awareness through an Immersive Virtual Environment*, NSF ITEST, $227,619. Jun 2022 - May 2026.

3. *Project HaHa: Low-Cost Hands-on Hardware Security Education*. Florida Department of Education (FDOE Cyber Florida), $1,413,129. Jun 2022 - Aug 2023.

4. *Connecting STEM to Music and the Physics of Sound Waves (M-Flow)*, NSF ITEST Subcontract, $87,748. Feb 2022 - Jun 2023.

5. *Hardware and Security Education for High School Students*, U.S. National Security Agency, $149,998. Aug 2021 - Aug 2023.

6. *Fair Prediction in Virtual Learning Environments*, Schmidt Family Foundation, $50,000, Aug 2021 - Aug 2022.

7. *ML4Math: Visual Interactive Machine Learning for High School Mathematics Education*, University of Florida Research Opportunity Seed Fund (ROSF), $85,000. Jun 2022 - Jun 2024.

8. *FAccT AI: Fair, Accountable, and Transparent AI in Education and Beyond*, University of Florida Informatics Institute (UFII) Seed Grant, $21,061. Jun 2021 - Jun 2022.

9. *Fair AI Responding to Online Education*, University of Florida AI Catalyst Fund, $50,000. Jan 2021 - Dec 2021.

Pending and Submitted Grants

1. *Collaborative Research: M-Flow: A New Flow-based Music Programming Platform to Engage Children in Computer Science*. Submitted to NSF ITEST 2022, total $1,299,937, our portion is $388,389.

2. *Algebra Learning Bot* (Based on my dissertation & Final Stage Negotiation). Walton Family Foundation, $224,641.

3. *AI Cyberinfrastructure for Learning Engineering Research & Development* (Final Stage Negotiation). Schmidt Family Foundation, $357,047.

PUBLICATIONS

Refereed Journal Articles

4 first-author papers & 8 second-author papers
Impact factors are based on the year of publication

1. **Li, C.**, Xing, W., & Leite, W. (2022). Building Socially Responsible Conversational Agents Using Big Data to Support Online Learning: A Case with Algebra Nation. *British Journal of Educational Technology, 53*(4), 776–803. https://doi.org/10.1111/bjet.13227 [Impact Factor: 5.268]

2. **Li, C.**, Xing, W., & Leite, W. (2022). Toward Building a Fair Peer Recommender to Support Help-Seeking in Online Learning. *Distance Education, 43*(1), 30–55. https://doi.org/10.1080/01587919.2021.2020619 [Impact Factor: 5.500]

3. **Li, C.**, Xing, W., & Leite, W. (2022). Using Fair AI to Predict Students' Math Learning Outcomes in an Online Learning Platform. *Interactive Learning Environments*. https://doi.org/10.1080/10494820.2022.2115076. [Impact Factor: 4.965]

4. **Li, C.** & Xing, W. (2021). Natural Language Generation Using Deep Learning to Support MOOC Learners. *International Journal of Artificial Intelligence in Education, 31*(2), 186–214. https://doi.org/10.1007/s40593-020-00235-x [Flagship Journal of International AIED Society]

5. Xie, C., **Li, C.**, Huang, X., Sung, S., & Jiang, R. (2022). Engaging Students in Distance Learning of Science with Remote Labs 2.0. *IEEE Transactions on Learning Technologies*. https://doi.org/10.1109/TLT.2022.3153005 [Impact Factor: 4.433]

6. Liu, M., **Li, C.**, & Pan, Z. (2022). Creating an Interactive Dashboard to Support Middle School Teachers' Implementation of a Technology-Supported Problem-Based Learning Program. *International Journal of Designs for Learning, 13*(1), 1-18. https://doi.org/10.14434/ijdl.v13i1.31243

7. Leite, W., Xing, W., Gail, G., & **Li, C.** (2022). Teacher Strategies to Use Virtual Learning Environments to Facilitate Algebra Learning During School Closures. *Journal of Research on Technology in Education*. https://doi.org/10.1080/15391523.2022.2110335 [Impact Factor: 3.281]

8. Jiang, R., Ding, X., Sung, S., Bulseco, D., Xie, C., & **Li, C.** (2022). A New Type of Interactive Video for Physics Education. *The Physics Teacher*.

9. Xie, C., **Li, C.**, Ding, X., Jiang, R., & Sung, S. (2021). Chemistry on the Cloud: From Wet Labs to Web Labs. *Journal of Chemistry Education, 98*(9), 2840–2847. https://doi.org/10.1021/acs.jchemed.1c00585 [Impact Factor: 2.979]

10. Jiang, R., **Li, C.**, Huang, X., Sung, S., & Xie, C. (2021). Remote Labs 2.0 to the Rescue: Doing Science in a Pandemic. *The Science Teacher, 88*(6), 63–71. Document URL

11. Liu, M., Pan, Z., **Li, C.**, Han, S., Shi, Y., & Pan, X. (2021). Using Learning Analytics to Support Teaching and Learning in Higher Education: A Systematic Focused Review of Journal Publications from 2016 to Present. *International Journal on E-Learning, 20*(2), 137–169. https://www.learntechlib.org/primary/p/218801/

12. Pan, Z., Lopez, M., **Li, C.**., & Liu, M. (2021). Introducing augmented reality in early childhood literacy learning. *Research in Learning Technology, 29*, Article 2539. https://doi.org/10.25304/rlt.v29.2539 [Scopus CiteScore: 4.8]

13. Sung, S., **Li, C.**, Huang X., & Xie, C. (2021). Enhancing Distance Learning of Science: Impact of Scalable Remote Laboratories on Students' Behavioral and Cognitive Engagement. *Journal of Computer Assisted Learning, 37*(6), 1606–1621. `https://doi.org/10.1111/jcal.12600` [Impact Factor: 2.126]

14. Xing, W., **Li, C.**, Chen, G., Huang, X., Massicotte, J., & Xie, C. (2020). Automatic Assessment of Students' Engineering Design Performance using a Bayesian Network Model. *Journal of Educational Computing Research, 59*(2), 230–256. `https://doi.org/10.1177/0735633120960422` [Impact Factor: 2.180]

15. Sung, S., **Li, C.**, Xie, C., Huang, X., & Shen, J. (2020). How Does Augmented Observation Facilitate Multimodal Representational Thinking? Applying Deep Learning to Decode Complex Student Construct. *Journal of Science Education and Technology, 30*(2), 210–226. `https://doi.org/10.1007/s10956-020-09856-2` [Impact Factor: 2.218]

16. Zou, W., Hu, X., Pan, Z., **Li, C.**, Cai Y., & Liu, M. (2020). Exploring the relationship between social presence and learners' prestige in MOOC discussion forums using automated content analysis and social network analysis. *Computers in Human Behavior, Article 115*, Article 106582. `https://doi.org/10.1016/j.chb.2020.106582` [Impact Factor: 4.306]

17. Liu, M., Shi, Y., Pan, Z., **Li, C.**, Pan, X., & Lopez, F. (2020). Examining middle school teachers' implementation of a technology-enriched problem-based learning program: Motivational factors, challenges, and strategies. *Journal of Research on Technology in Education, 53*(3), 279–295. `https://doi.org/10.1080/15391523.2020.1768183` [Impact Factor: 1.585]

18. Liu, M., **Li, C.**, Pan, Z., & Pan X. (2019). Mining Big Data to Help Make Informed Decisions for Designing Effective Learning Environments. *Interactive Learning Environments*, 1–21. `https://doi.org/10.1080/10494820.2019.1639061` [Impact Factor: 1.604]

19. Liu, M., Zou, W., Shi, Y., Pan, Z., & **Li, C.** (2019). What Do Participants Think of Today's MOOCs: An Updated Look at the Benefits and Challenges of MOOCs Designed for Working Professionals. *Journal of Computing in Higher Education, 32*(2), 307–329. `https://doi.org/10.1007/s12528-019-09234-x` [Impact Factor: 1.870]

20. Liu, M., Liu, S., Zou, W., Pan, Z., & **Li, C.** (2018). Examining Science Learning and Attitudes by At-Risk Students After They Used a Multimedia-Enhanced Problem-Based Learning Environment. *Interdisciplinary Journal of Problem-Based Learning. 13*(1). `https://doi.org/10.7771/1541-5015.1752` [Scopus CiteScore: 3.3]

Manuscripts Under Review and In Progress

1. **Li, C.**, & Xing, W. (under review). Does It Look Fair to You? Understanding Students' Periceved Fairness towards a Predictive System in Eudcation Using a Randomized Controlled Experiment. *Computers & Education*.

2. **Li, C.**, & Xing, W. (under review). Investigating the Effectiveness of an AI Recommendation System in an Online Professional Development Platform. *Computers in Human Behavior*.

3. Xing, W., **Li, C.**, & Xie, C. (in revision). Teaching Thermodynamics with Augmented Interaction and Learning Analytics. *Computers & Education*.

4. Pan, Z., **Li, C.**, Zou, W., & Liu, M. (under review). Learning analytics strategy for detecting

and tracking students' cognitive states during virtual problem-solving activities. *Technology, Knowledge and learning*.

5. **Li, C.**, Xing, W., Leite, W., Botelho, A., & Dawson K. (in progress). Design and Development of a Conversational Artificial Intelligence for Online Math Learning: Lessons Learned.

6. **Li, C.**, Xing, W., Botelho, A., Leite, W., & Dawson K. (in progress). Automatically Concretizing Math Problems to Support Math Learning Using Culturally-Relevant and Individualized Text-Generation Models.

Competitive Refereed Conference Papers

1. Xing, W., **Li, C.**, & Leite, W. (2022). AlgebraNation Dataset: Educational Big Data to Support Fair Educational Machine Learning. *Proceedings of the Educational Data Mining (EDM) 2022 Fairness, Accountability, and Transparency in Educational Data Workshop*. EDM. View Paper.

2. **Li, C.**, Xing, W. & Leite, W. (2022). Do Gender and Race Matter? Supporting Help-Seeking with Fair Peer Recommenders in an Online Algebra Learning Platform. *Proceedings of the 12th International Conference on Learning Analytics and Knowledge - LAK'22* (pp. 432–437). ACM. https://doi.org/10.1145/3506860.3506869 [≈30% acceptance rate]

3. **Li, C.** & Xing, W. (2022). Revealing Factors Influencing Students' Perceived Fairness: A Case with a Predictive System for Math Learning. *Proceedings of 2022 ACM Conference on Learning at Scale - L@S'22*. ACM. https://doi.org/10.1145/3491140.3528293 [≈30% acceptance rate]

4. **Li, C.**, Xing, W. & Leite, W. (2021). Yet Another Predictive Model? Fair Predictions of Students' Learning Outcomes in an Online Math Learning Platform. *Proceedings of the 11th International Conference on Learning Analytics and Knowledge - LAK'21* (pp. 572–578). ACM. https://doi.org/10.1145/3448139.3448200 [≈30% acceptance rate]

5. **Li, C.**, Xing, W. & Leite, W. (2021). Using Fair AI with Debiased Network Embeddings to Support Help Seeking in an Online Math Learning Platform. In I. Roll, D. McNamara, S. Sosnovsky, R. Luckin, & V. Dimitrova (Eds.), *Artificial Intelligence in Education. AIED 2021. Lecture Notes in Computer Science, vol 12749* (pp. 245–250). Springer. https://doi.org/10.1007/978-3-030-78270-2_44 [≈30% acceptance rate]

6. Zou, W., Pan, Z., **Li, C.**, & Liu, M. (2021). Does Social Presence Play a Role in Learners' Positions in MOOC Learner Network? A Machine Learning Approach to Analyze Social Presence in Discussion Forums. In *International Conference on Quantitative Ethnography* (pp. 248–264). Springer, Cham. https://doi.org/10.1007/978-3-030-67788-6_17

7. Pan, Z., **Li, C.**, & Liu, M. (2020). Learning Analytics Dashboard for Problem-based Learning. In *Proceedings of the Seventh ACM Conference on Learning@Scale* (pp. 393–396). ACM. https://doi.org/10.1145/3386527.3406751 [≈30% acceptance rate]

Book Chapters

1. Xing, W., & **Li, C.** (2022, in press). Fair Artificial Intelligence to Support STEM Education: A Hitchhiker's Guide. In J. Krajcik & X. Zhai (Eds.), *Uses of Artificial Intelligence in STEM Education*. Oxford University Press.

2. Liu, M., Zou, W., **Li, C.**, Shi, Y., Pan, Z., & Pan, X. (2019). Using Learning Analytics to Examine Relationships Between Learners' Usage Data with Their Profiles and Perceptions: A Case Study of a MOOC Designed for Working Professionals. In D. Ifenthaler, D. Mah, and J. Y. Yau (Eds.), *Utilizing Learning Analytics to Support Study Success* (pp. 275–294). New York: Springer International Publishing. https://doi.org/10.1007/978-3-319-64792-0_15

3. Liu, M., Horton, L., **Li, C.**, & Pan, Z. (2019). Alien Rescue. In K. Schrier (Ed.), *Learning, Education, & Games: 100 Games to Use in the Classroom and Beyond, Vol. III* (pp. 23–27). ETC Press (Carnegie Mellon).

4. Liu, M., Pan, Z., Pan, X., Dong, A., Zou, W., **Li, C.**, & Shi, Y. (2018). The Use of Analytics for Educational Purposes: A Review of Literature From 2015 to Present. In M. S. Khine (Ed.), *Emerging trends in learning analytics* (pp. 26-44). Brill. https://doi.org/10.1163/9789004399273_003

RESEARCH PRESENTATIONS

Refereed Conference Presentations

1. **Li, C.**, & Xing, W., & Leite, W. (2022, April 21–26). *Toward Fairly Predicting Students' Math Learning Outcomes in an Online Platform* [Poster presentation]. American Educational Research Association (AERA) 2022 Conference, San Diego, CA, United States.

2. **Li, C.**, & Xing, W. (2022, April 21–26). *Engaging MOOC Students With Social-Emotional Support by Using Conversational Artificial Intelligence With Deep Learning* [Poster presentation]. American Educational Research Association (AERA) 2022 Conference, San Diego, CA, United States.

3. Pan, Z., Song, H., Cai, Y., Shao, P., **Li, C.**, Liu, M. (2022, April 21–26). *The Role of a Learning Analytics Scaffolding System in Middle School Science Problem-Based Learning Activities* [Paper presentation]. American Educational Research Association (AERA) 2022 Conference, San Diego, CA, United States.

4. **Li, C.**, Xing, W. & Leite, W. (2021, November 2–6). *Time for a Paradigm Shift in Predictive Analytics: Debiasing Models with Fair AI* [Paper presentation]. Association for Educational Communications and Technology (AECT) 2021 Conference, Online.

5. **Li, C.** & Xing, W. (2021, November 2–6). *Using Conversational AI with deep learning to support MOOC learners* [Paper presentation]. Association for Educational Communications and Technology (AECT) 2021 Conference, Online.

6. **Li, C.**, Xing, W. & Leite, W. (2021, November 2–6). *Building a Network-based Recommender System Using Fair AI to Support Help Seeking in Online Learning* [Poster presentation]. Association for Educational Communications and Technology (AECT) 2021 Conference, Online.

7. Pan, Z., **Li, C.**, Zou, W., & Liu, M. (2021, April 8–12). *The development of an automatic text classifier enhanced dashboard in supporting teacher's facilitation of virtual problem-based learning activities* [Roundtable presentation]. American Educational Research Association (AERA) 2021 Conference, Online.

8. Liu, M., **Li, C.**, & Pan, Z. (2021, April 8–12). *Using Learning Analytics to Understand How*

to Design Effective Digital Educational Games [Paper presentation]. American Educational Research Association (AERA) 2021 Conference, Online.

9. Cheah, Y. H., **Li, C.**, & Hughes, J. E. (2020, canceled). *The Relationship between U.S. Students' Technology Access and Use and Their Science Achievement* [Paper presentation]. American Educational Research Association (AERA) 2020 Conference, San Francisco, CA, United States.

10. Liu, M., Zou W., **Li, C.**, Shi, Y., Pan, Z., & Pan, X. (2020, canceled). *Examining Relationships Between MOOC Participants' Usage Data and Their Profiles Through Learning Analytics* [Paper presentation]. American Educational Research Association (AERA) 2020 Conference, San Francisco, CA, United States.

11. Zou, W., Shi, Y., **Li, C.**, & Liu, M. (2020, canceled). *Examining learners' social presence in relation to their engagement in social interactions in MOOC forums* [Paper presentation]. American Educational Research Association (AERA) 2020 Conference, San Francisco, CA, United States.

12. Liu M., Shi, Y., Pan, Z., **Li, C.**, Pan, X. & Lopez, F. M. (2020, canceled). *What Motivates Middle School Teachers to Adopt A Technology-Enriched Problem-Based Learning Program in Their Classrooms* [Paper presentation]. American Educational Research Association (AERA) 2020 Conference, San Francisco, CA, United States.

13. **Li, C.**, Hsu, H.P., Hughes, J. E., & Zou, W. (2019, October 21–25). *How Computer-assisted Data Triangulation Influences Graduate Students' Learning Experience and Outcomes of Qualitative Data Analysis?* [Poster presentation]. Association for Educational Communications and Technology (AECT) 2019 Conference, Las Vegas, NV, United States.

14. Liu, M., Liu, S., Pan Z., Zou, W., & **Li, C.** (2019, November 4–7). *Can Using a Multimedia-Enriched Problem-Based Learning Environment Improve At-Risk Students' Attitude* [Paper presentation]. Association for the Advancement of Computing in Education (E-Learn) 2019 Conference, New Orleans, LO, United States.

15. Zou, W., **Li, C.**, & Jie, L. (2019, May 23). *How Does Participation in MOOC Discussion Forum Affect Achievement - An Analysis of Students' Social Presence and Achievement Emotions in Relation to Their Completion Status* [Paper presentation]. Learning Analytics in Asia (LAASIAN) 2019 Symposium, Hongkong, China.

16. Liu, M., Zou, W., Shi, Y., Pan, Z. & **Li, C.** (2019, April 5–9). *What Do Participants Think of Today's MOOCs Designed for Working Professionals* [Paper presentation]. American Educational Research Association (AERA) 2019 Conference, Toronto, Canada.

17. Liu, S., Liu, M., Pan Z., Zou, W., & **Li, C.** (2019, March 4–8). *Examining Science Learning by At-Risk Middle School Students in a Multimedia-Enriched Problem-Based Learning Environment* [Poster presentation]. International Learning Analytics and Knowledge (LAK) 2019 Conference, Tempe, AZ, United States.

18. Liu, M., Pan, Z., Pan, X., An, D., Zou, W., **Li, C.** & Shi, Y. (2018, October 15–18). *The Use of Analytics for Educational Purposes: A Review of Literature From 2015 to Present* [Paper presentation]. Association for the Advancement of Computing in Education (E-Learn) 2018 Conference, Las Vegas, NV, United States.

19. Liu, M., **Li, C.**, & Pan, Z. (2018, June 25–29). *Alien Rescue: A 3D Problem-Based Learning Game*. 2018 World Conference on Educational Media and Technology (EdMedia), Amsterdam, Netherlands.

20. **Li, C.**, & Pan, Z. (2018, October 23–27). *A Machine Learning incorporated qualitative data analysis method*. Association for Educational Communications and Technology (AECT) 2018 Conference, Kansas City, MO, United States.

Invited Talks & Workshops

1. **Li, C.**, Xing, W., & Leite, W. (2022, Jul.). *Encore Paper: Building socially responsible conversational agents using big data to support online learning: A case with Algebra Nation*. FATED 2022. Durham, UK. https://fated2022.github.io/acceptedpapers/

2. **Li, C.** (2021, May). *Fair AI in VLEs*. IES 2021 ED Games Expo. University of Florda, Gainesville, Florida. https://ies.ed.gov/blogs/research/post/highlighting-the-science-of-learning-at-the-2021-ed-games-expo

3. **Li, C.**, Xing, W., & Leite, W. (2021, Feb.). *Predicting Students' Learning Outcomes Using Fair AI in Online Math Learning*. AAAI 2021 Workshop on AI Education. Online. https://sites.google.com/view/tipce-2021#h.hxwg96b2wwkf

TEACHING EXPERIENCE

EDG 6931, Artificial Intelligence and Education (UF)   Aug. 2022 - Present
Teaching Assistant   *Gainesville, FL*

· Deliver instructions on intelligent tutoring systems and conversational AI.
· Design the final project of using AI tools to build conversational AI for education.
· Host Q&A sessions on DialogFlow and Rasa for students.

EDF3935, Fairness & Equity in AI for Education (UF)   Jan. 2022 - April 2022
Co-instructor   *Gainesville, FL*

· Mentored undergraduate students in computer science for fair AI projects.
· Delivered instructions on introductory machine learning and fair AI techniques.
· Hosted Q&A sessions on Python for students.
· Example students' deliverable: Click to view

EME6651, Learning Analytics & Concepts (UF)   Sept. 2020 - May 2022 (Three offerings)
Teaching Assistant   *Gainesville, FL*

· Recorded instructional tutorials for students: https://bit.ly/3xBxppB
· Assisted the instructor with designing curriculum, delivering lectures, and grading.
· Hosted Q&A sessions on Learning Analytics & RapidMiner for students.

EME6458, Distance Teaching & Learning (UF)   Jan. 2022 - Mar. 2022
Teaching Assistant   *Gainesville, FL*

· Recorded instructional tutorials for students: https://bit.ly/3rWllOG
· Assisted the instructor with designing curriculum, delivering lectures, and grading.
· Hosted Q&A sessions on Canvas development for students.

EME6074, Mobile Technologies in Education (UF)   Sept. 2021 - Dec. 2021
Teaching Assistant   *Gainesville, FL*

- Recorded instructional tutorials for students: https://bit.ly/3ETGdvg
- Assisted the instructor with designing curriculum, delivering lectures, and grading.
- Hosted Q&A sessions on Thunkable for students.

EDG6931, Research Design in Educational Technology (UF) May 2021 - Aug. 2021
Teaching Assistant *Gainesville, FL*

- Recorded instructional tutorials for students: https://bit.ly/38tq8Ae
- Assisted the instructor with designing curriculum, delivering lectures, and grading.
- Hosted Q&A sessions on SPSS for students.

UT Austin Coding Bootcamp Dec. 2016 - Sept. 2017
Teaching Assistant *Austin, TX*

- Co-developed and updated curriculum for teaching fullstack development with students from non-STEM background.
- Assisted instructors with designing curriculum, delivering lectures, and grading.
- Hosted Q&A sessions on JavaScript, CSS, and HTML for students.

New Oriental Education & Technology Group Dec. 2014 - May 2015
Part-time TOEFL Instructor *Beijing, China*

- Delivered lectures on TOEFL reading and listening to high school students and adults.
- Participated in designing rubrics for TOEFL speaking mock tests developed by the company.

ACADEMIC APPOINTMENTS

The Office of Instructional Innovation (UT) Sept. 2017 - Aug. 2020
Graduate Research Assistant *Austin, TX*

- Built both front-end and back-end of web applications for research and teaching purposes.
- Investigated students' usage patterns and learning outcomes who used the office's products by analyzing LMS as well as application logs.
- Improved applications' usability and functionality to support teaching and learning based on analysis results.
- Provided instructional design support for faculty with the help of modern technologies.

The Simulation and Game Applications Lab (UT) Feb. 2017 - Sept. 2017
Graduate Research Assistant *Austin, TX*

- Led the development of an educational game for high school students with hearing difficulties, funded by National Deaf Center.
- Studied students' behaviors and learning outcomes in the game MiddleGalaxy to improve the game's content delivery.
- Reviewed literature on learning analytics in educational games to develop a pipeline for intervention to help students with hearing disabilities.

University Health Services (UT) Sept. 2016 - Feb. 2017
Graduate Research Assistant *Austin, TX*

- Designed and adapted instruments to collect data on website's usability.
- Understood students' user experience on UHS' website by analyzing A/B test data.

· Developed web plugins to improve user experience based on research findings.

PROFESSIONAL EXPERIENCE

Concord Consortium Jun. 2019 - Aug. 2019
R & D Intern *Concord, MA*

· Independently developed iOS version of Infrared Explorer (NSF-funded).
· Implemented computer vision and graph algorithms in the application such as Marching Squares and A*.
· Project: <https://intofuture.org/ie.html>

Neuf Jul. 2017 - Aug. 2021
Co-founder & Software Engineer *Austin, TX*

· Built both iOS and Android clients with React Native independently.
· Collaborated on building computer vision models (e.g., FastRCNN, Vision Transformers) for fashion products recommendation system. Used Tensorflow and Keras.
· Project: <https://web.archive.org/web/20210421011527/https://apps.apple.com/us/app/neuf-shop-brands-you-love/id1415390829>

Ericsson Sept. 2017 - Feb. 2018
Learning Analytics Researcher *Austin, TX*

· Analyzed training data on employees of sales department quantitatively and qualitatively.
· Researched on factors that contributed to students' learning satisfaction by building a tree-based model.
· Understood how to improve students' learning satisfaction and results by extracting important features from statistical models.

Amne Jan. 2017 - April. 2017
Full-stack Developer *Austin, TX*

· Independently implemented the front-end architecture of the company's webapp using React.JS.
· Discussed design and implementation of APIs with backend developers.

PalmDrive Inc. Jun. 2016 - Sept. 2016
Mobile Development Engineer *Cupertino, CA*

· Independently implemented UI design of five minor versions, from 2.2 to 2.6 by using Apple's native APIs such as AVFoundation, UICollectionView, UITableView, CAAnimation and CoreGraphics.
· Wrote download service utility class by using Alamofire, NSOperation and etc.
· Applied deep linking to the app with Branch.io's SDK.
· Participated in code architecture(OOP), data modeling(CoreData) and API design(Node.js).
· Project: <http://xiaobandeng.palmdrive.cn/>

Perfect World Nov. 2014 - Mar. 2015
Overseas Marketing Intern *Beijing, China*

· Analyzed operation data (e.g., engagement index, conversion rate) of MMORPG games in Vietnam with Excel and Python.

· Analyzed user behaviors through log and transaction data to enhance the retention and pay rate .
· Collaborated with the marketing group of South-East Asia to come up with A/B tests based on the analysis.

General Electric Jul. 2014 - Sept. 2014
Summer Accounting Intern of Global Operations-Finance (GOF) *Shanghai, China*

· Participated in regular training held by GE, including lean start-up and communication skills.
· Developed computer vision models and browser scripts to automatically index invoices to Webex.
· Localized tax-reporting software in Vietnamese through XML.

HONORS & AWARDS

AECT Early Career Symposium Oct. 2022

AECT Research and Theory Division Featured Research Oct. 2022

LAK'22 Best Short Paper Nomination Mar. 2022

AECT Research and Theory Division Featured Research Nov. 2020

College of Education Fellowship (UF) [$\approx \$110,000$] Sept. 2020 - Sept. 2024

College of Education Scholarship (UT Austin) [$\approx \$8,000$] Sept. 2019 - Sept. 2020

New Doctoral Student Fellowship (UT Austin) [$\approx \$32,000$] Sept. 2017 - Sept. 2019

ISSS Financial Aid for International Students (UT Austin) Sept. 2016 - Sept. 2017

Dean's Scholarship (UIBE) [First 10% Rank] 2012, 2013, & 2014

AI CYBERINFRASTRUCTURE & SOFTWARE

Computational Models

1. MathRoBERTa Cyberinfrastructure trained with 8 Nvidia GPUs and over 3,000,000 math discussion posts by students and facilitators on Algebra Nation.

2. SafeMathBot Cyberinfrastructure trained with 8 Nvidia GPUs and enhanced with conversation safety policies (e.g., threat, profanity, identity attack).

3. Fair-LR Python Model: create a fairness-enhanced logistic regression (Fair-LR) model of prediction based on Seldonian Framework.

4. Fair-NE Python Model: construct a fair peer recommender using network embeddings.

Selected Web & Mobile Apps

1. My dissertation ConvAI: A reusable server cyberinfrastructure to construct a algebra ConvAI that allows open-domain conversations.

2. Telelab: Telelab approximates real-world observation and laboratory experiences in an online environment.

3. M-Flow: A flow-based programming platform that connects computing education with music creation.

4. Alien Rescue Teacher Dashboard: A learning analytics dashboard for teachers using Alien Rescue. Functionalities are highly modular and can be migrated to other educational programs with log data.

5. Infrared Explorer iOS: The iOS version of Infrared Explorer, which is later ported to serve as the engine of Telelab.

Selected LMS Extensions

1. IMS-LTI: Infrastructure package to streamline LTI integration with organizational Canvas instances (e.g., university).

2. Fitbit LTI (created for the Kinesiology department@UT): A analytics and social networking dashboard integrated in Canvas that allows instructors and students to view their Fitbit statistics and receive intervention emails.

3. Canvas quiz automator: A browser automation that automatically populates quizzes in Canvas using custom-defined formats (e.g., CSV).

PROFESSIONAL SERVICE

- Ad hoc Reviewer, British Journal of Educational Technology, 2022
- Ad hoc Reviewer, Interactive Learning Environments, 2022
- Ad hoc Reviewer, International Journal of Artificial Intelligence in Education, 2021
- Ad hoc Reviewer, Journal of Educational Computing Research, 2019
- Reviewer, International Conference on Learning Analytics & Knowledge (LAK'23), 2022
- Reviewer, AERA Conference, 2018 & 2021
- Reviewer, AECT Conference, 2018 & 2021

PROFESSIONAL AFFILIATIONS

- Society for Learning Analytics Research (SoLAR)
- International AIED Society
- International Educational Data Mining Society
- Association for Computing Machinery (ACM)
- Institute for Electrical and Electronics Engineers (IEEE)
- American Educational Research Association (AERA)
- Association for Educational Communications and Technology (AECT)

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