KANG XUE

121 NW Everett St, Portland, OR 97209
(+1) 706-461-2694 ◇ kang.xue@nwea.org ◇ kang.xue0622@gmail.com

EDUCATION

University of Georgia
Ph.D., Educational Psychology *August 2015 - July 2020*
Advisor: Laine P. Bradshaw

Beijing Institute of Technology
Ph.D., Engineering *Sep., 2007 - Mar., 2013*
Co-advised at **Georgia Tech** from Sep. 2010 to Oct. 2012
Advisors: Yue Liu, Patricio A. Vela (Georgia Tech), Songchun Zhu (UCLA)

Beijing Institute of Technology
B.S., Electronic Engineering *Sep., 2002 - July, 2006*

WORKING EXPERIENCE

Northwest Evaluation Association (NWEA), Portland, OR, USA
Research Scientist in Psychometric Solution Team
Director: Patrick Meyer **May, 2020 - Present**

National Board of Medical Examiners (NBME), Philadelphia, PA, USA
Internship in Assessment Science and Psychometrics **June, 2019 - July, 2019**

University of Florida, Lastinger Center, Virtual Learning Lab, Gainesville, FL, USA
Data Analytics **October, 2018 - August, 2019**

Advanced Technology Lab, Samsung R&D Institute China - Beijing, Beijing, China
Senior Research Engineer **January, 2015 - July, 2015**

Samsung Advanced Institute of Technology, China Lab, Beijing, China
Research Engineer **March, 2013 - December, 2014**

ACADEMIC EXPERIENCE

University of Florida, Gainesville, Florida, USA
Research Assistant (*Advisor:* Walter L. Leite) **Oct, 2018 - Aug, 2019**

University of Georgia, Athens, Georgia, USA
Research Assistant (*Advisor:* Laine P. Bradshaw) **August, 2017 - May, 2020**

University of Georgia, Athens, Georgia, USA
Research Assistant (*Advisor:* April Galyardt) **August, 2015 - May, 2017**

Beijing Institution of Technology, Beijing, China
Research Assistant (*Advisors:* Yue Liu, Yongtian Wang) **June, 2006 - March, 2013**

Georgia Institution of Technology, Atlanta, Georgia USA
Research Assistant (*Advisor:* Patricio A. Vela) **September, 2010 - October, 2012**

Lotus Hill Computer Vision and Information Science Research Institute, Wuhan, China
Research Assistant (*Advisor:* Songchun Zhu) **February, 2009 - September, 2009**

AWARDS AND RECOGNITIONS

Travel Award, the University of Georgia Graduate School, the University of Georgia, **2019** ($ 1,000)
Student Presentation Awards, Intl. Association for Computerized Adaptive Testing (IACAT), **2019** ($1,000)
Owen Scott Research Competition Grant, Department of Educational Psychology, the University of Georgia, **2018-2019** ($ 1,000)
Travel Award, the Department of Educational Psychology, the University of Georgia, **2018** ($ 300)
Travel Award, the University of Georgia Graduate School, the University of Georgia, **2018** ($ 650)
Travel Funding Award, Graduate Researchers in Educational Psychology (GREP), the University of Georgia, **2018** ($ 100)
Silver Award (Global Rank 2), Samsung Best Paper Award, Samsung, Korea, **2014** ($ 5,000)
Outstanding Graduates, Beijing Institute of Technology, **2013**
National Scholarship, Ministry of Education of China, **2012** ($ 3,500)
Special Grade Ph.D. Scholarship (Rank top 5%), Beijing Institute of Technology, **2011** ($ 2,400)
State Scholarship, China Scholarship Council, **2010-2012** ($ 40,000)
2nd Grade Ph.D. Scholarship, Beijing Institute of Technology, **2008-2011** ($ 3,600)

PUBLICATIONS

Kang Xue, Anne Corinne Huggins-Manley, and Walter Leite. Semisupervised Learning Method to Adjust Biased Item Difficulty Estimates Caused by Nonignorable Missingness in a Virtual Learning Environment. *Educational and Psychological Measurement.* doi:10.1177/00131644211020494, 2021.

Kang Xue, and Laine Bradshaw. A Semi-Supervised Learning-based Diagnostic Classification Method using Artificial Neural Networks. *Frontiers in Psychology.* Vol. 11, page 3992, doi: 10.3389/fpsyg.2020.618336, 2021.

Kang Xue, Walter Leite, and Anne Corinne Huggins-Manley. Semi-supervised Learning Method for Adjusting Biased Item Difficulty Estimates Caused by Nonignorable Missingness under 2PL-IRT Model. *Proceedings of The 13th International Conference on Educational Data Mining (EDM 2020)* 2020, pp. 715 - 719.

Kang Xue, Victoria Yaneva, Christopher Runyon and Peter Baldwin. Predicting the Difficulty and Response Time of Multiple Choice Questions Using Transfer Learning. *15th Workshop on Innovative Use of NLP for Building Educational Applications*, 2020.

Kang Xue. Computational Diagnostic Classification Model using Deep Feedforward Network based Semi-Supervised Learning, *25th ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD) Workshop on Deep Learning for Education*, 2019. (Oral Presentation)

Kang Xue. Non-Model based Global Item Discrimination Estimation using Deep Belief Network without Q-Matrix for Cognitive Diagnosis . *Proceedings of the 11th International Conference on Educational Data Mining (EDM 2018)*, 2018.

Kang Xue. Non-Model based Attribute Profile Estimation with Partial Q-Matrix Information for Cognitive Diagnosis using Artificial Neural Network. *Proceedings of the 11th International Conference on Educational Data Mining (EDM 2018)*, 2018.

Kang Xue, Xiying Wang, Gengyu Ma, Haitao Wang, and Dongkyung Nam. A video saliency detection method based on spatial and motion information. *In Image Processing (ICIP), 2015 IEEE International Conference on*, 412-416. *IEEE*, 2015.

Weiming Li, Zhihua Liu, **Kang Xue**, Yangho Cho, Xiying Wang, Gengyu Ma, and Haitao Wang. Post inserted object calibration for stereo video rectification. *In Image Processing (ICIP), 2015 IEEE International Conference on*, 1190-1194. *IEEE*, 2015.

Xiying Wang, **Kang Xue**, Dongkyung Nam, Jaejoon Han, and Haitao Wang. Hierarchical gaze estimation based on adaptive feature learning. *In Image Processing (ICIP), 2014 IEEE International Conference on*, 3347-3351. *IEEE*, 2014.

Xiying Wang, **Kang Xue**, Shuzheng Gao, Dongkyung Nam, Jaejoon Han, and Haitao Wang. User-adaptive Gaze Estimation Based on Single Camera and Simple Calibration. *Samsung Best Paper Award*, 2013.

Kang Xue, Yue Liu, Gbolabo Ogunmakin, Jing Chen, and Jiangen Zhang. Panoramic Gaussian Mixture Model and large-scale range background substraction method for PTZ camera-based surveillance systems. *Machine vision and applications* Vol. 24, No. 3, 477-492, 2013.

Kang Xue, Patricio A. Vela, Yue Liu, and Yongtian Wang. A modified KLT multiple objects tracking framework based on global segmentation and adaptive template. In Pattern Recognition (ICPR), 2012 21st International Conference on, pp. 3561-3564. IEEE, 2012.

Kang Xue, Gbolabo Ogunmakin, Yue Liu, Patricio A. Vela, and Yongtian Wang. PTZ camera-based adaptive panoramic and multi-layered background model. In Image Processing (ICIP), 2011 18th IEEE International Conference on, pp. 2949-2952. IEEE, 2011.

Kang Xue, Yue Liu, Jing Chen, and Qin Li. Panoramic background model for PTZ camera. *In Image and Signal Processing (CISP), 2010 3rd International Congress on*, vol. 1, pp. 409-413. *IEEE*, 2010.

Jing Chen, YongTian Wang, JunWei Guo, Wei Liu, JingDun Lin, **Kang Xue**, Yue Liu, and GangYi Ding. Augmented reality registration algorithm based on nature feature recognition. *Science China Information Sciences* 53, no. 8, 1555-1565, 2010.

Jiangen Zhang, Yongtian Wang, Jing Chen, and **Kang Xue**. A framework of surveillance system using a ptz camera. In Computer Science and Information Technology (ICCSIT), *2010 3rd IEEE International Conference on*, vol. 1, pp. 658-662. *IEEE*, 2010.

PRESENTATION AND WORKSHOPS

Kang Xue, Corinne Huggins-Manley, and Walter Leite. Semi-supervised learning method to adjust biased difficulty estimates caused by nonignorable missingness. *2020 Annual Meeting of the National Council on Measurement in Education (NCME)*, San Francisco.

Kang Xue, Victoria Yaneva, and Christopher Runyon. On the Utility of Using Transfer Learning to Predict Item Characteristics. *2020 Annual Meeting of the National Council on Measurement in Education (NCME)*, San Francisco.

Kang Xue. Computational Diagnostic Classification Model using Deep Feedforward Network based Semi-Supervised Learning. ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD) Workshop on Deep Learning for Education, 2019.

Kang Xue. Introduction to Artificial Neural Networks Workshop. the Department of Educational Psychology, the University of Georgia, May, 2019.

Kang Xue. A Deep Feedforward Network based Semi-Supervised Learning Method to Improve the Performance of Diagnostic Classification. *2019 IACAT Conference*, Minneapolis, USA.

Kang Xue, Laine Bradshaw. Non-parametric attribute profile estimation and Q-matrix reconstruction using modified autoencoder. *2019 Annual Meeting of the National Council on Measurement in Education (NCME)*, Toronto, Canada.

Kang Xue. Non-Model based Global Item Discrimination Estimation using Deep Belief Network without Q-Matrix for Cognitive Diagnosis. *2018 International Conference on Educational Data Mining*, Buffalo, USA, 2018.

Kang Xue. Non-Model based Attribute Profile Estimation with Partial Q-Matrix Information for Cognitive Diagnosis using Artificial Neural Network. *2018 International Conference on Educational Data Mining*, Buffalo, USA, 2018.

Kang Xue. Determine attribute profile for diagnostic cognitive measurement using generator-evaluator-network (GEN). *2018 International Meeting of the Psychometric Society (IMPS)*, New York, USA, 2018.

PATENTS

China Patent CN105279764B: "Eye image processing apparatus and method", Sep 11 2020. (1st Inventor)

U. S. Patent 10356397: "Three-dimensional image processing method and device and three-dimensional video display device", Jul 16, 2019.

U. S. Patent 10317687: "Light path adjuster and display device including the same", Jun 11, 2019.

U. S. Patent 10176374: "Image processing method and apparatus", Jan 8, 2019. (1st Inventor)

U. S. Patent 10126562: "Apparatus and methods for reducing moire fringe", Nov 13, 2018.

U. S. Patent 9953247: "Method and apparatus for determining eye position information", Apr 24, 2018.

U. S. Patent 9948913: "Image processing method and apparatus for processing an image pair", April 17, 2018.

China Patent CN105791795B: "Three-dimensional image processing method and device and three-dimensional video display device", Jan 26, 2018.

GRANTS

2019 Virtual Learning Lab Travel Grant ($ 2,500), the University of Florida. My proposal to deal with missing values in large online learning environment using deep learning and semi-supervised learning techniques was selected by Dr. Walter Leite research team as the key initiative research in the **Measurement Study 2** of the **IES Grant** (Title: Precision Education: The Virtual Learning Lab; Amount: $ 8,994,849; P.I.: Dr. Walter Leite). My role in this project was to conduct analyses, design machine learning method and pursue publication to support this research. This VLL travel grant was to support the selected researcher in this project to present their methods and findings in the American Educational Research Association (AERA) Annual Meeting 2019.

2018-2019 Owen Scott Research Competition Grant ($ 1,000), the University of Georgia. My proposal focusing on computational psychometrics using deep learning techniques was funded by the Owen Scott

Research Competition selection committee of the University of Georgia. My role in this grant is the Principal Investigator. My responsibility is to report the finds in my research and lead the *Introduction to Artificial Neural Networks Workshop* for the Department of Educational Psychology in May, 2019. The grant was to support me to build up the GPU based deep learning computing platform to increase the computational efficiency of applying deep learning.

PEER REVIEWER FOR JOURNALS & CONFERENCES

Frontiers in Psychology

Frontiers in Education

Journal of Computational Methods in Sciences and Engineering

The 35th AAAI Conference on Artificial Intelligence Workshop on AI Education

The 7th International Conference on Fuzzy Systems and Data Mining

TEACHING EXPERIENCE

University of Georgia, Athens, Georgia USA
Teaching Assistant
ERSH 8320 Applied Correlation and Regression **Fall 2016, Spring 2017**
Instructors: April Galyardt, Zhenqiu (Laura) Lu
Tasks: Grading, office hour and giving several lectures.

TECHNICAL SKILLS

Computer programming languages:	R, Python, Matlab, C/C++
Psychometrics:	mirt, CDM, JAGs
Machine Learning and Deep Learning:	Scikit-Learn, TensorFlow, PyTorch, Keras
Computer Vision:	OpenCV, Matlab Computer Vision Toolbox
Natural Language Processing:	NLTK, gensim, spaCy, Allennlp
Others:	LIBSVM