CURRICULUM VITAE

Bo PEI

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Educational Qualifications

Doctor of Philosophy, Educational Technology 2019-2022 (Expected)

College of Education, University of Florida

Research Interest: *Explainable AI, Fair AI in Education, Learning Analytics, Educational Data Visualization*

Supervisor: Dr. Wanli Xing

Doctoral Student, Instructional Technology 2017-2019

College of Education, Texas Tech university

Research Interest: *Multimodal Learning Analytics, Machine Learning, Deep Learning, Computer Vision*

Supervisor: Dr. Wanli, Xing

MEng. in Computer Science and Technology 2012-2015

Computer Science and Technology Department, Taiyuan University of Technology, Taiyuan, China

Dissertation: *Research of the Prediction on the Model to Distinguish the Benign and Malignant Solitary Pulmonary Nodules Based on the Hybrid Imaging*

Supervisor: Prof. Yan Qiang and Prof. Juan-Juan Zhao

Exchange Student in Computer Science and Technology 2009-2011

Information Technology Department, Lanzhou University, Gansu, China

BEng. in Computer Science and Technology 2007-2011

Information Technology Department, Tarim University, Xinjiang, China

Professional Experience

Research Assistant, College of Education, University of Florida 2019-Present

Research Assistant, College of Education, Texas Tech University 2017-2019

Research Assistant, College of Computer Science and Software, Taiyuan University of Technology 2012-2014

Work Experience	Software Engineer, *Hexin JiYe S&T Development CO., LTD,* Taiyuan, China, 2015-2017 Software Engineer, *Shanxi Bettem S&T Development CO., LTD*, Taiyuan, China, 2011-2012
Knowledge and Skills	Proficient knowledge of *Machine Learning*, *Image Processing and Data Mining* Excellent programming skills of *Python, Matlab, OpenCV, Java* Certificated skills of *Using python for data visualization and building interactive dashboard*
Research Projects	**Research Assistant,** Dashboards with Temporal Scaffolds: Using Educational Data Mining to Increase Temporal Participation in Online Courses, $40,000.00 Penn State Center for Online Innovation in Learning (COIL) Grant, 2017-2018 ▪ Designing natural language processing (NLP) algorithms to analyze posts in discussion forums for detecting the changes of emotions in learning process; ▪ Implementing machine learning algorithms to model the associations between students' learning performance and emotional statuses for providing insights for instructors to adjust instructional strategies. Publications: (Xing, Tang & **Pei**, 2019), (Tang, Xing & **Pei**, 2019) **Research Assistant,** High Adventure Science: Earths Systems and Sustainability National Science Foundation DRL Award # 1220756, $2,328,593.00 Concord Consortium, Oct. 2012 – Jan. 2018 ▪ Designing criteria to evaluate the quality of student scientific arguments for explaining the water cycling system; ▪ Extracting visual features on images using image processing approaches, and investigating how the features are correlated with students' understandings of the phenomenon. Publications: (**Pei**, Xing, & Lee, 2019), (**Pei**, Zhao, Xing & Lee, 2019) **Research Assistant,** Collaborative Research: SmartCAD: Guiding Engineering Design with Science Simulations National Science Foundation DRL Award # 1503196, $2,192,610.00 Concord Consortium, Jun. 2015 – Jan. 2021 ▪ Collecting, cleaning, and preprocessing students' learning data in the virtual design platform; ▪ Designing machine learning algorithms to analyze how different

behavior patterns are associated with students' learning performances and based on which to identify at-risk students at an early stage and generate individualized learning interventions.

Publications: (Xing, **Pei**, Li, Chen & Xie, 2019)

Research Assistant, Design Artificial Intelligence and Analytics for Deep STEM Learning
National Science Foundation Discovery Research PreK-12 Program, $279,999.00
University of Florida, Dec. 2019 – Present

- Developing curriculum modules based on the Learning by Design (LBD) framework;
- Designing a mobile app for capturing the Infrared (IR) artifacts that students used to make sense of the heat-related concepts;
- Implementing image processing algorithms to quantify the visual features in IR images and analyzing to what extent the visual features correlate with the evidence-based reasoning (EBR) process

Publications: A manuscript was submitted to the *International Journal of Science Education*

Research Assistant, Precision Education: The Virtual Learning Lab IES Grant
Award # R305C160004, $8,908,288.00
University of Florida, Jul. 2016 – Present

- Cleaning and preprocessing students' learning data collected by the virtual learning platform;
- Examining the trade-offs between the models' performance and fairness when modeling students' learning process;
- Implementing a visualization platform to explain how the bias is generated during modeling processes and present to what extent the biased outcome impacts the interventions about students' learning

Publications

Pei, B. & Xing, W. (2021). An Interpretable Pipeline for Identifying At-Risk Students. *Journal of Educational Computing Research*. DOI: 10.1177/07356331211038168

Pei, B., Xing, W., & Wang, M. (2021). Academic development of multimodal learning analytics: a bibliometric analysis. *Interactive Learning Environments*, 1-19. DOI: 10.1080/10494820.2021.1936075

Pei, B., Xing, W., & Lee, H. S. (2019). Using Automatic Image Processing to Analyze Visual Artifacts Created by Students in Scientific Argumentation. *British Journal of Educational*

Technology, 50(6), 3391-3404. DOI: 10.1111/bjet.12741

Xing, W., **Pei, B.**, Li, S., Chen, G. & Xie, C. (2019). Using learning analytics to support students' engineering design: The angle of prediction. *Interactive Learning Environments*,1-18. DOI: 10.1080/10494820.2019.1680391

Tang, H., Xing, W., & **Pei, B**. (2019). Time Really Matters: Understanding the Temporal Dimension of Online Learning Using Educational Data Mining. *Journal of Educational Computing Research,*57(5),1326-1347. DOI: 10.1177/0735633118784705

Xing, W., Tang, H., & **Pei, B.** (2019). Beyond Positive and Negative Emotions: Looking into the Role of Achievement Emotions in Discussion Forums of MOOCs. *The Internet and Higher Education,* 43,100690. DOI: 10.1016/j.iheduc.2019.100690

Zhu, G., Xing, W., Costa, S., Scardamalia, M., & **Pei, B**. (2019). Exploring the Interaction between Emotional Dynamics and Idea Improvement across Knowledge Building Spaces**.** *User Modeling and User-adapted Interaction,* 29(4),789-820. DOI: 10.1007/s11257-019-09241-8

Tang, H., Xing, W., **& Pei, B**. (2018). Exploring the temporal dimension of forum participation in MOOCs. *Distance Education,*39(3),353-372. DOI: 10.1080/01587919.2018.1476841

Pei, B., Xing, W., Zhu, G., Antonyan, K., & Xie, C. (Under Review). Visual Representations in Scientific Evidence-based Reasoning Processes. *International Journal of Science Education*.

Book Chapter

Pei, B., Zhao, H., Xing, W. & Lee, H. S. (2019). The Exploration of Image Processing in Scientific Argumentation. In D. L. Miltiadis, A. Naif, D. Linda, & V. Anna (Eds.), *Cognitive Computing in Technology-Enhanced Learning* (pp. 175-190). IGI Global. DOI: 10.4018/978-1-5225-9031-6.ch008

Manuscripts in preparation

Pei, B., Xing, W., Li, X., & Ma, Z. The Path from Motivations to Learning Achievements in Online Learning.

Pei, B., Xing, W., Oviatt, S., & Lin, F. Understanding Gestures in Collaborative Problem Solving Through Video Analytics.

Presentations

Pei, B. & Xing, W. (2022, April). *A Visual Analytic Approach for Presenting Learning Trajectories Along with the Mastery Level of Knowledge*. Accepted as a paper presentation at American Education Research Association (AERA)

Pei, B. & Xing, W. (2021, April). *An Approach to Visualize Students'*

Learning Process. Presented as a concurrent presentation at 2021 Association of Educational Communication and Technology (AECT) annual conference

Pei, B. & Xing, W. (2020, November). *Analyzing the associations between the learning motivations and outcomes in online learning settings from a quantitative perspective*. Presented as a concurrent presentation at 2020 Association of Educational Communication and Technology (AECT) annual conference

Pei, B. & Xing, W. (2020, November). *Students Online Learning Performance Prediction based on the Recurrent Neural Network Inferred Logistic Regression*. Presented as a concurrent presentation at 2020 Association of Educational Communication and Technology (AECT) annual conference

Pei, B. & Xing, W. (2020, April). *Identifying the At-risk Students Based on the Hybrid machine learning approaches*. Accepted as paper presentation at American Education Research Association (AERA). [Cancelled due to COVID-19]

Pei, B. & Xing, W. (2020, April). *Quantifying the Effect of Emotional Contagion on Learner Commitment in Massive Open Online Courses*. Accepted as a paper presentation at American Education Research Association (AERA). [Cancelled due to COVID-19]

Pei, B. & Xing, W. (2020, April). *Student Performance Prediction in Engineering Design.* Accepted as a paper presentation at American Education Research Association (AERA). [Cancelled due to COVID-19]

Pei, B., & Xing, W. (2019, October). *Understanding the Role of Gestures in Collaborative Learning Using Automatically Video Processing Approach.* Presented as a concurrent presentation at the 2019 Association of Educational Communication and Technology (AECT) annual conference (**Featured Research**)

Pei, B., & Xing, W. (2019, April). *Understanding Visual Artifacts Using Image Analytics in Students' Scientific Argumentation.* Accepted as a paper presentation at American Education Research Association (AERA).

Xing, W. & **Pei, B.** (2018 October). *DELT-Image-based Learning Analytics in Science Learning.* Presented as a concurrent presentation at the 2018 Association of Educational Communication and Technology (AECT) annual conference

Xing, W. & **Pei, B.** (2018 October). *Featured Research-Quantifying the Effect of Achievement Emotions on Student's Survival in Discussion Forums of MOOCs.* Presented as a concurrent presentation at the 2018 Association of Educational Communication

and Technology (AECT) annual conference

Pei, B. & Xing, W. (2018, April). *A Model to Analyze Factors Related to Learning Achievements in MOOCs.* Invited presentation at Education Graduate Student Organization (EGSO) at Texas Tech University

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Teaching Assistant

- EME 6208 - Designing Integrated Media Environments I (Online), University of Florida, Instructor: Dr. Wanli Xing
- EME 6074 - Mobile Technologies in Education (Online), University of Florida, Instructor: Dr. Wanli Xing
- EDIT 5325 - Plan/Develop Instructional Media (Online), Texas Tech University, Instructor: Dr. Wanli Xing

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Services

Journal Service

- Reviewer - Interactive Learning Environment
- Reviewer - SAGE Open
- Reviewer - Sensors
- Reviewer - Multimodal Technologies and Interaction
- Reviewer - Journal of Computing in Higher Education
- Guest Reviewer - Journal of Universal Computer Science
- Ad Hoc Reviewer - International Journal of Distance Education Technologies

Academic Conferences

- Reviewer - iConference 2022
- Reviewer - the 2021 IEEE International Conference on Engineering - Technology & Education (TALE)
- Reviewer - iConference 2021
- Reviewer - the 2020 Association of Educational Communication and Technology (AECT) annual conference
- Reviewer - iConference 2019

Activities

- Board Member of Education Graduate Student Organization (EGSO) at Texas Tech University 2017
- Member of Grade Appealing Committee in College of Education, Texas Tech University 2018-2019
