

H. Chad Lane

University of Illinois, Urbana-Champaign
Department of Educational Psychology
1310 S. Sixth St.
Champaign, IL 61820 USA
217-333-2245

hclane@illinois.edu
hchadlane.net
@hchadlane (twitter)
[linkedin.com/in/hchadlane](https://www.linkedin.com/in/hchadlane)

Education

Ph.D. Computer Science, University of Pittsburgh, 2004.

M.S. Computer Sciences, University of Wisconsin-Madison, 1997.

B.S. Mathematics & Computer Science, Truman State University, *cum laude*, minor in Philosophy, honors in Computer Science, 1995.

Current Appointments

Associate Professor, Educational Psychology, University of Illinois, Urbana-Champaign, 2015-present.

Affiliate Faculty, Illinois Informatics Institute, University of Illinois, Urbana-Champaign, 2015-present.

Division Chair, Cognitive Science of Teaching and Learning (CSTL), 2016-present.

Acting Director, Technology Innovation in Educational Research and Design (TIER-ED), 2019.

Experience

Director for Learning Sciences Research, Institute for Creative Technologies, University of Southern California, 2012-2015

Research Scientist, Institute for Creative Technologies, University of Southern California, 2004-2015.

Adjunct Assistant Professor of Clinical Education, USC Rossier School of Education, 2014 - 2015.

Graduate Research Assistant, Learning Research & Development Center, University of Pittsburgh, 1999-2004.

Teaching Fellow and Instructor, Dept. of Computer Science, University of Pittsburgh, 1997-2004.

Instructor (part time), Duff's Business College, Pittsburgh, PA, 1998-2000.

Director, Joseph Baldwin Academy, Truman State University, summers 1996-1998.

Graduate Student Instructor, Computer Sciences, University of Wisconsin-Madison, 1995-1997.

Visiting Student Researcher, U.S. Dept. of Energy, Oak Ridge National Lab, Spring/Summer 1994.

Research Interests

technology-enhanced learning, intelligent tutoring systems, educational games, informal learning, cognitive modeling, science of interest, cognitive and emotional engagement

Research Statement

I want to build educational technologies that are as compelling and engaging as the very best social media apps, video games or movies. Like our most dedicated educators, I seek to design educational technologies that captivate learners, young and old, and help cultivate attitudes towards learning and growth that are compatible with the demands of the modern world. In pursuit of these goals, I conduct research on the design, use, and impacts of intelligent technologies for learning and behavior change. This work involves blending techniques from the entertainment industry (that foster engagement) with those from artificial intelligence and intelligent tutoring systems (that promote learning), as well as running studies to better understand whether and how the resulting learning experiences impact learners.

Awards and Honors

Facilitator's Award, "Exploring Alternative Versions of Earth in Minecraft," NSF 2018 STEM for All Video Showcase <http://stemforall2018.videohall.com/presentations/1188>

Presenter's Award, "Move2Learn: Embodied Learning for Pre-K Scientists", NSF 2018 STEM for All Video Showcase <http://stemforall2018.videohall.com/presentations/1199>

Teachers Rated as Excellent, University of Illinois, Urbana-Champaign

- Spring 2015 (EPSY-INFO590, Engaging Educational Technologies)
- Fall 2015 (EPSY-INFO590, Engaging Educational Technologies)
- Fall 2016 (EPSY490, Informal Learning; EPSY-INFO590, Engaging Educational Technologies)
- Spring 2017 (EPSY-INFO590, Mobile Apps for Teaching, Learning, & Educational Research)
- Fall 2017 (EPSY490, Informal Learning; EPSY-INFO590, Engaging Educational Technologies)
- Spring 2018 (EPSY590, Mobile Apps for Teaching and Learning)
- Fall 2018 (EPSY490, Informal Learning)
- Spring 2019 (EPSY-INFO590, Mobile Apps for Teaching, Learning, & Educational Research)

Two-time nominee for President of the International Artificial Intelligence in Education Society, 2011 & 2013.

Best paper award for "Coaching Intercultural Communication in a Serious Game", International Conference on Computers in Education, 2008. Tapei, Taiwan.

Orrin E. & Margaret M. Taulbee Award for Excellence in Computer Science (teaching & research), Department of Computer Science, University of Pittsburgh, 2000 & 2001. (first two-time recipient)

Teaching Award for the Highest Evaluation Score among TAs, Department of Computer Science, University of Pittsburgh, 1999.

Commendation from Vice Chancellor for positive interaction with students, University of Pittsburgh, 1998.

Outstanding Graduate Student Instructor Award, Computer Sciences Department, University of Wisconsin-Madison, 1997.

Journal Articles

Bell, B. M., Martinez, L., Gotsis, M., Lane, H. C., Davis, J. N., Antunez-Castillo, L., Ragusa, G., & Spruijt-Metz, D. (2018). Virtual Sprouts: A Virtual Gardening Pilot Intervention Increases Self-Efficacy to Cook and Eat Fruits and Vegetables in Minority Youth. *Games for Health Journal*.

<http://doi.org/10.1089/g4h.2017.0102>

Lineberry, M., Dev, P., Lane, H. C., & Talbot, T. B. (2018). Learner-Adaptive Educational Technology for Simulation in Healthcare: Foundations and Opportunities. *Simulation in Healthcare: Journal of the Society for Simulation in Healthcare*. <https://doi.org/10.1097/SIH.0000000000000274>

Lane, H. C., McCalla, G., Looi, C. K., & Bull, S. (2016). Preface to the IJAIED 25th Anniversary Issue, Part 2. *International Journal of Artificial Intelligence in Education*, 26(2), 539-543. Heidelberg, Germany: Springer.

Lane, H.C., Hays, M.J., Core, M.G., & Auerbach, D. (2013). Learning intercultural communication skills with virtual humans: Feedback and fidelity. *Journal of Educational Psychology*, 105 (4), 1026-1035.

Wolf, B., Lane, H.C., Chaudhri, V., & Kolodner, J. (2013). AI Grand Challenges for Education. *AI Magazine*, 34(4), 66-84.

Swartout, W., Artstein, R., Forbell, E., Foutz, S., Lane, H.C., Lange, B., Morie, J., Noren, D., Rizzo, S., & Traum, D. (2013). Virtual Humans for Learning. *AI Magazine*, 34(4), 13-30.

Kim, J., Hill, R.W., Durlach, P.W., Lane, H.C., Forbell, E., Core, M., Pynadath, D., & Hart, J. (2009). BiLAT: A game-based environment for practicing negotiation in a cultural context. *International Journal of Artificial Intelligence in Education*, 19(3), 289-308.

Core, M., Traum, D., Lane, H. C., Swartout, W., Marsella, S., Gratch, J., & van Lent, M. (2006). Teaching negotiation skills through practice and reflection with virtual humans. *SIMULATION: Transactions of the Society for Modeling and Simulation*, 82(11), 685-701.

Lane, H. C. & VanLehn, K. (2005). Teaching the tacit knowledge of programming to novices with natural language tutoring. *Computer Science Education* 15(3), 183-201.

Stringently Reviewed Conference Publications

(NOTE: The conference papers in this section were submitted as full papers and, if not recently submitted, were stringently reviewed with acceptance rates ranging from 15% to 45%).

Yi, S., Lane, H.C., & Delialioglu, O. (2019). What if We Were Twice as Close to the Sun? Interview Findings from a Science Summer Camp Serving Unrepresented Youth. *Proceedings of Foundations of Digital Games*, San Luis Obispo, CA.

Yi, S. & Lane, H.C. (2019). Fostering Interest in Science through Interactive Exploration of Astronomy Simulations. *Pro2019ceedings of Conference of the International Society for Technology in Education*, Philadelphia, PA.

Lane, H.C., Core, M.G., Hays, M.J., Auerbach, D., & Rosenberg, M. (2015). Situated pedagogical authoring: Authoring intelligent tutors from a student's perspective. In *Proceedings of the 17th International Conference on Artificial Intelligence in Education*, LNAI 9912 (195-204). Heidelberg, Germany: Springer.

Lane, H.C., Cahill, C., Foutz, S., Auerbach, D., Noren, D., Lussenhop, C., & Swartout, W. (2013). The effects of a pedagogical agent for informal science education on learner behaviors and self- efficacy. In *Proceedings of the 16th International Conference on Artificial Intelligence in Education*, LNAI 7926 (309-318): Heidelberg, Germany: Springer.

Lane, H.C., Noren, D., Auerbach, D., Birch, M. & Swartout, W. (2011). Intelligent tutoring goes to the museum in the big city: A pedagogical agent for informal science education. In *Proceedings of the 15th International Conference on Artificial Intelligence in Education*, LNAI 6738 (155-162). Heidelberg, Germany: Springer.

Swartout, W., Traum, D., Artstein, R., Noren, D., Debevec, P., Bronnenkant, K., Williams, J., Leuski, A., Naraayanan, S., Piepol, D., Lane, H.C., et al., (2010). Ada and Grace: Toward realistic and engaging virtual museum guides. In *Proceedings of the 10th Intelligent Virtual Agents Conference*, LNAI 6356 (286-300). Heidelberg, Germany: Springer.

Lane, H.C., Hays, M.J., Auerbach, D., & Core, M.G. (2010). Investigating the relationship between presence and learning in a serious game. In *Proceedings of the 10th International Conference on Intelligent Tutoring Systems*, LNCS 6094 (274-284). Heidelberg, Germany: Springer.

Lane, H.C., Schneider, M., Michael, S.W., Albrechtsen, J.S. & Meissner, C. (2010). Virtual humans with secrets: Learning to detect verbal cues to deception. In *Proceedings of the 10th International Conference on Intelligent Tutoring Systems*, LNCS 6095 (144-154). Heidelberg, Germany: Springer.

Hays, M., Lane, H. C., Core, M., Auerbach, D., Gomboc, D., & Rosenberg, M. (2009). Feedback specificity and the learning of intercultural communication skills. In *Proceedings of the 14th International Conference on Artificial Intelligence in Education* (391-398). Amsterdam: IOS Press.

Gomboc, D., Core, M., Lane, H.C., Karnavat, A., Auerbach, D., & Rosenberg, M. (2008). An intelligent tutoring framework for simulation-based training. In *Proceedings of the 18th International Conference on Computers in Education* (93-97). Taipei, Taiwan: APSCE.

Lane, H. C., Hays, M., Core, M., Gomboc, D., Forbell, E., Auerbach, D., & Rosenberg, M. (2008). Coaching intercultural communication in a serious game. In *Proceedings of the 18th International Conference on Computers in Education* (35-42). Taipei, Taiwan: APSCE. **BEST PAPER AWARD**

Lane, H. C., Core, M., Gomboc, D., Karnavat, A., & Rosenberg, M. (2007). Intelligent tutoring for interpersonal and intercultural skills. In *Proceedings of the IITSEC Interservice/Industry Training, Simulation, and Education Conference*. Arlington, VA: National Training Systems Association.

Hill, R. W., Belanich, J., Lane, H. C., Core, M., Dixon, M., Forbell, E., Kim, J., & Hart, J. (2006). Pedagogically structured game-based training: Development of the ELECT BiLAT simulation. In *Proceedings of the Army Science Conference*.

Core, M., Lane, H. C., van Lent, M., Gomboc, D., Solomon, S., & Rosenberg, M. (2006). Building explainable artificial intelligence systems. In *Proceedings of the 18th Conference on Innovative Applications of Artificial Intelligence (IAAI) (1766-1773)*. Menlo Park, CA: AAAI Press.

Gomboc, D., Solomon, S., Core, M., Lane, H. C., & van Lent, M. (2005). Design recommendations to support automated explanation and tutoring. In *Proceedings of the 14th Conference on Behavior Representation in Modeling and Simulation (BRIMS)*.

Lane, H. C. & VanLehn, K. (2005). Intention-based scoring: An approach to measuring success at solving the composition problem. In *Proceedings of the 36th ACM SIGCSE Technical Symposium on Computer Science Education (373-377)*. New York, NY: ACM Press.

Lane, H. C. & VanLehn, K. (2004). A dialogue-based tutoring system for beginning programming. In *Proceedings of the 17th FLAIRS International Florida Artificial Intelligence Research Society Conference (449-454)*. Menlo Park, CA: AAAI Press.

Lane, H. C. & VanLehn, K. (2003). Coached program planning: Dialogue-based support for novice program design. In *Proceedings of the 34th ACM SIGCSE Technical Symposium on Computer Science Education (148-152)*. New York: ACM Press.

Book Chapters (reviewed)

Bulut, I.H., Delialioglu, O., & Lane, H. C. (in-press). Beyond Acceptance: A new model for technology engagement in 21st Century Learning. In M. Montebello, W. Cope, & M. Kalantzis (Eds.) *The Digital Learner: Challenges and Opportunities*. Abingdon, UK: Routledge.

Lane, H. C., & D'Mello, S. K. (2019). Uses of Physiological Monitoring in Intelligent Learning Environments: A Review of Research, Evidence, and Technologies. In T. D. Parsons, L. Lin, & D. Cockerham (Eds.), *Mind, Brain and Technology: Learning in the Age of Emerging Technologies* (pp. 67-86). Springer International Publishing.

Goldberg, B., Nye, B., Lane, H.C., & Guadagnoli, M. (2018). Team Assessment and Pedagogy as Informed by Sports Coaching and Assessment. In R. Sottolare, A. Graesser, X. Hu, & A. Sinatra (Eds.), *Design Recommendations for Intelligent Tutoring Systems* (pp. 105-120). US Army Research Laboratory.

Lane, H. C. & Mercier, E. (2017). Enhancing collaboration and learning through touch screen interfaces. In J. Roschelle, W. Martin, J. Ahn, & P. Schank (Eds.), *Cyberlearning Community Report: The State of Cyberlearning and the Future of Learning With Technology* (pp. 41-44). Menlo Park CA: SRI International.

Fusco, J. Martin, W. Lane, H. C. & Chase, C. (2017). Virtual peers and coaches: Social and cognitive support for learning. In J. Roschelle, W. Martin, J. Ahn, & P. Schank (Eds.), *Cyberlearning Community Report: The State of Cyberlearning and the Future of Learning With Technology* (pp. 31-35). Menlo Park CA: SRI International.

Lane, H. C., & Yi, S. (2017). Playing with virtual blocks: Minecraft as a learning environment for practice and research. In F. C. Blumberg & P. J. Brooks (Eds.), *Cognitive Development in Digital Contexts* (pp. 145-156). Amsterdam, Netherlands: Elsevier.

- Lane, H.C. (2017). Interactive sensing technologies. In K. Peppler (Ed.), *The SAGE Encyclopedia of Out-of-School Learning* (pp. 373-375). Los Angeles: SAGE.
- Toedte, R. J. & Lane, H. C. (2017). Data visualization. In K. Peppler (Ed.), *The SAGE Encyclopedia of Out-of-School Learning* (pp. 201-204). Los Angeles: SAGE.
- Lane, H.C. (2016). Pedagogical agents and affect: Molding positive learning interactions. In S.Y. Tettegah & M. Gartmeier (Eds), *Emotions, Technology, Design, & Learning* (pp. 47-61). London: Academic Press.
- Lane, H.C. (2015). Enhancing informal learning experiences with affect-aware technologies. In R.A. Calvo, S.K. D'Mello, J. Gratch, & A. Kappas (Eds) *Handbook of Affective Computing* (pp. 435-446). New York: Oxford University Press.
- Lane, H. C. (2012). Coaching and mentoring. In N. Seel (Ed.), *Encyclopedia of the Sciences of Learning, Vol 1* (pp. 557-559). Heidelberg, Germany: Springer.
- Lane, H. C. (2012). Cognitive models of learning. In N. Seel (Ed.), *Encyclopedia of the Sciences of Learning, Vol 1* (pp. 608-610). Heidelberg, Germany: Springer.
- Lane, H. C. (2012). Intercultural learning. In N. Seel (Ed.), *Encyclopedia of the Sciences of Learning, Vol 2* (pp. 1618-1620). Heidelberg, Germany: Springer.
- Lane, H.C. & Wray, R. (2012). Individualized social and cultural learning with virtual humans. In P. Durlach & A. Lesgold (Eds.), *Adaptive Technologies for Training and Education* (pp. 204-221), New York: Cambridge University Press.
- Ogan, A. & Lane, H. C. (2010). Virtual learning environments for culture and intercultural competence. In E. Blanchard & D. Allard (Eds.), *Handbook of Research on Culturally-Aware Information Technology: Perspectives and Models* (pp. 501-519). Hershey, PA: IGI Global.
- Lane, H. C. & Johnson, W. L. (2009). Intelligent Tutoring and Pedagogical Experience Manipulation in Virtual Learning Environments. In D. Schmorow, J. Cone, & D. Nicholson (Eds.), *The Handbook of Virtual Environments for Training and Education, Volume 2: VE Components and Training Technologies* (pp. 393-406). Westport, CT: Praeger Security International.

Workshops, Short papers, Magazine articles, and Other Publications

- Bell, B., Cook, L., Gotsis, M., Lane, H.C., Davis, J., Castillo, L.A., Ragusa, G., & Spruijt-Metz, D. (2017) Virtual Sprouts: A virtual gardening pilot intervention increases self-efficacy to cook and eat fruits and vegetables in minority youth. *Society of Behavioral Medicine, 38th Annual Meeting & Scientific Sessions*. San Diego, CA.
- Lane, H.C., Yi, S., Guerrero, B., & Comins, N. (2017) Minecraft as a Sandbox for STEM Interest Development: Preliminary Results. In *Proceedings of the Workshop on Interest Driven Creation at the International Conference on Computers in Education* (pp. 1-10). Christchurch, NZ.
- Lane, H.C., Yi, S., Guerrero, B., & Comins, N. (2017) A Taxonomy of Minecraft Activities for STEM. In *Proceedings of the International Conference on Computers in Education* (pp. 1-3). Christchurch, NZ.
- Lane, H.C. & Santos, O. (2016). Embodied Learning and Artificial Intelligence: Expanding the

bandwidth of learning technologies. In *Ideas Worth Sharing*. London: Pearson.

Lane, H.C. (2016, May). Virtual Environments, Real Learning. *Computer* (pp. 14-15), IEEE Computer Society.

Hays, M.J., Ogan, A., & Lane, H.C. (2010). The evolution of assessment: Learning about culture from a serious game. In C. Lynch et al. (Eds.), *Proceedings of the Workshop on Intelligent Tutoring Technologies for Ill-defined Problems and Ill-defined Domains at the 10th International Conference on Intelligent Tutoring Systems*. Pittsburgh, PA.

Lane, H.C. (2010). Characters that help you learn: Individualized practice with virtual human role players. In D. Perez-Marín, I. Pascual-Nieto, & S. Bull (Eds.), *Proceedings of the Workshop on Adaptation and Personalization in e-b/Learning using Pedagogic Conversational Agents held at User Modeling, Adaptation, and Personalization*. Waikoloa Village, Hawaii.

Wolf, et al. (2010). *A Roadmap for Education Technology*. Computing Research Association (CRA). [Contributing Author, sections on Serious Games and Intelligent Environments]

McAlinden, R., Gordon, A., Lane, H.C., & Pynadath, D. (2009). UrbanSim: A game-based simulation for counterinsurgency and stability-focused operations. In H.C. Lane, Ogan, A., & V. Shute (Eds.), *Proceedings of the Educational Games Workshop at the 14th International Conference on Artificial Intelligence in Education* (pp. 41-50). Brighton, UK.

Lane, H. C. & Ogan, A. (2009). Virtual environments for cultural learning. In E. Blanchard, H. C. Lane, & D. Allard (Eds.), *Proceedings of the 2nd Workshop on Culturally-Aware Tutoring Systems at the 14th International Conference on Artificial Intelligence in Education* (25-34). Brighton, UK.

Wray, R., Lane, H. C., Stensrud, B., Core, M., Hamel, L., & Forbell, E. (2009). Pedagogical experience manipulation for cultural learning. In E. Blanchard, H. C. Lane, & D. Allard (Eds.), *Proceedings of the 2nd Workshop on Culturally-Aware Tutoring Systems at the 14th International Conference on Artificial Intelligence in Education* (35-44). Brighton, UK.

Lane, H.C. (2009). Promoting metacognition in immersive cultural learning environments. In J.A. Jacko (Ed.), *Human-Computer Interaction, Part IV, HCII 2009*, LNCS 5613 (129-139). Heidelberg, Germany: Springer.

Lane, H.C., Core, M., Gomboc, D., Birch, M., Hart, J., & Rosenberg, M. (2009). Using written and behavioral data to detect evidence of continuous learning. In J. Kay & B. Kummerfeld (Eds.), *Proceedings of the Lifelong Learner Modeling Workshop at User Modeling, Adaptation, and Personalization* (54-61). Trento, Italy.

Lane, H. C. & Matthew J. Hays (2008). Getting down to business: Teaching cross-cultural social interaction skills in a serious game. In E. G. Blanchard et al., (Eds.), *Proceedings of the 1st Workshop on Culturally-Aware Tutoring Systems at the 9th International Conference on Intelligent Tutoring Systems* (35-46). Montreal, Canada.

Lane, H. C. (2007). Metacognition and the Development of Intercultural Competence. In I. Roll et al. (Eds.), *Proceedings of the Workshop on Metacognition and Self-Regulated Learning in Intelligent Tutoring Systems at the 13th International Conference on Artificial Intelligence in Education* (23- 32). Marina del Rey, CA.

Lane, H. C., Core, M., Gomboc, D., Solomon, S., van Lent, M., & Rosenberg, M. (2006). Reflective

tutoring for immersive simulation. In *Proceedings of the 8th Intelligent Tutoring Systems Conference* (pp. 732-734). Heidelberg, Germany: Springer-Verlag.

Lane, H. C. (2006). Intelligent tutoring systems: Prospects for guided practice and efficient learning. *Army Science of Learning Workshop*, Hampton, VA. August 1-3, 2006.

Core, M., Lane, H. C., van Lent, M., Solomon, S., Gomboc, D., & Carpenter, P. (2005). Toward question answering for simulations. *Papers of the Knowledge and Reasoning for Answering Questions workshop at IJCAI05*, Edinburgh, Scotland.

Lane, H. C., Core, M., van Lent, M., Solomon, S., & Gomboc, D. (2005). Explainable artificial intelligence for training and tutoring. In *Proceedings of the 12th International Conference on Artificial Intelligence in Education*. (pp. 762- 764). Amsterdam: IOS Press.

Riedl, M., Lane, H. C., Hill, R. W., & Swartout, B. (2005). Automated story direction and intelligent tutoring: Towards a unifying architecture. In *Proceedings of the Workshop on Narrative Learning Environments at the 12th International Conference on Artificial Intelligence in Education*. Amsterdam, The Netherlands.

Lane, H. C. (1994). Cryptographic algorithms for privacy-enhanced mail (Technical Report K/DSRD-1721). Department of Energy, Oak Ridge National Lab, Data Systems Research and Development.

Thesis & Dissertation

Lane, H. C. (2004). Natural Language Tutoring and the Novice Programmer. Doctoral dissertation, Department of Computer Science, University of Pittsburgh. Advisor: Kurt VanLehn, Committee: Diane Litman, Peter Brusilovsky, Jan Wiebe, & Marian Petre.

<http://etd.library.pitt.edu/ETD/available/etd-12082004-151424/>

Lane, H. C. (1995). Zero-knowledge proofs: Proving you know without telling. Senior Honors Thesis, Division of Math & Computer Science, Truman State University.

Research Funding (current)

Fostering Enduring Interest in STEM through Exoplanet Education and Interactive Exploration and Creation of Potentially Habitable Worlds (PI, NSF DRL# 1934087, AISL, \$2,738,242, 9/1/19 - 8/31/22). This project involves the design of engaging, interactive digital activities for middle school learners (ages 9-13) that trigger and sustain interest in STEM. Using a customized Minecraft server, learners can explore alternative versions of Earth, visit representations of known exoplanets, interact with autonomous agents, and create new content to share with other learners. Collaborators: University of Maine, University of Colorado-Boulder (Fiske Planetarium), PBS NOVA, Learn01 (Miami).

Cultivating Creativity to Integrate Computation and Science Problem Solving in Informal Learning (PI, NSF DRL# 1934087, STEM+C, \$530,459, 9/1/19 - 8/31/21). This project will develop interactive learning content for the learning of computational thinking skills in the context of scientific problem solving. The project emphasizes the pursuit of creative solutions to problems inspired by real-world challenges, such as flooding and agricultural optimization, that require scientific understanding and use of computational thinking skills.

Move2Learn: Understanding the role of embodied interaction in Pre-K science learning (Co-PI, NSF DRL#1646940, \$2.4M total w/UK, \$1,420,050 US, UIUC \$400K, ScienceLearning+, 3/1/17 - 2/28/20). This project investigates how movements and gestures of Pre-K learners can support exploration and understanding of science concepts in informal settings. The project pursues an integrated view of informal science education that captures cognitive, emotional, and physical aspects of learning and interaction. Collaborators: Frost Museum of Science (Miami, FL), The Children's Museum (Indianapolis, IN), University of Edinburgh, and University College London.

Research Funding (completed)

Fostering Interest in Science through Interactive Exploration of Astronomy What-If Simulations (PI, NSF DRL# 1713609, \$299,949, 6/1/17 - 5/31/19).

Scrutability in Game-Based Assessment and Prediction of Career Fit, (Subcontractor, Research Lead, NSF SBIR#1747381, \$300,000, UIUC \$60K, 1/1/18 - 12/31/18). Collaborator: Posed2, Inc.

Virtual Sprouts: Web-based Gardening Games to Teach Nutrition and Combat Obesity (co-PI), NCRR Science Education Partnership Award (SEPA), National Institutes for Health, 5/1/11-4/30/16, \$1,338,123

Situated Pedagogical Authoring for Virtual Human-based Training (PI), Department of the Army, 11/1/11 - 10/31/14, \$2,193,558

Fostering Engagement, Motivation, and Diligence in STEM Learning (PI), Telemedicine & Advanced Technology Research Center (TATRC), 10/1/12 - 3/31/14, \$231,310

Fast Authoring of Content for Intelligent Tutoring Systems (Co-PI), Office of Naval Research, 5/1/13 - 6/30/14, \$273,280

Responsive Virtual Human Museum Guides (co-PI), National Science Foundation, DRL#0813541, 9/1/08 - 8/31/12, \$2,062,116

Technologies for Accelerated Continuous Learning (PI), Department of the Army, 8/1/07 - 10/31/11, \$1,450,100

Intelligent Guided Experiential Learning: Tutoring for Practice (PI), Department of the Army, 11/1/09 - 10/31/11, \$1,019,328

Interactive Game-Based Systems for Psychological Health (co-PI), Office of Naval Research, 2/1/10 - 1/31/11, \$50,017

Virtual Practice for Removable Partial Denture Design (co-PI), University of Southern California, James H. Zumberge Award for Interdepartmental Collaboration, 2/1/10 - 7/31/10, \$10,000

Intelligent Modeling for Pedagogically Aware Cultural Training (co-PI), United States Air Force, 8/1/08 - 7/31/10, \$262,633

Adaptive Expertise for Leadership Training (co-PI), Office of Naval Research, 3/1/09 - 8/31/09, \$24,439

Intelligent Guided Experiential Learning: Tutoring for Practice (PI), Department of the Army, 11/1/07 - 10/31/08, \$859,611

Dynamic Experiences for Simulation-based Training (PI), Department of the Army, 11/1/05 - 10/31/06, \$188,250

Reflective Tutoring and Explainable Artificial Intelligence (co-PI), Department of the Army, 11/1/05 - 10/31/07, \$1,754,965

Service (External, senior positions and national committees)

Program Co-Chair, Technology, Mind, & Society (TMS) by APA and SIGCHI, October 2019.

Program Co-Chair, Computer Supported Education (CSEDU), Crete, Greece, May 2019.

Program Co-Chair, 26th International Conference on Computers in Education (ICCE), Track C1: Artificial Intelligence in Education, Metro Manila, Philippines, 2018.

Advisor, Special Interest Group, IEEE ICICLE Design for Learning, 2018-current.

Steering Committee, Technology, Mind, & Society Conference (TMS), new conference funded by APA, with support from ACM SIGCHI and AAI, 2017-current.

Lead Editor, IJAIED Special Issue on 25th anniversary issue, 2016.

Associate Editor, IEEE Transactions on Learning Technologies (TLT), 2014 - current.

Executive Committee (elected position), International Society for Artificial Intelligence in Education, 2010-2015.

Special Editor, AI Magazine special double issue on Advanced Learning Technologies, Fall 2013 & Spring 2014.

Advisory Committee, National Science Foundation, Cyberlearning: Transforming Education Program, 2012.

Reviewer & Consultant, European Commission, Divisions on Technology-Enhanced Learning and Creativity Research, 2011-current.

Program Co-Chair, 16th International Conference on Artificial Intelligence in Education (AIED), 2013. Memphis, TN.

Senior Program Committee, 11th International Conference on Intelligent Tutoring Systems (ITS), 2012. Crete, Greece.

Conference Chair, 27th International Florida Artificial Intelligence Research Society Conference (FLAIRS), 2012.

Senior Program Committee & Interactive Events Co-Chair, 15th International Conference on Artificial Intelligence in Education (AIED), 2011. Auckland, New Zealand.

Program Co-Chair, 23rd and 24th International Florida Artificial Intelligence Research Society Conferences (FLAIRS), 2008 & 2009.

Service (program committees, chair positions, editorships, volunteering)

Reviewer IEEE Conference on Intelligence in Games (CIG), 2019.

Reviewer, Institute for Educational Sciences (IES), Department of Education, 2012-present.

Reviewer & Senior Program Committee, Artificial Intelligence in Education Conference (AIED), 2004-current.

Reviewer, ACM Technical Symposium on Computer Science Education (SIGCSE), 2004-current.

Proposal reviewer, National Science Foundation (ISE, AISL, ITEST, & Cyberlearning), 2009-current.

Reviewer & Program Committee, Intelligent Tutoring Systems Conference (ITS), 2006-current.

Reviewer & Program Committee, Conference on Computer Supported Education (CSEDU), 2010-current.

Reviewer & Program Committee, International Journal of Artificial Intelligence and Education, 2008-current.

Editorial Board, Journal of Interactive Learning Environments, 2007-current.

Program Committee, International Florida Artificial Intelligence Research Society Conference (FLAIRS), 2008-current.

Program Committee, Special track on Intelligent Tutoring Systems, International Florida Artificial Intelligence Research Society Conference (FLAIRS), 2008-2013.

Program Committee, Special track on Intelligent Learning Technologies, International Florida Artificial Intelligence Research Society Conference (FLAIRS), 2014-current.

Reviewer, IEEE Transactions on Learning Technologies, 2008-current.

Reviewer, Cognitive Technology Journal, 2008-2010.

Mentor & Reviewer, Young Researchers Track, 10th International Conference on Intelligent Tutoring Systems, Pittsburgh, PA, 2010.

Youth technology mentor, MEND (Meeting Every Need with Dignity), 2010.

Program Committee, 14th International Conference on Artificial Intelligence in Education (AIED09), Brighton, UK, 2009.

Chair, Workshop on Intelligent Lifelong Learning Companions, October 2-3, 2008. Marina del Rey, CA. <http://projects.ict.usc.edu/companion/>

Program Committee, National Conference on Artificial Intelligence (AAAI), 2007.

Reviewer, Young Researcher Track, National Conference on Artificial Intelligence (AAAI), 2007- 2009.

Organizing Committee, Local Arrangements, Artificial Intelligence in Education Conference (AIED07), Marina del Rey, CA, 2007.

Chair, Special track on Intelligent Tutoring Systems, 19th International Florida Artificial Intelligence Research Society Conference (FLAIRS), May 11-13, 2006. Melbourne Beach, FL.

Chair, Workshop on Intelligent Tutoring in Serious Games, August 24-25, 2006. Marina del Rey, CA. <http://projects.ict.usc.edu/itgs/>

Service (internal)

Division Chair, Cognitive Science of Teaching and Learning (CSTL), Department of Educational Psychology, College of Education, University of Illinois, Urbana-Champaign, 2016-current.

TIER-ED Committee (including hiring search), College of Education, University of Illinois, Urbana-Champaign, 2017-current.

Host, Fulbright Visiting Scholar, Prof. Dr. Ömer Delialioğlu, Middle East Technical University (METU), 2017-2018.

Online Programs Committee, College of Education, University of Illinois, Urbana-Champaign, 2017-current.

O'Leary Center Design Committee, College of Education, University of Illinois, Urbana-Champaign, 2016-2017.

College of Education Dean Search Committee, University of Illinois, Urbana-Champaign, 2016-2017.

Illinois Informatics Institute Review Committee, University of Illinois, Urbana-Champaign, 2016.

Volunteer Java Instructor, Learning Research & Development Center, University of Pittsburgh, 1999.

Undergraduate Programs Committee, Computer Science, University of Pittsburgh, 1998-2000.

Invited Talks, Keynotes, Panels, and Presentations

“Technology-Enhanced Informal STEM Learning”, Invited Panel Presentation, NSF AISL PI Meeting, February 12, 2019.”

“How AI is being used for fine-grained assessment and to support learning across contexts”, Keynote, Superintelligence: The Future of Artificial Intelligence. Kuwait Foundation for the Advancement of Science (KFAS), November 20, 2018.

“How AI Research is Working to Support and Empower Educators”, Alelo Webinar Series on the Future of AI in Education and Training, August 8-9, 2018.

“Exploring Alternative Versions of Earth in Minecraft”, 2018 STEM for All Video Showcase, May 14-21, 2018. <http://videohall.com/p/1188> **FACILITATOR'S CHOICE AWARD** (20 awards out of 214)

“Move2Learn: Embodied Learning for Preschool Scientists”, 2018 STEM for All Video Showcase, May 14-21. <http://videohall.com/p/1199> **PRESENTER'S CHOICE AWARD** (9 awards out of 214)

“Promoting Interest and Engagement with Intelligent Learning Technologies”, Invited Plenary, Rensselaer Polytechnic Institute, Teaching & Learning Colloquium, Troy, NY, May 18, 2018.

“Promoting Interest and Engagement in Informal Learning with Intelligent Learning Technologies”, Invited talk, Emerging Technology Workshop, St. Louis Science Center, St. Louis, MO. May 4, 2018.

“Technology-Enhanced Informal Learning: Bringing Advanced Learning Technologies into Museums and Out-of-School Settings”, Invited Lecture, London Knowledge Lab, University College London, London, England, March 20, 2018.

“Technology-Enhanced Informal Learning: Bringing Advanced Learning Technologies into Museums

and Out-of-School Settings”, Keynote Presentation, CSEDU (Computer Supported Education), Funchal, Portugal, March 17, 2018.

“Research on Pedagogical Agents: How Making Computers More Human-like Can Improve Learning.” Invited online talk, Center for Innovative Research in Cyberlearning (CIRCL), October 24, 2017. Retrieved from <http://circlcenter.org/events/ecolloq-implicit-assessments-pedagogical-agents/>

“Informal science learning: Promoting engagement, interest, and learning in museums”, Distinguished Visiting Lecture, Notre Dame University, Psychology Department, November 28, 2016.

“Can we Build Passionate Intelligent Tutoring Systems? Promoting Engagement and Learning with Pedagogical Agents”, Kitchen Talk, Culture Lab, Newcastle University, England, February 24, 2014.

“Can we Build Passionate Intelligent Tutoring Systems? Promoting Engagement and Learning with Pedagogical Agents”, Seminar, Institute for Language, Cognition, and Computation, University of Edinburgh, Scotland, February 21, 2014.

“Grand Challenges in the Human Dimension: Expertise and Training”, Army Research Laboratory’s (ARL) Human Dimension Workshop, Potomac, Maryland, November 5, 2013.

“The Design, Implementation, and Impacts of Pedagogical Agents”, NIH mHealth summer institute, University of California Los Angeles, Los Angeles, CA, August 27, 2013.

“Designing and Building Pedagogical Agents for Informal Science Education”, Invited talk, UCLA Psychology Department, Los Angeles, CA, August 30, 2013.

“Pedagogical agents for informal science education”, Invited talk, Knowledge Factor, Inc., Boulder, CO, July 23, 2013.

“How can we intelligently make more intelligent computer scientists for the world to enjoy?”, Keynote presentation, Workshop on AI-supported Education for Computer Science (AIEDCS), Memphis, TN, July 13, 2013.

“Neuroscience, Learning, and Creativity” Invited panel presentation, USC Interaxon (neuroscience education group), University of Southern California, March 12, 2013.

“Using Virtual Humans to Educate and Inspire”, Western Center Academy (middle school), Hemet, CA, December 6, 2012.

“Can we build passionate and inspiring intelligent tutors? Lessons learned from using virtual humans and intelligent tutoring systems in the Boston Museum of Science”, Invited talk, University of Memphis, September 1, 2011.

“I’m Learning! What the Simpsons have to tell us about education, learning, and technology.” Banquet address, 15th International Conference on Artificial Intelligence in Education (AIED2011), June 29, 2011. Auckland, New Zealand.

“The learning vs. fun debate: An abbreviated history”, panel presentation at the 24th Florida Artificial Intelligence Research Society (FLAIRS-24) Conference, Games, Entertainment, Palm Beach, FL, May 20, 2011.

“Learning with virtual humans: Using simulated role players to teach and inspire”, Truman State University, Department of Mathematics and Computer Science, Kirksville, MO, October 14, 2010.

“Promoting metacognitive learning in video games for children”, panel presentation at the NSF Conference on Academic Lessons from Video Game Learning, Fordham University, New York, NY, October 7, 2010.

Fordham University, New York, NY, October 8, 2010. “What else can games teach?”, panel presentation at the 23rd Florida Artificial Intelligence Research Society (FLAIRS-23) Conference, Games, Entertainment, and Learning, Daytona Beach, FL, May 21, 2010.

“Learning with virtual humans: Using simulated role players to teach and inspire”, keynote address to the National Meeting of the Junior Science and Humanities Symposium (JSHS), Washington, DC, April 28, 2010. (300 of the top high school STEM students from all 50 states)

“Learning with virtual humans: Using simulated role players to teach and inspire”, Invited talk, Worcester Polytechnic University, Departments of Computer Science and Psychology, Worcester, MA, April 12, 2010.

“The evolution of AIED: Successes and challenges”, panel presentation, 14th International Conference Artificial Intelligence in Education, Brighton, UK, July 8, 2009.

“Guided learning and cognitive skill acquisition in serious games”, Northern Illinois University, Department of Computer Science, DeKalb, IL, October 25, 2007.

“Guided learning and cognitive skill acquisition in serious games”, Northern Iowa University, Department of Computer Science, Cedar Rapids, IA, October 24, 2007.

“Guided learning and cognitive skill acquisition in serious games”, Truman State University, Department of Mathematics and Computer Science, Kirksville, MO, October 22, 2007.

“Human and Computer Tutoring: What we know, need to know, and are finding out about guided learning”, Invited talk, University of California Los Angeles, Department of Psychology, Los Angeles, CA, January 12, 2007.

“Intelligent Tutoring Systems: Prospects for Guided Practice and Efficient Learning”, Invited working group talk, Army Science of Learning Conference, Hampton, VA, August 1, 2006.

Academic advising, thesis committees, supervision

Current PhD Students and committees:

- Ross Toedte, Educational Psychology (advisor)
- Sherry Yi, Educational Psychology (advisor)
- Matthew Gadbury, Educational Psychology (advisor)
- Andrea Pellegrini, Educational Psychology (advisor)
- Helen Wauck, Computer Science (dissertation committee)
- Sneha Krishna Kumaran, Computer Science (dissertation committee)
- John Myers, Curriculum & Instruction (dissertation committee)

Current undergraduates (UIUC):

- Jack Henhapl, Computer Science (supervisor)
- Hyunoo Park, Mathematics (supervisor)

Past Students:

- Xingliang Chen, Computer Science, University of Canterbury (dissertation committee), May 2019.
- Xue Yan, APPLeS, James Scholar (co-advisor w/Prof. Kiel Christianson)
- Kyungho Lee, PhD Informatics (dissertation committee member), March 2019.
- Rebecca Teasdale, PhD Educational Psychology (dissertation committee), February 2019. (Asst. Prof. at University of Illinois, Chicago)
- Geoffrey McKinley, PhD Psychology (dissertation committee), September 2018. (postdoc)
- Yue Fan, Educational Psychology (advisor), M.S. Educational Psychology, May 2018 (employed in Beijing).
- Joshua Fiechter, PhD (dissertation committee member), UIUC, Psychology, 2017. (postdoc)
- Destinee Johnson, B.S. (co-advisor w/Prof. Michelle Perry), UIUC, Learning and Education Studies, 2017 (graduate student, Howard University).
- Kaylee Furllett (advisor), UIUC James Scholar, 2017-2018.
- Robert Deloatch, PhD (dissertation committee), UIUC, Computer Science (Research Scientist at Apple)
- Qing He, M.A. (thesis committee), UIUC, Fine Arts, 2017.
- Nick Degens, PhD (dissertation committee), Department of Social Sciences, Information Technology Group, Wageningen University, Netherlands, 2014. (Asst. Prof., Hanze University)
- Richard Gluga, PhD (dissertation committee), Department of Computer Science, University of Sydney, Australia, 2013.
- Sergey Sosnovsky, PhD (dissertation committee), Dept. of Information Science, University of Pittsburgh, 2011. (Asst. Prof, University of Utrecht)
- Shumin Wu: PhD (dissertation committee member), Dept. of Computer Science, University of Southern California, spring 2007. (Software Engineer, Facebook)

Supervision (USC):

- Daniel Auerbach, Programmer Analyst, Fall 2007 - 2015.

- Matthew Hays: Research Associate, 2011-2014; Postdoctoral Research Assistant, 2009 - 2011; Visiting Graduate Student Researcher (Psychology Dept., University of California, Los Angeles), Summer 2007 - Fall 2007, Summer 2008. (now Director of Research, Knowledge Factor, Inc., Boulder, CO)
- Mike Birch, Programmer Analyst, 2009 - 2013; Graduate student researcher (University of Southern California, Los Angeles), Summer - Fall 2008.
- Dave Gomboc, Research Programmer, Spring 2005 - Fall 2010.
- Mike Schneider, Research Programmer, Spring 2008 - Summer 2010.
- Tony Lockhart, Visiting Graduate Student Researcher (Georgia Tech University, Atlanta, GA), Summer 2010.
- Adeola Odunsi, Summer Intern (Jackson State University, Jackson, MS), Summer 2010.
- Toby Dragon, Visiting Graduate Student Researcher (University of Massachusetts, Amherst, MA), Summers 2008, 2009.
- Steven Michael, Visiting Graduate Student Researcher (Psychology Dept., University of Texas-El Paso), Summer 2009.
- Martin van Velsen: Programmer Analyst, Fall 2006 - Fall 2008.
- Jonathan Gordon, Visiting Graduate Student Researcher (University of Rochester, Rochester, NY), Summer 2008.
- Nazila Hafezi, Visiting Graduate Student Researcher (University of Texas, El Paso, TX), Summer 2008.
- Eric Zastoupil, Summer Intern (Westpoint Military Academy), Summer 2008.
- Amy Ogan: Visiting Graduate Student Researcher (Human-Computer Interaction, Carnegie Mellon University, Pittsburgh), Summer 2007.
- Ahish Karnavat: Programmer Analyst, Spring 2006 - Spring 2008.
- Tipu Qamril, Student Programmer (University of Southern California), 2006-2007.
- Qun Cao, Programmer Analyst, 2006-2007.
- David Dawes, Summer Intern (Westpoint Military Academy), Summer 2006.
- Jeremy Glick, Summer Intern (Cognitive Science, Stanford University), Summer 2006.
- Emily Pitts, Summer Intern (North Carolina A&T), Summer 2006, Summer 2007.
- Sheldon Harris, Summer Intern (Xavier University of Louisiana), Summer 2006.
- Zeeshan Maqbool, Independent Study, Dept. of Computer Science, University of Southern California, Spring 2005.

Teaching

Courses at UIUC (2015-current):

- EPSY-INFO590: Interactive and Engaging educational technologies (Spring 2015, Fall 2015, Fall 2016, Fall 2017) *As of May 2018, this course is now permanent as EPSY/CI/INFO 555*
- EPSY573/CI550/SPED550: Methods of Educational Inquiry (Spring 2016)
- ESPY490: Learning in Everyday Contexts (Fall 2015, Fall 2016, Fall 2017)
- EPSY-INFO590: Mobile Technologies for Teaching, Learning, & Educational Research (Spring 2017, Spring 2018, Spring 2019)

Courses in Undergraduate and Graduate School (1995-2003)

- Graduate School Teaching Portfolio: <http://people.ict.usc.edu/~lane/TP/>
- Intermediate Programming in C++, University of Pittsburgh, Summer 2001.
- Introduction to Computer Programming, University of Pittsburgh, 1997-2003.
- Introduction to Algebraic Language Programming, University of Wisconsin-Madison, 1995-1997.
- College Algebra, Truman State University, 1994.