

## CURRICULUM VITAE

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### Professional Preparation

- 1993 Ph.D. Cognitive Psychology, University of California, Irvine  
1990 M.A. Social Sciences, University of California, Irvine  
1985 M.S. Applied Mathematics, Huazhong University of Science and Technology, Wuhan, China  
1982 B.A. Applied Mathematics, Huazhong University of Science and Technology, Wuhan, China

### Appointments

- 2016- Dean, School of Psychology, Central China Normal University  
2016- Full Professor, Computer Science, University of Memphis  
2014- Full Professor, Electronic and Computer Engineering, University of Memphis  
2013–2015 Visiting Professor, School of Psychology, Central China Normal University  
1993– Assistant, Associate, Full Professor, Psychology, University of Memphis  
2004– Director, ADL Workforce Co-lab, ADL Memphis ITS Center, Memphis, TN  
1985–1987 Assistant Professor, Lecturer, Department of Mathematics, Huazhong University of Science and Technology, Wuhan, China

### Books:

- Sottolare, R., Graesser, A., Hu, X., Olney, A., Nye, B. and Sinatra, A. (Eds.). (2016). Design Recommendations for Intelligent Tutoring Systems: Volume 4 - Domain Modeling. Orlando, FL: U.S. Army Research Laboratory. ISBN 978-0-9893923-9-6.  
Sottolare, R., Graesser, A., Hu, X., and Brawner, K. (Eds.). (2015). Design Recommendations for Intelligent Tutoring Systems: Volume 3 - Authoring Tools and Expert Modeling Techniques, Orlando, FL: U.S. Army Research Laboratory. ISBN 978-0-9893923-7-2.  
Sottolare, R., Graesser, A., Hu, X., and Goldberg, B. (Eds.). (2014). Design Recommendations for Intelligent Tutoring Systems: Volume 2 - Instructional Management. Orlando, FL: U.S. Army Research Laboratory. ISBN 978-0-9893923-3-4.  
Sottolare, R., Graesser, A., Hu, X., & Holden, H. (Eds.). (2013). Design Recommendations for Intelligent Tutoring Systems - Volume 1 - Learner Modeling (1st edition). Orlando, Florida: U.S. Army Research Laboratory. ISBN 978-0-9893923-0-3.  
Falmagne, J-C., Albert, D., Doble, C. Eppstein, D., Hu, X. (Eds.). (2013). Knowledge Spaces: Applications in Education. Berlin: Springer.

### Selected Journal Articles

- Huang, X., Craig, S. D., Xie, J., Graesser, A., & Hu, X. (2016). Intelligent tutoring systems work as a math gap reducer in 6th grade after-school program. *Learning and Individual*

- Differences*. [10.1016/j.lindif.2016.01.012](https://doi.org/10.1016/j.lindif.2016.01.012), 47, 258-265.
- Foronda, C., Shubeck, K., Swoboda, S.M., Hudson, K.W., Budhathoki, C., Sullivan, N., & Hu, X. (2016). Impact of virtual simulation to teach concepts of disaster triage. *Clinical Simulation in Nursing*, 12, 137-144.
- Wolfe, C.R., Reyna, V.F. Widmer, C. L., Cedillos-Whynott, E.M., Weil, A. M., Hu, X. (2016) Understanding Genetic Breast Cancer Risk: Processing Loci of the BRCA Gist Intelligent Tutoring System. *Learning and Individual Differences*, 49, 178-189.
- Nye, B., Hu, X., Graesser, A.C., Cai, Z. (2014). AutoTutor in the Cloud: A Service-Oriented Paradigm for an Interoperable Natural-Language ITS. *Journal of Advanced Distributed Learning Technology*. 2(6), 35-48.
- Rus, V., D'Mello, S. K., Hu, X., & Graesser, A. C. (2013). Recent advances in intelligent tutoring systems with conversational dialogue. *AI Magazine*, 34, 42-54.
- Craig, S. D., Hu, X., Graesser, A. C., Bargagliotti, A. E., Sterbinsky, A., Cheney, K. R., & Okwumabua, T. (2013). The impact of a technology-based mathematics after-school program using ALEKS on student's knowledge and behaviors. *Computers & Education*, 68, 495-504.
- Hu, X., Craig, S. D., Bargagliotti A. E., Graesser, A. C., Okwumabua, T., Anderson, C., Cheney, K. R., & Sterbinsky, A. (2012). The effects of a traditional and technology-based after-school program on 6th grade students' mathematics skills. *Journal of Computers in Mathematics and Science Teaching*, 31, 17-38.
- Wolfe, C. R., Fisher, C. R., Reyna, V. F., & Hu, X. (2012). Improving internal consistency in conditional probability estimation with an Intelligent Tutoring System and web-based tutorials. *International Journal of Internet Science*, 7, 38-54.
- Graesser, A.C., & Hu, X. (2011). Commentary on causal prescriptive statements. *Educational Psychology Review*, 23(2), 279-285.
- You, Y., Hu, X., & Qi, H. (2011). Improved EM algorithm for MPT model Analysis. *Behavior Research Methods*. DOI: 10.3758/s13428-011-0113-9
- Mo, L., Yang, F., Hu, X. (2011) An empirical examination of IRT information for school climate surveys. *Educational Research & Evaluation*, 17(1), 33-45.
- Mo, L., Yang, F., Hu, X., Calaway, F., and Nickey, J. (2011) ACT Test Performance by Advanced Placement Students. *Journal of Educational Research*, 104(5), 354-359.
- Okwumabua, T., Walker, K., Hu, X., and Watson, A. (2010) An exploration of African American students' attitudes toward online learning. *Urban Education*, 46(2), 241-250.
- Batchelder, W. H., Hu, X., & Smith, J. B. (2009). Multinomial processing tree models for discrete choice. *Zeitschrift fur Psychology / Journal of Psychology*, 217, 149-158.
- Louwerse, M.M., Cai, Z., Hu, X., Ventura, M., & Jeuniaux, P. (2006). Cognitively inspired natural language based knowledge representations: Further explorations of Latent Semantic Analysis. *International Journal of Artificial Intelligence Tools*, 15(6), 1021-1039.
- Mo, L. Hu, X. & yang, F. (2006). The Measurement of Source Memory in Source Monitoring Experiment. *PSYCHOLOGICAL SCIENCE (心理科学)*. 29 (5), 1194-1198.
- Penumatsa, P., Ventura, M., Graesser, A. C., Franceschetti, D. R., Louwerse, M., Hu, X., Cai, Z., & the TRG (2006). The right threshold value: What is the right threshold of cosine measure when using latent semantic analysis for evaluating student answers? *International Journal of Artificial Intelligence Tools* 15(5), 767-777.
- Woodward, T. S., Menon, M., Hu, X. & Keefe, R. S. E.(2006). Optimization of a multinomial model for investigations of hallucinations and delusions with source monitoring. *Schizophrenia Research*. 85 (1-3), 106-112.

## Selected Book Chapters

- Graesser, A.C., Rus, V and Hu, X. (2017). Instruction Based on Tutoring. In R.E. Mayer and P. A. Alexander (Eds.), *Handbook of Research on Learning and Instruction* (pp. 460-482). Routledge: New York, NY and Abingdon, Oxon, UK.
- Graesser, A.C., Cai, Z, Baer, W.O., Olney, A.M., Hu, X., Reed, M., and Greenberg, D. (2017). Reading Comprehension lessons in AutoTutor for the Center of Adult Literacy. In S. A. Crossley and D.S. McNamara (Eds.), *Adaptive Educational Technologies for Literacy Instruction*. (pp. 288-293). Routledge: Abingdon, Oxon, UK.
- Graesser, A.C., Hu, X., Nye, B., Sottolare, R. (2016). Intelligent tutoring systems, serious games, and the Generalized Intelligent Framework for Tutoring (GIFT). In H.F. O'Neil, E.L. Baker, and R.S. Perez. (Eds.), *Using games and simulation for teaching and assessment*. (pp. 58-80). Routledge: Abingdon, Oxon, UK.
- Nye, B. D. & Hu, X. (2015). A Historical Perspective on Authoring and ITS: Reviewing Some Lessons Learned. In Sottolare, Graesser, Hu, & Brawner (Ed.) *Design Recommendations for Intelligent Tutoring Systems: Volume III - Authoring Tools and Expert Modelling Techniques (Volume III)*
- Nye, B. D., Goldberg, B. & Hu, X. (2015). Generalizing the Genres for ITS: Authoring Considerations for Representative Learning Tasks. In Sottolare, Graesser, Hu, & Brawner (Ed.) *Design Recommendations for Intelligent Tutoring Systems: Volume III - Authoring Tools and Expert Modelling Techniques (Volume III)*
- Cai, Z., Graesser, A. C. & Hu, X. (2015). ASAT: AutoTutor Script Authoring Tool. In Sottolare, Graesser, Hu, & Brawner (Ed.) *Design Recommendations for Intelligent Tutoring Systems: Volume 3 - Authoring Tools and Expert Modelling Techniques (Volume III)*.
- Morrison, D. M., Nye, B., & Hu, X. (2014). Where in the data stream are we?: Analyzing the flow of text in dialogue-based systems for learning. In R. A. Sottolare, X. Hu, H. Holden, & K. Brawner (Eds.) *Design Recommendations for Intelligent Tutoring Systems: Volume 2: Adaptive Instructional Strategies and Tactics*.
- Sullins, J., Meister, R., Craig, S. D., Wilson, W. M., Bargagliotti, A., & Hu, X. (2013). The impact of a mathematical intelligent tutoring system on students' performance on standardized high-stake tests. In *Knowledge Spaces: Application in Education* (pp. 69-78). Berlin: Springer.
- Hu, X., Xu, Y. J., Hall, C., Walker, K., & Okwumabua, T. (2013). A potential technological solution for reducing the achievement gap between White and Black students. In *Knowledge Spaces: Application in Education* (pp. 79-91). Berlin: Springer.
- Robson, R. Hu, X., Morrison, D., & Cai, Z. (2013). The Need for a Mathematical Model of Intelligent Tutoring. In Sottolare, Graesser, Hu, & Holden (Ed.) *Design Recommendations for Adaptive Intelligent Tutoring Systems Learner Modeling (Volume I)*. Army Research Laboratory.
- Hu, X., Morrison, D., & Cai, Z. (2013). On the Use of Learner Micromodels as Partial Solutions to Complex Problems in a Multiagent, Conversation-based Intelligent Tutoring System. In Sottolare, Graesser, Hu, & Holden (Ed.) *Design Recommendations for Adaptive Intelligent Tutoring Systems Learner Modeling (Volume I)*. Army Research Laboratory.
- Batchelder, W.H., Hu, X., and Riefer, D.M. Multinomial Modeling. (2013) In H. Pashler (Ed.). *The Encyclopedia of the Mind* (pp.538-541). Sage Publications.
- Sullins, J, Meister, R., Craig, S.D., Wilson, W. M., Bargagliotti, A., & Hu, X. (2013). Is There a Relationship Between Interacting with a Mathematical Intelligent Tutoring System and Students Performance on Standardized High-Stake Tests? In: D. Albert, C. Doble, D. Eppstein, J. Falmagne & X. Hu (Eds.), *Knowledge Spaces: Applications to Education*.
- Graesser, A. C., Rus, V., Cai, Z., & Hu, X. (2012). Question answering and generation. In P. McCarthy and C. Boonthum-Denecke (Eds.), *Applied natural language processing: Identification, investigation, and resolution* (pp. 1-16). Hershey, PA: IGI Global.

- Graesser, A. C., D’Mello, S. K., Hu, X., Cai, Z., Olney, A., & Morgan, B. (2012). AutoTutor. In P. McCarthy and C. Boonthum-Denecke (Eds.), *Applied natural language processing: Identification, investigation, and resolution* (pp. 169-187). Hershey, PA: IGI Global.
- Hu, X., Graesser, A. and Fowler, D. (2010) Intelligent Tutoring Systems. In R. Wisher, P. Jesukiewicz and B. Kahn (Eds.) *Learning on Demand: ADL and the Future of e-Learning*. Alexandria, VA: Advanced Distributed Learning.

### **Selected Conference Publications**

- Nye, B. D., Hajeer, M., Forsyth, C., Samei, B., Hu, X., & Millis, K. (2014). Exploring real-time student models based on natural-language tutoring sessions: A look at the relative importance of predictors. In Educational Data Mining (EDM) 2014 .
- Craig, S. D., Xie, J., Huang, X. Graesser, A. C. & Hu, X. (2014). The Impact of Epistemological Beliefs on Student Interactions with an Intelligent Tutoring System. In Trausan-Matu, S., Boyer, K. E., Crosby, M., & Pannourgia, K. (eds.), *Proceedings of the 12th International Conference on Intelligent Tutoring Systems* (pp. 660-662), New York: Springer.
- Hu, X., Nye, B. D., Gao, C., Huang, X., Xie, J., & Shubeck, K. (2014). Semantic Representation Analysis: A General Framework for Individualized, Domain-Specific and Context-Sensitive Semantic Processing. In *Foundations of Augmented Cognition. Advancing Human Performance and Decision-Making through Adaptive Systems* (pp. 35-46). Springer International Publishing.
- Xie, J., Huang, X., Hua, H., Wang, J., Tang, Q., Craig, S. D., & Hu, X.(2013). Discovering the relationship between student effort and ability for predicting the performance of technology-assisted learning in a mathematics after-school program. In D’Mello, S. K., Calvo, R. A., and Olney, A. (Eds.), *Proceedings of the 6th International Conference on Educational Data Mining* (pp. 354-355). Worcester, MA: International Educational Data Mining Society.
- Craig, S. D. Anderson, C., Bargaglioitti, A., Graesser, A. C., Okumabua, T., Sterbinsky, A., & Hu, X. (2011). Learning with ALEKS: The Impact of Students’ Attendance in a Mathematics After-School Program. In G. Biswas, S. Bull, J. Kay, & A. Mitrovic (Eds.), *Artificial Intelligence in Education: 15th International conference, AIED 2011* (pp. 435-437). Berlin: Springer.
- Cheney, K. R.; Craig, S. D.; Anderson, C.; Bargagliotti, A.; Graesser, A. C.; Sterbinsky, A.; Okwumabua, T.; Hu, X. (2011). Closing the knowledge gap in mathematics among sixth grade students using ALEKS. In Koehler, M.; Mishra, P. (Eds.), *Proceedings of Society for Information Technology & Teacher Education International Conference 2011* (pp. 1425–1427). Chesapeake, VA: AACE.
- Hu, X., Cai, Z., Han, L., Craig, S.D., Wang, T., & Graesser, A.C. (2009). AutoTutor Lite. In V. Dimitrova, R. Mizoguchi, B. Du Boulay, B., & A.C. Graesser (Eds.), *Artificial Intelligence in Education: Building Learning Systems that Care: From Knowledge Representation to Affective Modelling* (pp. 802). Amsterdam: IOS Press.
- Hu, X., & Martindale, T. (2008). Enhancing learning with ITS-style interactions between learner and content. *Interservice/Industry Training, Simulation & Education (2008)*, 8218, (pp. 1-11).
- Jeuniaux, P., Louwerse, M. M., & Hu, X. (2006). The role of discourse structure and response time in multimodal communication. *Proceedings of the 6<sup>th</sup> International Conference in Intelligent Virtual Agents (IVA06)* (pp. 459–460). Berlin, Germany: Springer.
- Louwerse, M. M., Cai, Z., Hu, X., Ventura, M., & Jeuniaux, P. (2005). The embodiment of amodal symbolic knowledge representations. In I. Russell & Z. Markov (Eds.), *Proceedings of the 18<sup>th</sup> International Conference of the Florida Artificial Intelligence Research Society* (pp. 542–547). Menlo Park, CA: AAAI Press.
- Cai, Z., McNamara, D., Louwerse, M., Hu, X., Rowe, M., & Graesser, A. C. (2004). NLS: Non-latent similarity algorithm. In K. Forbus, D. Gentner, & T. Regier (Eds.), *26<sup>th</sup> Annual Meeting of the*

*Cognitive Science Society* (pp. 180–185). Mahwah, NJ: Erlbaum.

**Other Experience and Professional Service**

- Local organizer for the AIED and EDM 2017 Conferences in Wuhan, China
- Director of the Advanced Distributed Learning (ADL) Memphis Intelligent Tutoring Systems (ITS) Center ([www.memphis.edu/mitsc/](http://www.memphis.edu/mitsc/))
- Director of Advanced Learning Technologies (ALT) at the University of Memphis
- Dr. Hu plays a major role in ITS and standardization. In the past few years, he introduced ALEKS (a widely used ITS for mathematics) to Memphis-area schools (third grade to college students) and has helped over 1000 students per year. He is also a strong advocate of computers in learning and research.
- President of the International Society for Computers in Psychology (SCiP) (2009).
- Founded the Workforce e-Learning Resource Network (WERN) (2005)

**Current Funding: Dr. Xiangen Hu**

<b>CURRENT</b>					
<b>Title</b>	<b>Agency/Source</b>	<b>Start</b>	<b>End</b>	<b>Role</b>	<b>FTE*</b>
Electronix Tutor-Opt C	ONR	05/16	11/17	Co-PI	33 %
Building a Learning Science Community in Support of PAL/TLA "Ubiquitous Learning" Ecosystem.	ADL	03/17	04/18	PI	6 %
Understanding the cognitive and motivational profiles of struggling adult readers and developing effective and engaging literacy programs to address their literacy learning needs	Institute of Education Sciences (subcontract from Georgia State Univ.)	7/12	6/17	Co-PI	1 mo
Generalized Intelligent Framework for Tutors (GIFT) (option years)	ARL	5/12	12/17	PI	17 %