CURRICULUM VITAE
SCOTTY D. CRAIG, PH.D.

Biographical Sketch

Scotty D. Craig is currently an Associate Professor of Human Systems Engineering within The Polytechnic School of the Ira A. Fulton Schools of Engineering at Arizona State University and an affiliate faculty of the Mary Lou Fulton Teachers College. He earned a Ph.D. in Experimental Psychology (Cognitive) from The University of Memphis with a focus on cognitive learning. Dr. Craig has studied emotion and learning, discourse processing, multimedia learning, vicarious learning environments, and intelligent tutoring systems (ITS) in both laboratory and applied classroom settings.

Dr. Craig has established two active labs while at Arizona State University. He is Director of the **Cognitive-Based Applied Learning Technology (CoBALT) Lab,** which conducts innovative research at the intersection of human cognition, technology, and the learning sciences that can provide solutions to real world problems within education and training. He is also Co-Director of the **DoD Advanced Distributed Learning Initiative Partnership Lab** at Arizona State University. Current projects examine virtual humans for learning and training, music on the web, effectiveness of electronic textbooks for learning, and applications of ITS to training within virtual worlds, classrooms, and after-school settings.

Summary of Impact

His work at ASU has generated 59 publications (17 journal articles, 7 book chapters, 25 published conference proceedings, 3 edited books, 2 edited journal special issues, and 5 editorials, encyclopedia articles, and newsletters), 14 peer reviewed conference presentations, and 1 patent. Total contributions to the field consist of 121 publications (36 journal articles, 10 book chapters, 60 published conference proceedings, 3 edited books, 4 edited Journal special issues, 1 conference proceedings, and 7 editorials, encyclopedia articles, and newsletters), 58 peer reviewed conference presentations, and one patent. Dr. Craig has served as ad hoc reviewer for numerous academic journals and conferences as well as a review panelist for NSF's Advanced Learning Technology (ALT) and Human Centered Computing (HCC) funding areas and Institute for Educational Sciences (U.S. Department of Education). He is currently on the editorial board for the *International Journal of STEM Education* and *Technology, Instruction, Cognition, and Learning*.

Websites: http://adl.asu.edu; http://cobaltlab.org
Google Scholar Summary: http://scholar.google.com/citations?hl=en&user=aAIeW7gAAAAJ

PROFESSIONAL EXPERIENCE

August 2018-Present	Associate Professor, Arizona State University
August 2012–August 2018	Assistant Professor, Arizona State University
Dec. 2016-Present	Co-Director of the Advanced Distributed Learning Partnership Lab at Arizona State University
September 2007–July 2012	Project Coordinator III /Research Assistant Professor, University of Memphis
March 2009–July 2012	Associate Director of Research and Development for the Advanced Distributed Learning Memphis Intelligent Tutoring Systems Center at the University of Memphis
August 2005–2007	Postdoc, Pittsburgh Science Learning Center; University of Pittsburgh

AWARDS

- Roland L. Frye Achievement Award for Research, University of Memphis 2000
- University of Memphis Department of Psychology Outstanding Service Award, 2005
- E-learn Best Paper Award, 2005
- 14th Annual Conference on Artificial Intelligence in Education Best Poster Award, 2009
- American Society for Engineering Education Pacific Southwest Best Paper Award, 2016
- International Conference on Artificial Intelligence in Education Best Poster Award, 2017
- Innovation in Scholarship Award – The Polytechnic School of Ira A. Fulton Schools of Engineering at Arizona State University, 2017
- The Polytechnic School Faculty Teaching Excellence Award– The Polytechnic School of Ira A. Fulton Schools of Engineering at Arizona State University, 2018

GRANT EXPERIENCE

SUMMARY OF GRANT SUPPORT

Total Approved/Anticipated External Funding: $2,745,578
Total Approved/Anticipated External Funding (PI): $2,160,997

CURRENT

{1} NSF IUSE EHR. Improving student performance and engagement via the human side of engineering: Human systems engineering education. Co-PI; $298,426 (20%)
{2} DoD-ADL. (HQ0034-19-C-0015) Science of Learning for Education and Readiness. PI; $894,942 (50%). 2019-2021.
{3} DoD-ADL (HQ0034-19-C-0018) An evaluation of the PERvasive Learning System from an End-User Perspective. PI; $1,139,181 (50%). 2019-2022.
Initiative

{4} NSF IIS. Exploring Social Learning in Collaborative Augmented Reality with Virtual Pedagogical Agents as Learning Companions. PI (ASU); 43,851 (100%).

COMPLETED

{1} Institute of Education Sciences (2009-2014). Applications of intelligent tutoring systems (ITS) to improve the skill levels of students with deficiencies in mathematics. Co-PI; PI-ASU; $2,284,278 (ASU subcontract: $63,830; 100%)

{2} DoD/TATRC–United States Army Medical Research Acquisition Activity (2011-2014). Virtual civilian aeromedical evacuation sustainment training. Co-PI; PI-ASU; (ASU subcontract: $63,044; 100%)

{3} DoD-ONR (2017-2018). A biometric measurement suite to understand the processes behind human learning. Co-PI; $286,155 (42,923, 15%)

PRIOR TO ASU

{1} IES (2005-2010). An implementation of vicarious learning with deep-level reasoning questions in middle school and high school classrooms. Senior Researcher; $1,050,000.

PENDING

{1} NSF-CNS (2018, February) SCC: Connecting Community Stakeholders to Healthcare Education and Employment with Smart and Connected Socio-Technical Strategies $2,999,688.00; PI@ASU $40,000.

COMPETITIVE INTERNAL GRANT FUNDING

ASU-CTI (2013-2014). An empirical investigation of the affordances of electronic textbooks. PI; $18,800.

ASU-KEEN (2017 Fall). Integrating the 3Cs into Research Training: Facilitating the Entrepreneurial Mindset by Applying Research Methods Skills to Real World Problem Solving. PI: 12,000.

PUBLICATIONS

(*) Corresponding Author
Bold Font: ASU Ph.D. Student
Underline: ASU Master's Student
(#) ASU Undergraduate Student
(∞) Other/Visiting Undergraduate Student
(✗)ASU Postdoctoral Researcher
‡ High School Student
(+) Equal Contributions (if not equal include % of participation)

SUMMARY OF PUBLICATIONS

Book Chapters (Total): 10
Book Chapters (ASU): 7
Book Chapters (Prior to ASU): 3
Conference Proceedings (Total): 60
Conference Proceedings (ASU): 25
Conference Proceedings (Prior to ASU): 35
Edited Books (or Co-Edited) (ASU): 3
Edited (or Co-Edited) Journal Issue (ASU): 2
Edited (or Co-Edited) Proceedings (Prior to ASU): 2
Encyclopedia Articles (ASU): 3
Journal Editorials (ASU): 2
Journal Publications (Total): 36
Journal Publications (ASU): 17
Journal Publications (Prior to ASU): 19

JOURNAL ARTICLES

{17} Schroeder, N. L., Chin, J., & Craig, S. D.* (in press). Learner Control Aids Learning from Instructional Videos with a Virtual Human. *Technology Knowledge & Learning*.

{16} Zipp, S. A.# & Craig, S. D.* (in press/2019-online). The impact of user biases on interactions with virtual humans within a virtual world for emergency management training. *Educational Technology Research & Design*

{15} Roscoe, R. D., Becker, D.V., Branaghan, R. J., Chiou, E. K., Gray, R., Craig, S. D., Gutzwiller, R., & Cooke, N. J. (2019). Bridging Psychology and Engineering to make technology work for people. *American Psychologist, 74*, 394-406.

{14} Craig, S. D.*, & Schroeder, N. L. (2019). Text to Speech Software and Learning: Investigating the Relevancy of the Voice Effect. Journal of Educational Computing Research, 57, 1534-1548.

{13} Okwumabua, T. M., Peasant, C. ∞, Barnes, E. ∞, Anderson, M. ∞, & Craig, S. D.* (2018). Using deep reasoning questions to improve an email-based STI prevention intervention.

Journal of Sexuality Education, 13, 452-469.

{12} Schroeder, N. L., Yang, F., Banerjee, T., Romine, W. L., & Craig, S. D. (2018). The influence of learners' perceptions of virtual humans on learning transfer. *Computers & Education, 126*, 170-182.

{11} **Chuang, C. Y.**, Craig, S. D.*, & Femiani, J. C. (2017). Detecting probable cheating during online assessments based on time delay and head pose. *Higher Education Research and Development, 36*, 1123-1137.
[Impact Factor: 1.21; H5-index: 33]

{10} Craig, S. D.*, & Schroeder, N. L. (2017). Reconsidering the voice effect when learning from a virtual human. *Computers and Education, 114*, 193-205.
https://doi.org/10.1016/j.compedu.2017.07.003
[Impact Factor: 3.82; H5-index: 94]

{9} **Bruchok, C. M.,** <u>Mar, C.</u> & Craig, S. D.* (2017). Is free recall active: The testing effect through the ICAP lens. *Journal of Interactive Learning Research, 28*, 127-148.
[Impact Factor: N\A; H5-index: 10]

{8} Schroeder, N.+, Romine, W.+, & Craig, S. D.+ (2017). Measuring pedagogical agent persona and the influence of agent persona on learning. *Computers & Education, 109*, 176-186.
[Impact Factor : 3.82; H5-index: 94]

{7} Sohoni, S.+, Craig, S. D.+ & Vedula, K.+ (2017). A blueprint for an ecosystem for supporting high quality education for engineering. *Journal of Engineering Education Transformation, 30(4)*, 58-66.
[Impact Factor: N\A; H5-index: 3]

{6} <u>Twyford, J.</u> & Craig, S. D.* (2017). Modeling goal setting within a multimedia environment on complex physics content. *Journal of Educational Computing Research, 55 (3)*, 374-394.
[Impact Factor: .68; H5-index: 22]

{5} Huang, X. ∞, Craig, S. D.+, Xie, J. ∞, Graesser, A. C.+, & Hu, X.+* (2016). Intelligent tutoring systems work as a math gap reducer in 6th grade after-school program. *Learning and Individual Differences, 47*, 258-265.
[Impact Factor: 1.63; H5-index: 41]

{4} Schroeder, N. L., & Craig, S. D.* (2016 online/in press). The effect of pacing on learners' Perceptions of pedagogical agents. *Journal of Educational Computing Research*.
[Impact Factor: .64; H5-index: 22]

{3} Craig, S. D.*, <u>Twyford, J.</u>**,** Irigoyen, N.#, & Zipp S.# (2015). A test of spatial contiguity for virtual human's gestures in multimedia learning environments. *Journal of Educational Computing Research, 53*, 3-14.
[Impact Factor: .66; H5-index: 22]

{2} Sullins,. J.+, Craig, S.D.+, & Hu, X.+ (2015). Exploring the effectiveness of a novel feedback mechanism within an intelligent tutoring system. *International Journal of Learning Technology, 10*, 220-236.
[Impact Factor: N\A; H5-index: 10]

{1} 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.
[Impact Factor: 2.88; H5-index: 88]

JOURNAL ARTICLES PRIOR TO ARIZONA STATE UNIVERSITY

{19} Craig. S. D.*, Gholson, B., Brittingham, J. K., Williams, J. , & Shubeck, K. T. (2012). Promoting vicarious learning of physics using deep questions with explanations. *Computers & Education, 58*, 1042-1048.

{18} 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.

{17} Sullins, J., Craig, S. D., & Graesser, A. C. (2010). The influence of modality on deep reasoning questions. *International Journal of Learning Technology*, *5*, 378–387.

{16} Craig, S. D., Chi, M. T. H., & VanLehn, K. (2009). Improving classroom learning by collaboratively observing human tutoring videos while problem solving. *Journal of Educational Psychology*, *101*, 779–789.

{15} D'Mello, S. K., Craig, S. D., & Graesser, A. C. (2009). Multimethod assessment of affective experience and expression during deep learning. *International Journal of Learning Technology*, *4*, 165–187.

{14} Gholson, B., Witherspoon, A., Morgan, B., Brittingham, J., Coles, R., Graesser, A. C., Sullins, J., & Craig, S. D. (2009). Exploring the deep-level reasoning questions effect during vicarious learning among eighth to eleventh graders in the domains of computer literacy and Newtonian physics. *Instructional Science*, *37*, 487–493.

{13} Craig, S. D., D'Mello, S., Witherspoon, A., & Graesser, A. (2008). Emote-aloud during learning with AutoTutor: Applying the facial action coding system to affective states during learning. *Cognition and Emotion*, *22*, 777–788.

{12} D'Mello, S., Craig, S. D., Witherspoon, A., McDaniel, B., & Graesser, A. C. (2008). Automatic detection of learner's affect from conversational cues. *User Modeling and User-Adapted Interaction*, *18*, 45–80.

{11} Graesser, A. C., D'Mello, S., Craig, S. D., Witherspoon, A., Sullins, J., McDaniel, B., & Gholson, B. (2008). The relationship between affective states and dialog patterns during interactions with AutoTutor. *Journal of Interactive Learning Research*, *19*(2), 293–312.

{10} D'Mello, S. K., Craig, S. D., Sullins, J., & Graesser, A. (2006). Predicting affective states expressed through an emote-aloud procedure from a mixed-initiative dialog with AutoTutor. *International Journal of Artificial Intelligence in Education*, *16*, 3–28.

{9} Gholson, B., & Craig, S. D. (2006). Promoting constructive activities that support vicarious learning during computer-based instruction. *Educational Psychology Review*, *18*, 119–139.

{8} Craig, S. D., Sullins, J., Witherspoon, A., & Gholson, B. (2006). Deep-level reasoning questions effect: The role of dialog and deep-level reasoning questions during vicarious learning. *Cognition and Instruction*, *24*(4), 565–591.

{7} Graesser, A. C., Olde, B., Pomeroy, P., Whitten, S., Lu, S., & Craig, S. (2005). Inferencias y preguntas en la cómprension de textos cientificos [Inferences and questions in science text comprehension]. *Tarbiya*, *36*, 103–129.

{6} Craig, S. D., Driscoll, D., & Gholson, B. (2004). Constructing knowledge from dialog in an intelligent tutoring system: Interactive learning, vicarious learning, and pedagogical agents. *Journal of Educational Multimedia and Hypermedia*, *13*, 163–183.

{5} Craig, S. D., Graesser, A., Sullins, J., & Gholson, B. (2004). Affect and learning: An exploratory look into the role of affect in learning. *Journal of Educational Media (now: Learning, Media & Technology)*, *29*, 241–250.   (#12 ranked article for Journal)

{4} Driscoll, D., Craig, S. D., Gholson, B., Ventura, M., Hu, X., & Graesser, A. (2003). Vicarious learning: Effects of overhearing dialog and monolog-like discourse in a virtual tutoring session. *Journal of Educational Computing Research*, *29*, 431–450.

{3} Craig, S. D., Gholson, B., & Driscoll, D. (2002). Animated pedagogical agents in multimedia educational environments: Effects of agent properties, picture features, and redundancy. *Journal of Educational Psychology*, *94*, 428–434.

{2} Rajan, S., Craig, S. D., Gholson, B., Person, N., & Graesser, A. (2001). AutoTutor: Incorporating back-channel feedback and other human-like conversational behaviors into an intelligent tutoring system. *International Journal of Speech Technology*, *4*, 117–126.

{1} Craig, S. D., Gholson B., Ventura, M., Graesser, A. C., & the Tutoring Research Group. (2000). Overhearing dialogues and monologues in virtual tutoring sessions: Effects on questioning and vicarious learning. *International Journal of Artificial Intelligence in Education (Special Issue: Analyzing Educational Dialogue Interaction)*, *11*, 242–253.

SUBMITTED | REVISION (2 | 3)

{1} Chiou, E. K., Schroeder, N. L. & Craig, S. D. (submitted). How we Trust, Perceive, and Learning from Virtual Humans: The influence of voice quality. Computers & Education.

{2} Craig, S. D.*, Gholson, B., Germany, M. ∞, & Cheney, K.R∞. (revised/submitted). The effect of a teacher implemented deep-level reasoning question strategy in high school physics classrooms. *IEEE Transactions on Education*.

MANUSCRIPTS IN PREPARATION (5)

Chin, J., Roscoe, R. D., & Craig, S. D. (in preparation). Isolated text as a design method for signaling learnings in a multimedia learning environment. Target: Journal of Educational Computing Research.

Craig, S. D., **Chuang, C. Y.**, & Femiani, J. C. (in preparation). Detection of cheating during online assessments using head pose and confusion. Target: Computers & Education.

BOOK CHAPTERS

{7} Craig, S. D. & Douglas, I. (2019). Distributed Learning Instructional Theories. In J. J. Walcutt & S. Schatz. (Eds.), Modernizing Learning: Building the Future Learning Ecosystem (pp. 43-60). Washington, DC: Government Publishing Office.

{6} Craig, S. D. & Schroeder, N. L. (2018). Design principles for virtual humans in educational technology environments. In K. Millis, J. Magliano, D. Long, & K. Wiemer (Eds.) Deep Learning: Multi-Disciplinary Approaches (pp. 128-139). New York, NY:Routledge/Taylor and Francis.

{5} Roscoe, R., D., Branaghan, R., Cooke, N. J., & Craig, S. D. (2017). Human systems engineering and educational technology. In R. D. Roscoe, S. D. Craig and I. Douglas (Eds.), *End-User Considerations in Educational Technology Design*. (pp. 1-34). IGI Global: New York.

{4} Bennett, Jr, W., Bridewell, J., Rowe, L. J., Craig, S. D., & Poole, H. (2016). Training issues for remotely piloted aircraft systems from a human systems integration perspective. In N. J. Cooke, L. J. Rowe, W. Bennett, Jr. & D. Q. Joralman (Eds.), *Remotely Piloted Aircraft Systems: A Human Systems Integration Perspective*. (pp. 163-178). John Wiley & Sons: New York.

{3} Chughtai, R., **Zhang, S.**, & Craig, S.D.* (2016). Opportunities from usability design for improving intelligent tutoring systems. In R. Atkinson (Ed.), *Intelligent Tutoring Systems: Structure, Applications, and Challenges.* (pp. 129-152). Nova Science Publishers: New York.

{2} Craig, S. D. & Brittingham, J. K. ∞ (2013). Instruction via observational learning: Addressing the growing need for efficient learning techniques in schools. In R. Atkinson (Ed.), *Learning Environments: Technologies, Challenges and Impact Assessment.* (pp. 81-99). Nova Science Publishers: New York.

{1} 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*. (pp. 69-78). Springer: Berlin Heidelberg.

BOOK CHAPTERS PRIOR TO ARIZONA STATE UNIVERSITY

{3} Graesser, A., C., Franceschetti, D., Gholson, B., & Craig, S. (2011). Learning Newtonian physics with conversational agents and interactive simulation. In N. Stein & S. W. Raudenbush (Eds.), *Developmental cognitive science goes to school* (pp. 157–172). New York: Routledge.

{2} Gholson, B., Coles, R., & Craig, S. D. (2010). Features of computerized multimedia environments that support vicarious learning processes. In M. S. Khine & I. M. Saleh (Eds.), *New science of learning: Cognition, computers and collaboration in education* (pp. 53–78). New York: Springer.

{1} Graesser, A. C., Pomeroy, V., & Craig, S. (2002). Psychological and computational research on theme comprehension. In W. van Peer & M. M. Louwerse (Eds.), *Thematics in psychology and literary studies* (pp. 19–34). Albany, NY: SUNY Press.

PUBLISHED CONFERENCE PROCEEDINGS

(All papers in this section were also presented at a conference and **were peer reviewed**.)

PUBLISHED

{25} Craig, S. D., Chiou, E., & Schroeder, N. L. (2019). Impact of virtual human's voice on learner's trust. In Proceedings of the Human Factors and Ergonomics Society Annual Meeting (in press). Los Angeles, CA: SAGE Publications.

{24} Gutzwiller, R. S., Chiou, E., Craig, S. D., Lewis, C. M., Lematta, G. J., & Hsiung, C. (2019). Positive bias in the 'Turst in Automated Systems Survey'? An examination of the Jian et al. (2002) Scale. In Proceedings of the Human Factors and Ergonomics Society Annual Meeting (in press). Los Angeles, CA: SAGE Publications.

{22} Craig, S. D., Zhang, S., & Prewitt, D. (2018, September). Deep Reasoning for Enhancing Etextbooks (DREE): Using Deep-Level Questions for Guiding Learning. In Proceedings of the Human Factors and Ergonomics Society Annual Meeting (pp. 341-345). Los Angeles, CA: SAGE Publications.

{21} Kadekar, H. B. M., Sohoni, S., & Craig, S. D. (2018). Effects of Error Messages on Students' Ability to Understand and Fix Programming Errors. In the Proceedings of the Frontiers in Education Conference (FIE), 2017 IEEE (pp. X-X). IEEE.

{20} Ioia, K. A. & Craig, S. D.* (2018). The influence of vicarious learning on explicit bias and knowledge retention in an online LGBT competency training program. In Proceedings of E-Learn: World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education 2016 (pp. 1034-1046). Chesapeake, VA: Association for the Advancement of Computing in Education (AACE).

{19} Mar, C., Craig, S. D., & Sohoni, S. (2017). The Effect of Embedded Questions in Programming Education. In the Proceedings of the Frontiers in Education Conference (FIE), 2017 IEEE (pp. 1-8). IEEE.

{18} Roscoe, R. D., **Johnson, C. K.,** Lande, M., Craig, S. D., & Gray, R. (2018, September). A Conceptual Qualitative Framework for Assessing Human Systems Engineering Education Outcomes and Opportunities. In Proceedings of the Human Factors and Ergonomics Society Annual Meeting (pp. 349-353). Los Angeles, CA: SAGE Publications.

{17} Zipp, S. A., Krause, T., & Craig, S. D. (2017, November). The impact of user biases toward a virtual human's skin tone on triage errors within a virtual world for emergency management training. Proceedings of the Human Factors & Ergonomics Society Annual Meeting (pp. 2057-2061). Los Angeles: SAGE.

{16} Liles, K. ∞, Perry, C. ∞, Craig, S. D., & Beer, J. (2017). Student perceptions: The test of spatial contiguity and gestures for robot instructors. In the Proceedings of the 2017 Conference on Human-Robot Interaction (HRI2017) (pp. 185-186). ACM.

{15} [1]Sohoni, S.+, Craig, S. D.+, & Lu, S. (2017, March). Impact of prior exposure to the PLP

instruction set architecture in a computer architecture course. In Proceedings of the 2017 ACM SIGCSE Technical Symposium on Computer Science Education (pp. 555-560). ACM.

[1]Acceptance rate: 30%

{14}[1]Xie, J. ∞, Shubeck, K. ∞, Craig, S. D.*, & Hu, X. (2017). The strategies to learn from errors in adaptive math tutoring system. In E. André, R. Baker, X. Hu, M. T. Rodrigo, and B. du Boulay (Eds.), Proceedings of the International Conference on Artificial Intelligence in Education (pp. 590-593). Berlin, Germany: Springer.

[1] Best poster award

{13} [1]**Bruchok, C. M.,** <u>Mar, C.,</u> & Craig, S. D.* (2016). Is free recall active: The testing effect through the ICAP lens. In Proceedings of E-Learn: World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education 2016 (pp. 331-344). Chesapeake, VA: Association for the Advancement of Computing in Education (AACE).

[1]Accepted as a full journal article.

{12} Craig, S. D.*, Huang, X. ∞, Xie, J. ∞, Fang, Y. ∞**,** & Hu, X. (2016). Identifying relevant user behavior, predicting learning, and persistence in an ITS-based afterschool program. In T. Barnes, M. Chi, & M. Feng (Eds.), Proceedings of the 9th International Conference on Educational Data Mining (pp. 581-582). Worcester, MA: International Educational Data Mining Society.

{11} Shubeck, K. T. ∞, Craig, S. D.*, & Hu, X. (2016). Live-action mass-casualty training and virtual world training: A comparison. Proceedings of the Human Factors & Ergonomics Society Annual Meeting (pp. 2103-2107). Los Angeles: SAGE.

{10} Sohoni, S.+ & Craig, S. D.+ (2016). Making the case for adopting and evaluating innovative pedagogical techniques in engineering classrooms. In Proceedings of the American Society for Engineering Education Annual Conference & Exposition. Washington, DC: American Society for Engineering Education. From https://peer.asee.org/25667 DOI: 10.18260/p.25667

{9} [1]Sohoni, S.+, <u>Mar, C.,</u> & Craig, S. D.+ (2016). Comparing cooperative learning in online and in-person versions of a microprocessors course. In L. Gossage (Ed.), *Proceedings of the 2016 American Society for Engineering Education Pacific Southwest Section Conference* (pp. 257-268). Washington, DC: American Society for Engineering Education.

[1] Best paper award

{8} **Chuang, C.,** Craig, S. D.*, & Femiani, J. (2015). The role of certainty and time delay in student's cheating decisions during online testing. In R. Dale, C. Jennings, P. Magilio, T. Matlock, D. Noelle, A. Warlaumont, & J. Yoshimi (Eds.) Proceedings of the 37th annual Cognitive Science Society Meeting (pp.387-392). Cognitive Science Society. From https://mindmodeling.org/cogsci2015/papers/0076/

{7} <u>Chughtai, R.,</u> **Zhang, S.** & Craig, S. D.* (2015). Usability evaluation of intelligent tutoring system: ITS from a usability perspective. Proceedings of the Human Factors & Ergonomics Society Annual Meeting (pp. 367-371). Los Angeles: SAGE.

{6} 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 .

{5} Huang, X. ∞, Xie, J. ∞, Graesser, A. C. Hu, X. & Craig, S. D.* (2014). The effects of computerized tutor on the mathematics attitudes of sixth grade students in after-school program. In W. Eberle & C. Boonthum-Denecke (Eds.), Proceedings of the 27th International Florida Artificial Intelligence Research Society (FLAIRS) Conference (pp. 522-523). Menlo Park, CA: The AAAI Press.

{4} Xie, J. ∞, Huang, X. ∞, Craig, S. D., Graesser, A. C. & Hu, X. (2014). The effect of math ability on students' math learning behaviors in the computer-based tutoring system. In W. Eberle & C. Boonthum-Denecke (Eds.), Proceedings of the 27th International Florida Artificial Intelligence Research Society (FLAIRS) Conference (pp. 526-527). Menlo Park, CA: The AAAI Press.

{3} **Zhang, S**., *Craig, S. D*., Prewitt, D., Stuart, N. D., & Irigoyen, N.# (2014). Multimodal learning in electronic textbooks. In W. Eberle & C. Boonthum-Denecke (Eds.), Proceedings of the 27th International Florida Artificial Intelligence Research Society (FLAIRS) Conference (p. 527). Menlo Park, CA: The AAAI Press.

{2} Twyford, J., & Craig, S. D.* (2013). Virtual humans and gesturing during multimedia learning: An investigation of predictions from the temporal contiguity effect. In T. Bastiaens & G. Marks (Eds.), World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education (ELEARN) 2013 (pp. 2541-2545). Chesapeake, VA: AACE.

{1} Xie, J. ∞, Huang, X. ∞, Hua, H. ∞, Wang, J. ∞, Tang, Q. ∞, Craig, S. D.+, Graeser, A.C.+, Lin, K., & 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. (http://www.educationaldatamining.org/IEDMS/EDM2013)

CONFERENCE PROCEEDINGS PRIOR TO ARIZONA STATE UNIVERSITY

{35} Cheney, K., Craig, S. D., & Hu, X. (2012). Lessons learning from a three year after-school program using ALEKS to teach sixth graders Mathematics. In P. M. McCarthy & G. M. Youngblood (Eds.), Proceedings of the 25th International Florida Artificial Intelligence Research Society (FLAIRS) Conference (pp. 751). Menlo Park, CA: The AAAI Press.

{34} Shubeck, K., *Craig, S. D.,* Hu, X., Faghihi, U. Levy, M., & Koch, R. (2012). Incorporating natural language tutoring into a virtual world for emergency response training. In P. M. McCarthy & G. M. Youngblood (Eds.), Proceedings of the 25th International Florida Artificial Intelligence Research Society (FLAIRS) Conference (p. 573). Menlo Park, CA: The AAAI Press.

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[1]*Best Poster Award at the 14th Annual Conference on Artificial Intelligence in Education*

{27} D'Mello, S. K., Craig, S. D., Fike, K., & Graesser, A. C. (2009). Responding to learners' cognitive-affective states with supportive and shakeup dialogues. In J. A. Jacko (Ed.), Lecture Notes in Computer Science, Vol. 5612: *Human-computer interaction—Ambient, ubiquitous and intelligent interaction* (pp. 595–604). Berlin, Germany: Springer-Verlag.

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{23} Craig, S. D., VanLehn, K., & Chi, M. T. H. (2008). Promoting learning by observing deep-level reasoning questions on quantitative physics problem solving with Andes. In K. McFerrin, R. Weber, R. Weber, R. Carlsen, & D. A. Willis (Eds.), *The Proceedings of the 19th International Conference for the Society for Information Technology & Teacher Education* (pp. 1065–1068). Chesapeake, VA: AACE.

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{19} D'Mello S., Craig, S. D., el Kaliouby, R., Alsmeyer, M., & Rebolledo-Mendes, G. (2007). Modeling and scaffolding affective experiences to impact learning. In R. Luckin, K. R. Koedinger, & J. Greer (Eds.). *Artificial Intelligence in Education: Building Technology Rich Learning Contexts That Work (AIED07)* (p. 719). Washington, DC: IOS Press.

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{16} D'Mello, S. K., Craig, S. D., Gholson, B., Franklin, S., Picard, R., & Graesser, A. C. (2005). Integrating affect sensors in an intelligent tutoring system. In *Affective Interactions: The Computer in the Affective Loop Workshop at 2005 International Conference on Intelligent User Interfaces* (pp. 7–13) New York: AMC Press.

{15} [1]D'Mello, S. K., Craig, S. D., Gholson, B., Witherspoon, A., Sullins, J., & Graesser A. C. (2005). The relationship between affective states and dialog patterns during interactions with AutoTutor. In *Proceedings of E-Learn 2005: World Conference on E-Learning in Corporate, Government, Healthcare, & Higher Education* (pp. 2004–2011). Chesapeake, VA: AACE.
[1]*Received best paper award*

{14} Craig, S. D., Gholson, B., & Sullins, J. (2004). Should we question them?: An investigation into the role of deep questions in vicarious learning environments. In J. Nall & R. Robson (Eds.), *Proceedings of E-Learn 2004: World Conference on E-Learning in Corporate, Government, Healthcare, & Higher Education* (pp. 1836–1840). Chesapeake, VA: AACE.

{13} Craig, S. D., D'Mello, S. K., Gholson, B., Witherspoon, A., Sullins, J., & Graesser A. C. (2004). Emotions during learning: The first steps toward an affect sensitive intelligent tutoring system. In J. Nall & R. Robson (Eds.). *Proceedings of E-Learn 2004: World Conference on E-Learning in Corporate, Government, Healthcare, & Higher Education* (pp. 284–288). Chesapeake, VA: AACE.

{12} Craig, S. D., Driscoll, D., Sullins, J., & Gholson, B. (2003). Knowledge construction from multimedia learning environments: The role of interactivity, collaboration and vicarious learning. In A. Méndez-Vilas & J. A. Mesa González (Eds.), *Advances in Technology-Based Education: Towards a Knowledge-based Society, Vol. 3* (pp. 1903–1906). Badajoz, Spain: Junta de Extremadura.

{11} Craig, S. D., & Graesser, A. (2003). Why am I confused: An exploratory look into the role of affect in learning. In A. Méndez-Vilas & J. A.Mesa González (Eds.), *Advances in Technology-Based Education: Towards a Knowledge-based Society, Vol. 2* (pp. 808–812). Badajoz, Spain: Junta de Extremadura.

{10} Craig, S. D., & Gholson, B. (2002). Does an agent matter?: The effects of animated pedagogical agents on multimedia environments. In P. Barker & S. Rebelsky (Eds.) *Proceedings for ED-MEDIA 2002: World Conference on Educational Multimedia, Hypermedia and Telecommunications* (pp. 357–362). Chesapeake, VA: AACE.

{9} Craig, S. D., Driscoll, D., & Gholson, B. (2002). Evidence on the roles of pedagogical agents, redundant printed text, and interactive vs. vicarious learning in an intelligent tutoring system called AutoTutor. In P. Bell, R. Stevens, & T. Satwicz (Eds.), *Keeping Learning Complex: The Proceedings of the Fifth International Conference of Learning Sciences (ICLS)*. Mahwah, NJ: Erlbaum.

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{6} Craig, S. D., Gholson B., Ventura, M., & the Tutoring Research Group. (2000). The effects of information presentation style on question generation. *Proceedings of the 10th Annual meeting of the Society for Text and Discourse* (pp. 110–111), Lyon, France.

{5} Craig, S. D., Hu, X., Gholson, B., Marks, W., Graesser, A. C., & the Tutoring Research Group. (2000). AutoTutor: A human tutoring simulation with an animated pedagogical agent interface. In P. Hamberger (Ed.), *Integrated command environments* (pp. 23–30). San Diego, CA: SPIE Proceedings Series.

{4} Person, N. K., Craig, S., Price, P., Hu, X., Gholson, B., Graesser, A. C., & the Tutoring Research Group (2000). Incorporating human-like conversational behaviors into AutoTutor. In J. Rickel, (Ed.), *Fourth International Conference on Autonomous Agents Proceedings of Workshop 7: Achieving Human-like Behavior in Interactive Animated Agents* (pp. 85–92).

{3} Price, P., Craig, S., Person, N. K., Graesser, A., & the Tutoring Research Group. (2000). The making of Marco: Incorporating lifelike behaviors into AutoTutor. In J. Rickel, (Ed.), *Fourth International Conference on Autonomous Agents Proceedings of Workshop 7: Achieving Human-like Behavior in Interactive Animated Agents* (pp. 93–97).

{2} Craig, S. D., Hu, X., Marks, W., Graesser, A. C., & the Tutoring Research Group (1999). Source monitoring among multiple virtual agents: A study of who said what. In G. Cumming, T. Okamoto, & L. Gomez (Eds.), *Advanced Research in Computers and Communications in Education: New Human Abilities for the Networked Society, Vol. 1* (pp. 141–148). Washington, DC: IOS Press.

{1} Graesser, A. C., & Craig, S. (1999). The construction of multiple agents during the comprehension of discourse and literary short stories. In A.B. Gomez (Ed.), *AESLA Proceedings*.

EDITED WORKS

BOOKS

{3} Craig, S. D. (Fall 2018). Tutoring and Intelligent Tutoring Systems. New York, NY: Nova Science Publishers.

{2} Roscoe, R. D.+, Craig, S. D.+, & Douglas, I.+ (Eds.). (2017). *End-User Considerations in Educational Technology Design*. Hershey, PA: IGI Global Inc. http://www.igi-global.com/book/end-user-considerations-educational-technology

{1} Andrews, D. H+. & Craig, S. D.+ (Eds.). (2015). *Readings in Training and Simulation (Vol. 2): Research articles from 2000 to 2014*. Santa Monica, CA: Human Factors and Ergonomics Society. http://www.amazon.com/dp/B019NT7KQA

EDITED JOURNALS

{2} Craig, S. D., Graesser, A. C., & Perez, R. (Eds.). (2018). *International Journal of STEM Education* Volume 5. Springer Open. https://www.springeropen.com/collections/ONR

{1} Craig, S. D.*, Jackson, G. T. & Hausmann, R. G. M. (Eds.) (2013). *International Journal of Learning Technology Volume 8, Nos. 4*. Geneva, Switzerland: Inderscience Publishers Ltd.

PRIOR TO ARIZONA STATE UNIVERSITY

{2} Craig, S. D., & Dicheva, D. (Eds.). (2009). *AIED Workshop Proceedings (Vols. 1–10)*. http://iaied.org/

{1} Craig, S. D., & Rebolledo-Mendez, G. (Eds.) (2009). *International Journal of Learning Technology Volume 4, Nos. 3/4*. Geneva, Switzerland: Inderscience Publishers Ltd.

CONFERENCE PROCEEDINGS

{1} D'Mello S., Craig, S. D., el Kaliouby, R., Alsmeyer, M., & Rebolledo-Mendes, G. (Eds.). (2007). *Workshop on modeling and scaffolding affective experiences to impact learning.* July 3, 2007. http://www.informatics.sussex.ac.uk/users/gr20/aied07/ AffectWkshpAIED07Proceedings-R1.pdf

ENCYCLOPEDIA ARTICLES, EDITORIALS, & NEWSLETTERS

ENCYCLOPEDIA ARTICLES

{4} Craig, S. D. (in press/2019). The role of questions in academic achievement. In J. Hattie & E. Anderman (Eds.), *Visible Learning Guide to Student Achievement* (pp. xxx-xxx). London: Routledge.

{3} Craig, S. D. (2017). Learning Through Observation. In K. Peppler (Ed.), The SAGE Encyclopedia of Out-of-School Learning Vol. 1. (pp. 434-436) Los Angeles: SAGE.

{2} Craig, S. D. (2012). Questioning. In J. Hattie & E. Anderman (Eds.), *International Guide to Student Achievement*. (pp. 414-415). London: Routledge.

{1} Craig, S. D. (2012). Confusion's impact on learning. In N. M. Seel (Ed.), *Encyclopedia of the Sciences of Learning* (pp.766-767). New York: Springer.

JOURNAL EDITORIALS (2)

{3} Craig, S. D., Graesser, A. C., & Perez, R. (2018). Advances from the Office of Naval Research STEM Grand Challenge: Expanding the Boundaries of Intelligent Tutoring Systems. International Journal of STEM Education, 5, https://doi.org/10.1186/s40594-018-0111-x (article); https://www.springeropen.com/collections/ONR (SI collection).

{2} Craig, S. D., Jackson, G.T., & Hausmann, R.G.M (2013). Editorial: Advances in Intelligent Tutoring Systems: Contributions from the FLAIRS ITS track. *International Journal of Learning Technology, 8*, 313-314. **[Journal: Impact Factor – N\A; H5-index-10]**

{1} Craig, S. D., & Rebolledo-Mendez, G. (2009). Incorporating the affective loop into learning technologies. *International Journal of Learning Technology*, *4*, 125–129.

NEWSLETTERS (2)

{2} Graesser, A. C., Craig, S., & Wiemer-Hastings, P. (1997). *Text & Discourse Newsletter*. Vol. 5.

{1} Graesser, A. C., Craig, S. & Horrowitz, R. (1996). *Text & Discourse Newsletter*. Vol. 4.

CONFERENCE PRESENTATIONS

SUMMARY OF PRESENTATIONS

Conference Presentations (Total): 58
Conference Presentations (ASU): 14
Conference Presentations (Prior to ASU): 44
Invited Presentations – External: 3
Invited Presentations –ASU Internal: 6

Submitted

Accepted/presented

{14} Craig, S. D., Roscoe, R. D., Branaghan, R., Gary, K., McNicol, S., & Barnard, W. (2019, August) PERvasive Learning System: Verification, Validation, and Experimental Testing. Poster presented at iFEST: Innovation Instruction and Implementation in Federal E-Learning Science & Technology Conference, Alexandria, VA.

{13} Craig, S. D., Roscoe, R. D., Cooke, N. J., Prewitt, D., Hsiao, S., & Schroeder, N. (2019, August) Science of Learning for Education and Readiness (SoLaR: Human System Framework for Effective Distributed Learning Organizations. Poster presented at iFEST: Innovation Instruction and Implementation in Federal E-Learning Science & Technology Conference, Alexandria, VA.

{12} McNicol, S., Craig, S. D., Branaghan, R., & Roscoe, R. D. (2019, August) A Heuristic Evaluative Framework for Mobile Self-Regulated Learning Design. Presented at iFEST: Innovation Instruction and Implementation in Federal E-Learning Science & Technology Conference, Alexandria, VA.

{11} Craig, S. D., Schroeder, N. L., Chin, J., & Williams, J. (2018, April). *Investigating the Relevancy of the Voice Effect with an Updated Text-to-Speech Engine*. Paper presented at American Educational Research Association. New York, NY.

{10} Roscoe, R. D., Craig, S. D., Lande, M. Gray, R., **Johnson, C.**, & Sohoni, S. (2018, April). *Formative Assessment of Human Systems Engineering in Students' Engineering Projects: A Preliminary Framework*. Paper presented at American Educational Research Association. New York, NY.

{9} Schroeder, N. L., Yang, F., Banerjee, T., Romine, W. L., & Craig, S. D. (2018, October). Learners' perceptions of pedagogical agents: A cluster analysis. Association for Educational Communications and Technology. Kansas City, MO.

{8} Craig, S. D., Schroeder, N. L., Chin, J., & Williams, J. (2018, April). *Investigating the Relevancy of the Voice Effect with an Updated Text-to-Speech Engine*. Paper presented at American Educational Research Association. New York, NY.

{7} Craig, S. D., & Schroeder, N. L. (2017, November). *The voice effect and pedagogical agents: Reopening the conversation*. Paper presented at Association for Educational Communications & Technology International Convention, Jacksonville, FL.

{6} **Bruchok, C. M.**, <u>Mar, C.</u>, **Akca-Hobbins, S.**, <u>Potter, H.</u>, & Craig, S. D.* (2017, April). *Learning by quizzing: Recall from an ICAP perspective*. Paper presented at American Educational Research Association. San Antonio, TX.

{5} Schroeder, N. L., Craig, S. D., & <u>Chin, J.</u> (2017, April). *Learner control influences instructional efficiency when learning with a pedagogical agent*. Paper presented at American Educational Research Association. San Antonio, TX.

{4} Schroeder, N. A.+, Romine, W.+, & Craig, S. D.+ (2016, August). *The impact of pedagogical agent persona on learning: A path analysis approach*. Presented at Association for Educational Communications & Technology International Convention, Las Vegas, NV.

{3} Fang, Y. ∞, Nye, B. D., Craig, S. D. & Hu, X. (2014, November). *Motivation detection in online math learning*. Poster presented at Society for Computers in Psychology. Long Beach, CA.

{2} Craig, S. D., Hu, X., Graesser, A. C., Bargagliotti A. E., Sterbinsky, A., Cheney, K. R., & Okwumabua, T. (2013, April). *The impact of a technology-based mathematics afterschool program using ALEKS on student's knowledge and behaviors*. Paper presented at American Educational Research Association. San Francisco, CA.

{1} Shubeck, K.T., Germany-Shubeck, M., *Craig, S.D.*, Dev, P., Hu, X., Koch, R., Heinrichs, W.L., Liao, Y., Cai, Z. (2013, November). *VCAEST: Training facilitated by an ITS embedded in a virtual world*. Poster presented at the annual meeting of the Society for Computers in Psychology, Toronto, ON.

CONFERENCE PRESENTATIONS PRIOR TO ARIZONA STATE UNIVERSITY

{44} Sullins, J., Craig, S. D., & Graesser, A. C. (2012, February). *The effects of affect on multimedia learning.* Presented at the Annual Meeting of the Southeastern Psychological Association. New Orleans, LA.

{43} Lewis, J., Okwumabua, T., Craig, S., Peasant, C., Barnes, E., & Etheridge, M. (2011, August). *Is older really wiser? Frequency of condom use in a college population*. Presented at NPHC. Washington, DC.

{42} Lewis, J., Okwumabua, T., Craig, S., Peasant, C., Thomas, L., Barnes, E., & Anderson, M. (2011, August). *Is older really wiser? Frequency of condom use in a college population*. Presented at 2011 National HIV Prevention Conference. Atlanta, GA.

{41} Peasant, C., Okwumabua, T., Craig, S., Anderson, M., & White, A. (2011, August). *The color of risk: Race difference in risk perception in college women*. Presented at 2011 National HIV Prevention Conference. Atlanta, GA.

{40} Hu, X., Craig, S. D., Anderson, C., Bargagliotti, A., Graesser, A. C., Okwumabua, T., & Sterbinsky, A. (2010, June). *Applications of intelligent tutoring systems (ITS) to improve the skill levels of students with deficiencies in mathematics*. Poster presented at the 5th Annual Institute of Education Sciences Research Conference. Washington, DC.

{39} Cheney, K. R., Germany, M., Fike, K., Craig, S. D., Gholson, B. (2009, February 14). *Impact of agent quality on vicarious learning environments*. Paper presented at the 12th Annual Mid-South Psychology Conference. Jackson, TN.

{38} Germany, M., Brittingham, J., Cheney, K. R., Fike, K., Craig, S. D., & Gholson, B. (2009, February 14). *The role of deep-level reasoning questions and explanations in vicarious*

learning environments. Paper presented at the 12th Annual Mid-South Psychology Conference. Jackson, TN.

{37} Craig, S. D., Brittingham, J., Williams, J., Martindale, T., Graesser, A., & Gholson, B. (2009, April). *Moving computer-based vicarious learning from the laboratory into the classroom*. Paper presented at American Educational Research Association. San Diego, CA.

{36} Craig, S. D., Brittingham, J., Williams, J., Martindale, T., Graesser, A., & Gholson, B. (2009, April). *The impact of domain knowledge on the portability of vicarious learning to the classroom*. Paper presented at National Association for Research in Science Teaching. Garden Grove, CA.

{35} Cheney, K. R., Germany, M., Fike, K., Craig, S. D., & Gholson, B. (2009, April 17). *Manipulating agent quality: Its effect on vicarious learning environments*. Paper presented at the 23rd National Conference on Undergraduate Research. La Crosse, WI.

{34} Craig, S. D., Graesser, A. C., & Gholson, B. (2009, May). *Integration of vicarious learning environments into high school and middle school classrooms*. Paper presented at the 21st Annual Convention of the Association for Psychological Science. San Francisco.

{33} Cheney, K. R., Germany, M., Fike, K., Craig, S. D., & Gholson, B. (2009, May 22). *The role of agent quality in vicarious learning*. Poster presented at the 21st Annual Convention of the Association for Psychological Science. San Francisco.

{32} Gholson, B. Graesser, A. C., & Craig, S. D. (2009, June). *IDRIVE project summary: An Overview of our randomized classroom experiments in the Memphis City Schools*. Poster presented at the 4th Annual Institute of Education Sciences Research Conference. Washington, DC.

{31} Gholson, B., Craig, S. D., Brittingham, J. K., Germany, M., Fike, K., & Cheney, K. R. (2009, July). *The role of deep-level questions, "self" explanations, and domain knowledge in vicarious learning*. Presented at the 19th Annual Meeting of the Society for Text and Discourse. Rotterdam, the Netherlands.

{30} Han, L., Craig, S. D., Hu, X., Williams, J., & Hu, X. (2009, November). *AutoTutor Lite*. Poster presented at the 39th Annual Meeting of the Society for Computers in Psychology. Boston.

{29} Hu, X., Craig, S. D., Han, L., & Morgan, B. (2009, November). *Learner's characteristics curves*. Poster presented at the 39th Annual Meeting of the Society for Computers in Psychology. Boston.

{28} Cheney, K. R., Germany, M., Fike, K., Craig, S. D., & Gholson, B. (2008, February 23). *Improving learning in the Memphis City Schools: Teaching the circulatory system through vicarious learning*. Presented at the 11th Annual Mid-South Psychology Conference. Memphis, TN.

{27} Cheney, K. R., Germany, M., Fike, K., Craig, S. D., & Gholson, B. (2008, May 17). *The impact of agent quality and deep level reasoning questions on vicarious learning environments*. Presented at the Eighth Annual Stanford Undergraduate Psychology Conference. Stanford, CA.

{26} Brittingham, J. K., Williams, J. L., Craig, S. D., Martindale T., Graesser A. C., & Gholson, B. (2008, June). *A comparison of vicarious environments with deep-level reasoning questions and standard pedagogy in middle school classrooms*. Presented at the 18th Annual Meeting of the Society for Text and Discourse. Memphis, TN.

{25} Gholson, B., Graesser, A., & Craig, S. D. (2008, June). *An implementation of vicarious learning with deep-level reasoning questions in middle school and high school classrooms.* Presented at the 3rd Annual Institute of Education Sciences Research Conference. Washington, DC.

{24} Williams, J. L., Brittingham, J. K., Craig, S. D., Mullins, W., Barnes, D., & Gholson, B. (2008, July). *Deep-level reasoning questions in multimedia presentations: Vicarious learning in high school classrooms.* Presented at the 11th International Conference of the International Society for the Empirical Study of Literature and Media. Memphis, TN.

{23} Brittingham, J., Martindale, T., Williams, J., Craig, S., Graesser, A., & Gholson, B. (2008, November). *Comparing teacher-led group instruction with a vicarious computer-based tutoring environment with deep-level reasoning questions*. Presented at the 2008 Association for Educational Communication and Technology International Convention. Orlando, FL.

{22} Cheney, K. R., Germany, M., Fike, K., Craig, S. D., Gholson, B. (2008, November 5). *Improving vicarious learning: Manipulating agent quality and deep-level reasoning questions.* Paper presented at the Works in Progress Symposium. Memphis, TN.

{21} Gholson, B., Graesser, A. C., Craig, S., & Witherspoon, A. (2007, April). *The transfer of deep-level reasoning questions and their effects on science learning*. Symposium presentation on What Conditions Support Transfer of Knowledge? New Research in Mathematics and Science Education at the 2007 Annual Meetings of the American Educational Research Association. Chicago.

{20} VanLehn, K., Hausmann, R., & Craig, S. (2007, April). *Is the "self" of self-explanation important?* Symposium presentation at PSLC AERA Symposium: In vivo experimentation for understanding robust learning: Pros and cons at the 2007 Annual Meetings of the American Educational Research Association. Chicago.

{19} VanLehn, K., Hausmann, R., & Craig, S. (2007, August). *The role of the "self" in self-explanation*. Symposium presentation at the PSLC EARLI Symposium at the 2007 EARLI conference. Budapest, Hungary.

{18} Gholson, B., Graesser, A., Craig, S. D., Witherspoon, A. & Sullins, J. (2006, June). *IDRiVE: Instruction with deep-level reasoning questions in vicarious environments*. Presented at the 1st Annual Institute of Education Sciences Research Conference. Washington, DC.

{17} D'Mello, S., Craig, S., McDaniel, B., & Graesser, A. (2006, July). *Predicting learner's affective states from a dialogue with AutoTutor*. Presented at the 16th Annual Meeting of the Society for Text and Discourse. Minneapolis, MN.

{16} Craig, S. D., Sullins, J., Witherspoon, A., & Gholson, B. (2005, July). *The deep-level reasoning questions effect: Dialog and deep-level questions in vicarious learning*. Presented at the 15th Annual Meeting of the Society for Text and Discourse. Amsterdam.

{15} Witherspoon, A. M., Craig, S. D., Sullins, J., Gholson, B., & Graesser, A. C. (2004, February). *The impact of affective states on learner's perceptions of the learning environment*. Presented at the Mid-South Psychology Conference. Memphis, TN.

{14} Craig, S. D., Sullins, J., & Gholson, B. (2004, August). *The effects of discourse type on vicarious learning*. Presented at the 14th Annual Meeting of the Society for Text and Discourse. Chicago, IL.

{13} Driscoll, D., Craig, S., & Gholson, B. (2002, June). *The effects of discourse type on vicarious learning*. Presented at the 12th Annual Meeting of the Society for Text and Discourse. Chicago, IL.

{12} Craig, S. D., Gholson B., Driscoll, D., & Ventura, M. (2001, July). *Overhearing monologues and dialogues: Effects of vicarious learning on recall and question generation*. Presented at the 11th Annual Meeting of the Society for Text and Discourse. Santa Barbara, CA.

{11} Driscoll, D., Craig, S., Gholson, B., & Ventura, M. (2001, November). *Vicarious learning during virtual tutoring: Overhearing dialog and monologue discourse*. Presented at the 42nd Annual Meeting of the Psychonomic Society. Orlando, FL.

{10} Graesser, A., Lu, S., Whitten, S., Olde, B., Pomeroy, V., & Craig, S. (2000, June). *Deep and shallow comprehension of illustrated texts on everyday devices*. Presented at Society for the Scientific Study of Reading. Stockholm.

{9} Craig, S. D., Gholson B., Ventura, M., & the Tutoring Research Group. (2000, July). *The effects of information presentation style on question generation*. Presented at the 10th Annual Meeting of the Society for Text and Discourse. Lyon, France.

{8} Craig, S. D., Graesser, A., & Cregger, M. (2000, August). *Who wants what in a story: The effects of reader's impressions of the characters*. Presented at International Society for the Empirical Study of Literature (IGEL 2000). Toronto, Canada.

{7} Graesser, A. C., Pomeroy, V., & Craig, S. (1999, January). *Think aloud protocols in the context of illustrated texts and devices that malfunction*. Paper presented at the Tenth Annual Meeting of the Winter Conference on Discourse, Text & Cognition. Jackson Hole, WY.

{6} Graesser, A. C., Craig, S., Pomeroy, V., & Olde, B. (1999, April). *Deep comprehension of illustrated texts in the context of a breakdown scenario*. Invited symposium on discourse comprehension at the Meetings of the American Educational Research Association. Montreal, Canada.

{5} Craig, S. D., Gholson, B., Garzon, M. H., Hu, X., Marks, W., Wiemer-Hastings, P., Lu, Z., & the Tutoring Research Group. (1999, July). *AutoTutor and Otto Tudor*. Presented at the International Conference on Artificial Intelligence in Education. Le Mans, France.

{4} Graesser, A. C., Craig, S., Pomeroy, V., & Olde, B. (1999, July). *Comprehension of illustrated texts about everyday devices*. Paper presented at the Meetings of the Society for Applied Research in Memory and Cognition. Boulder, CO.

{3} Craig, S. D., Gholson, B., Smither, D., & the Tutoring Research Group. (1999, August). *Listening in on dialogues and monologues of embodied agents in virtual tutoring sessions: Learning and questioning*. Presented at The Society for Text and Discourse. Vancouver, Canada.

{2} Craig, S. D., & Hu, X. (1999, November). *Xtrain: Expert training and data collection system*. Presented at the 1999 Meeting of the Society for Computers in Psychology. Los Angeles.

{1} Craig, S., Cregger, M., & Graesser, A. (1997, May). *What does it matter?: Subjects views of characters' wants in a story world*. Presented at The 1997 Southeastern Undergraduate Psychology Research Conference.

Invited Talks (Internal:6/External:3/Total:9)

INTERNAL

{6} Craig, S. D. (2013). Learning with an Intelligent Tutor Afterschool. Simulation Modleing and Applied Cognitive Science Brownbag.

{5} Craig, S. D. (2015). Enhancing Human Learning with Technologies that Guide Human Cognition. Poster presented at Learning Innovation Showcase.

{4} Craig, S. D. (2016). Improving educational technology with virtual humans. Human Systems Engineering Brownbag

{3} Craig, S. D. (2016). Improving Multimedia-based learning and training with virtual humans. DCI 791: Transdisciplinary Research Seminar.

{2} Craig, S. D. (2017). Supporting Knowledge Acquisition with Cognitive-Based Applied Learning Technologies. Poster presented at The 2nd ASU Learning Innovation Showcase.

{1} Craig, S. D. (2017). Improving Training with Advanced Distributed Learning. Poster presented at The 2nd ASU Learning Innovation Showcase.

EXTERNAL

{3} Craig, S. (2017, Feb). Human Systems Engineering: Applying Psychology to Technology and Engineering with examples from Learning Technology Research. Invited Speaker at Arizona Psychology Undergraduate Research Conference. Tempe, AZ.

{2} Craig, S. D., & Sohoni, S. (2016, June-July). Research and publishing in Engineering Education. IUCEE Training webinar series speaker. Series of 7 talks.

{1} Craig, S. D. (2014, October). Improving student learning by manipulating the behavior of virtual humans. Presented at Workshop on Empirical Research with Pedagogical Agents. Los Angeles, CA. *http://werpa.ict.usc.edu/schedule/*

PATENTS (1)

{1} Hu, X., Cai, Z., Graesser, A. C., & Craig, S. (2013). Methods of evaluating semantic differences, methods of identifying related sets of items in semantic spaces, and systems and computer program products for implementing the same. *U.S. Patent No. 20,130,138,665*. Washington, DC: U.S. Patent and Trademark Office.

TEACHING AND MENTORING

SUMMARY OF TEACHING

Undergraduate Courses Taught: 22 (New Course Development: 9)
Graduate Courses Taught: 10 (New Course Development: 4)

CTI 101 Success in Technology and Innovation: Fall 2014
FSE 294 Undergraduate Research Experience: Fall 2015; 2 sections
HSE 230 Statistics for Human Systems Research I: Spring 2017, Spring 2018
HSE 290 Experimental Methods for Human Systems Research: Fall 2016-Fall 2019
HSE 290 EM For HSE (ASUOnline): Fall 2018, Spring 2019
HSE 324 Applied Cognitive Science: Fall 2016; Fall 2017
HSE 520 Methods in Applied Cognitive Science: Spring 2017, 2018, 2019
PSY 230 Introduction to Statistics: Spring 2016
PSY 290 Research Methods: Fall (2012, 2013, 2014); Spring 2015 (online).
PSY 390 Experimental Psychology: Fall 2014
PSY 560 Psychological Issues and Research with Virtual and Augmented Reality: Spring 2013
PSY 560 Cognitive Science Principles of Learning: Fall 2015
PSY 560 Modernizing Learning: Fall 2019
SMC 520 Methods in Applied Cognitive Science: Spring (2013, 2014, 2015, 2016)

SUMMARY OF MENTORING

Ph.D. Students Graduated: 1
Ph.D. Students Current: 5
M.S. Students Graduated: 8
M.S. Students Current: 3
Barrett Honor's students mentored: 4
Fulton Undergraduate Research Initiative: 3

GRADUATE FACULTY PROGRAM MEMBERSHIPS

The University of Memphis Graduate Faculty – Psychology Department (until 5/20/2016)
Arizona State University Graduate Faculty –
    Human Systems Engineering/Applied Psychology Master's Program
    Software Engineering
    Simulation Modeling and Applied Cognitive Science Program
    Psychology - Cognitive Science Program

SERVICE

SUMMARY OF PROFESSIONAL ACTIVITIES AND SERVICE

International/national conference committees: 15
International/national conference sessions chaired: 3
Editorial board memberships: 3
Peer Reviewer for 18 Journals
Proposal Reviewer Service for **3** funding agencies | 9 panels
ASU-Level Committees: 0
College-Level Committees: 2 (CTI)
Engineering School-Level Committees: 1
Unit-Level Committees: 3
Faculty Search Committees (member-only): 3
Program-level Leadership: 6

PROFESSIONAL SERVICE

EDITORIAL BOARD MEMBER

International Journal of STEM Education (2018-present)
International Journal of Learning Technologies (2006–2018)
Technology, Cognition, Instruction, and Learning (2013-present)
Journal of Educational Psychology (Principal Reviewer: 2013-2019; Board member: 2019)

AD-HOC REVIEWER

Applied Cognitive Psychology
Archives of Scientific Psychology
Cognitive Science
Computers & Education
Contemporary Educational Psychology
Current Directions in Psychological Science
Discourse Processes
Human Factors
IEEE – Affective Computing
IEEE – Intelligent Systems
Instructional Science
International Journal of Artificial Intelligence in Education
International Journal of STEM Education
Journal of Educational Computing Research
Journal of Experimental Psychology: Applied
Journal of Educational Psychology
Learning and Individual Differences
Review of Educational Research
Science Education

Computer-Human Interaction (2013)
Intelligent Tutoring Systems Conference (2008)
International Conference on Artificial Intelligence in Education (2007)

CONFERENCE ORGANIZATION

Session chair

ICCE99 Session Chair (Chiba, Japan, 1999)
Ed-Media Session Chair (Denver, 2002)
E-Learn Session Chair (Washington, DC, 2004)
International Conference on Intelligent Tutoring Systems Session Chair (2014)
E-Learn Session Chair (Washington, DC, 2013)
E-Learn Session Chair (Washington, DC, 2016)

Conference organization

Artificial Intelligence in Education workshop chair: 2009
Artificial Intelligence in Education program committee: 2009- 2017(3); senior program
  committee (2017)
Cognitive Science Society Annual Meeting Program Committee: 2015-2017 (3)
International Conference on Computers in Education Program Committee: 2016 (1)
International Conference on Intelligent Tutoring Systems Program Committee: 2010-2016 (3)
Florida Artificial Intelligence Research Society Conference Program Committee: 2013- 2017 (5)

GRANT PANEL REVIEWING

NSF Advanced Learning Technologies (ALT) panel (2006)
NSF Human-Centered Computing (HCC) panel (2007)
IES - Social and Behavioral Sciences panel (2008)
IES Basic Processes Panel member appointment (2013-2016)
IES Basic Processes Panel member appointment (2017-2019)
Singapore Ministry of Education (MOE) Tertiary Education Research Fund (TRF) (2015)
NSF Cyber-Human Systems reviewer (2016)

PUBLICATION EDITORIAL EXPERIENCE

Society for Text and Discourse (Newsletter Editor, 1996, 1997)
AIED 2007 workshop organizer
    "Modeling and Scaffolding Affective Experiences to Impact Learning"
    http://www.informatics.sussex.ac.uk/users/gr20/aied07/
Editor of special issue of *International Journal of Learning Technologies*: Affect and Learning
  (2009)
Editor of special issue of *International Journal of Learning Technologies*: Advances in
  intelligent Tutoring Systems: Contributions from the FLAIRS ITS track (2014)
Editor of special issue of *International Journal of STEM Education*: Office of Naval Research
  (ONR) STEM Grand Challenge (in progress)

UNIVERSITY SERVICE

UNIVERSITY REPRESENTATION AND PROMOTION

ASU Polytechnic capabilities visit to Ft. Huachuca (Oct 2012)
Faculty organizer for Cognitive Science and Engineering booth at ASU CTI Science &
  Engineering Festival (Feb 2013)
Night of the Open Door Lab Demo (2015)
SEE@ASU (July 2015)
Fulton Day in the Life - HSE Event Coordinator (2015)
Arizona Psychology Undergraduate Research Conference –
        Invited Presenter – Promoting Human Systems Engineering

COLLEGE COMMITTEES AND SERVICE

TPS Curriculum & Instruction Committee (2019)
College of Technology & Innovation Curriculum & Instruction Committee (2012-2013) (CTI)
College of Technology & Innovation Research Committee (2013-2014) (CTI)
FURI review board member (2014-present)
TEIM Convocation Planning Committee (Spring 2013)

PROGRAM LEVEL SERVICE

CSE Faculty Search Committee (2012-2013; 2013-2014)
Simulation, Modeling, and Applied Cognitive Science Admissions Committee (2012-current)
Human Systems Engineering Degree Committee (2014)
Cognitive Science & Engineering subject pool coordinator (Fall 2012-current)
Cognitive Science & Engineering New Student Orientation Representative (2012-2013)
CSE Program Assessment Coordinator BS-I/O Psych & MS Applied Psych (2012-2013)
Faculty advisor: Student Network for Applied Psychology (Fall 2012-2014)
Barrett Faculty Honors Advisor for I/O Psychology (Fall 2015-2018)
Barrett Faculty Honors Advisor for Human Systems Engineering (Fall 2016-current)

UNDERGRADUATE MENTORING

Barrett Honor's Thesis Advisor (2015-2019)
FURI Mentor (2014-2017)

NEWS ARTICLES/EXTERNAL RECOGNITION

Lombrozo, T. (2015, December 14). Sometimes Confusion Is A Good Thing. National Public
        Radio (NPR.org). http://www.npr.org/sections/13.7/2015/12/14/459651340/sometimes-
        confusion-is-a-good-thing

Grove, J. (2017, April, 18). All in the head: online cheats exposed by face tilts. Times Higher
        Education. https://www.timeshighereducation.com/news/all-head-online-cheats-exposed-
        face-tilts